ENTRANCE BOOSTER

For Topmost +2 Colleges of Nepal

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MCQs

Multiple Choice Question Collection

Subject:

PHYSICS

MCQS: LIGHT - REFLECTION AND REFRACTION

1. An object is placed 20 cm in front of a plane mirror. The mirror is moved 2 cm towards the object. The distance between the positions of the original and final images seen in the mirror is:
   a. 2 cm b. 4 cm c. 10 cm d. 22 cm
   Answer: a. 4 cm
2. A ray of light that strikes a plane mirror PQ at an angle of incidence of 30^o, is reflected from the plane mirror and then strikes a second plane mirror QR placed at right angles to the first mirror. The angle of reflection at the second mirror is:
   a. 30^o b. 45^o c. 60^o d. 90^o
   Answer: c. 60^o
3. An object is placed at 100 mm in front of a concave mirror which produces an upright image (erect image). The radius of curvature of the mirror is:
   a. Less than 100 mm b. Between 100 mm and 200 mm
   c. Exactly 200 mm d. More than 200 mm
   Answer: d. More than 200 mm
4. Which position of the object will produce a magnified virtual image, if a concave mirror of focal length 15 cm is being used?
   a. 10 cm b. 20 cm c. 30 cm d. 35 cm
   Answer: a. 10 cm
5. A concave mirror produces a magnification of +4. The object is placed:
   a. At the focus
   b. Between focus and centre of curvature
   c. Between focus and pole
   d. Beyond the centre of curvature
   Answer: c. Between focus and pole
6. Two big mirrors A and B are fitted side by side on a wall. A man is standing at such a distance from the wall that he can see the erect image of his face in both the mirrors. When the man starts walking towards the mirrors, he finds that the size of his face in mirror A goes on increasing but that in mirror B remains the same:
   a. Mirror A is concave and mirror B is convex
   b. Mirror A is plane and mirror B is concave
   c. Mirror A is concave and mirror B is plane
   d. Mirror A is convex and mirror B is concave
   Answer: c. Mirror A is concave and mirror B is plane
7. A ray of light is travelling in a direction perpendicular to the boundary of a parallel glass slab. The ray of light:
   a. Is refracted towards the normal

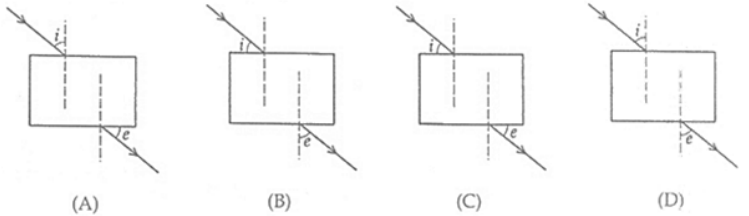
b. Is refracted away from the normal
c. Is reflected along the same path
d. Does not get refracted
Answer: d. Does not get refracted

8. A ray of light passes from a medium X to another medium Y. No refraction of light occurs if the ray of light hits the boundary of medium Y at an angle of:
a. 120^o b. 90^o c. 45^o d. 0^o
Answer: b. 90^o

9. A lens of focal length 12 cm forms an erect image, three times the size of the object. The distance between the object and image is:
a. 8 cm b. 16 cm c. 24 cm d. 36 cm
Answer: a. 8 cm

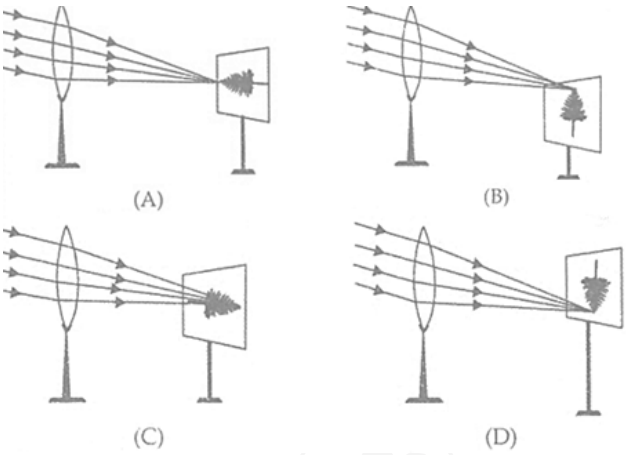
10. If an object is placed 21 cm from a converging lens, the image formed is slightly smaller than the object. If the object is placed at a distance of 19 cm from the lens, the image formed is slightly larger than the object. The approximate focal length of the lens is:
a. 20 cm b. 18 cm c. 10 cm d. 5 cm
Answer: c. 10 cm

11. A student does the experiment on tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. He can get a correct measure of the angle of incidence and the angle of emergence by following the labelling indicated in figure:



a. A b. B c. C d. D
Answer: d. D

12. While performing an experiment on determination of focal length of a convex lens, four students obtained the image of the same distant tree on the screen as follows:

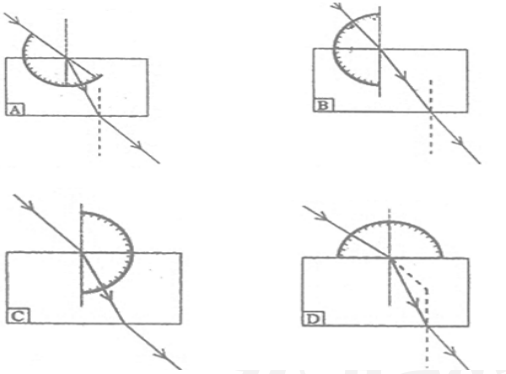


Which diagram shows the formation of image correctly?

a. A b. B c. C d. D

Answer: d. D

13. A student traces the path of a ray of light passing through a rectangular slab.



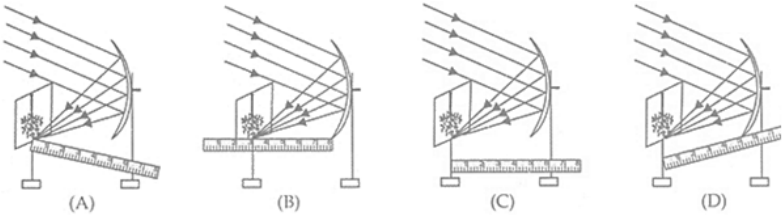
For measuring the angle of incidence, he must position the protractor in the manner shown in the figure:

a. A b. B

c. C d. D

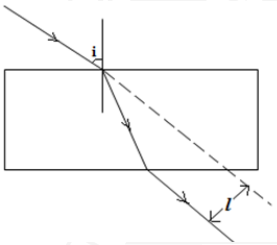
Answer: d. D

14. Four students A, B, C and D performed the experiment to determine the focal length of a concave mirror by obtaining the image of a distant tree on a screen. They measured the distances between the screen and the mirror as shown in the diagrams given below:



The correct way to measure accurate focal length of the mirror is:
a. A b. B c. C d. D
Answer: c. C

15. A student traces the path of a ray of light passing through a rectangular slab for three different values of angle of incidence ($\angle i$) namely 30^o, 45^o and 60^o. He extends the direction of incident ray by a dotted line and measures the perpendicular distance 'l' between the extended incident ray and the emergent ray.



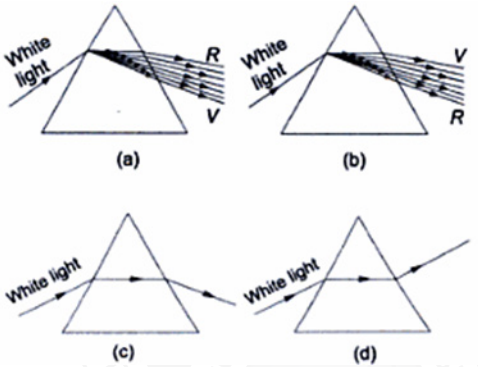
He will observe that:
a. 'l' keeps on increasing with increase in angle of incidence
b. 'l' keeps on decreasing with increase in angle of incidence
c. 'l' remains the same for all three angles of incidence
d. 'l' is the maximum for $\angle i = 45^o$ and is less than this value for $\angle i = 30^o$ and $\angle i = 60^o$.
Answer: a. 'l' keeps on increasing with increase in angle of incidence

MCQS: THE HUMAN EYE AND THE COLOURFUL WORLD

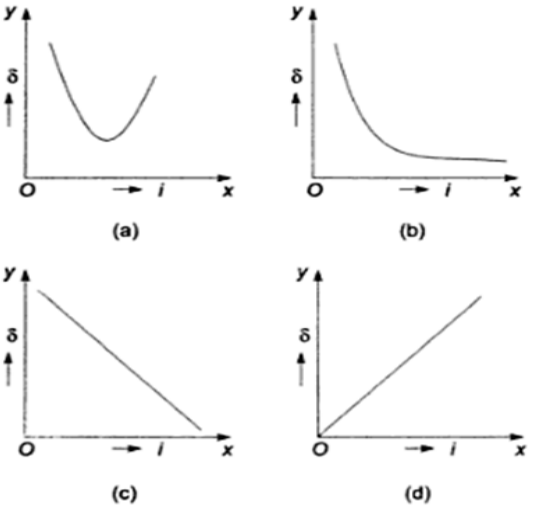
1. The term "accommodation" as applied to the eye, refers to its ability to:
a. Control the light intensity falling on the retina
b. Erect the inverted image formed on the retina
c. Adjust the focal length of the lens
d. Vary the distance between the lens and retina
Answer: c. Adjust the focal length of the lens

2. How eyes adjust in order to focus the image of near or distant objects on retina?
   a. The lens moves in or out according to the position of the object
   b. The retina moves in or out according to the position of the object
   c. The lens becomes thicker or thinner according to the position of the object
   d. The pupil gets larger or smaller according to the position of the object
   Answer: c. The lens becomes thicker or thinner according to the position of the object
3. A person cannot see the distant objects clearly (though he can see the nearby objects clearly). He is suffering from the defect of vision called:
   a. Cataract b. Hypermetropia c. Myopia d. Presbyopia
   Answer: c. Myopia
4. A got his eye tested. The optician's prescription for the spectacles was:
   Left eye: −3 D
   Right eye: −3.50 D
   The person is having a defect of vision called:
   a. Presbyopia b. Myopia c. Astigmatism d. Hypermetropia
   Answer: b. Myopia
5. A man finds it difficult to read the odometer on the dashboard of the car but is able to clearly read a distant road sign. Which of the following statement is correct about this man?
   a. The near point of his eyes has receded away.
   b. The near point of his eyes has come closer to him.
   c. The far point of his eyes has receded away.
   d. The far point of his eyes has come closer to him.
   Answer: a. The near point of his eyes has receded away
6. With both eyes open, a person's field of view is about:
   a. 90^o b. 150^o c. 180^o d. 360^o
   Answer: c. 180^o
7. When a beam of white light falls on a glass prism, the colour of light which will deviate least is:
   a. Violet b. Red c. Green d. Blue
   Answer: b. Red
8. The star appear shifted from their actual position due to the phenomenon of:
   a. Diffraction of light b. Scattering of light
   c. Refraction of light d. Reflection of light
   Answer: c. Refraction of light

9. Blue colour of the sky is due to the phenomenon of:
   a. Reflection of light b. Refraction of light
   c. Dispersion of light d. Scattering of light
   Answer: d. Scattering of light
10. Which of the following figures correctly represents the passage of white light through prism?

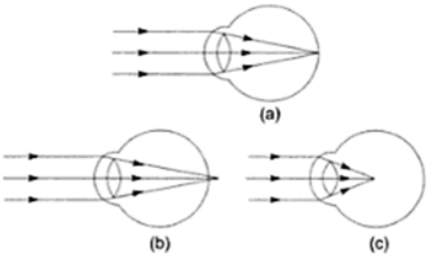


   Answer: (a)
11. Which of the following graph represents the correct variation of angle of incidence (i) and angle of deviation (δ)?



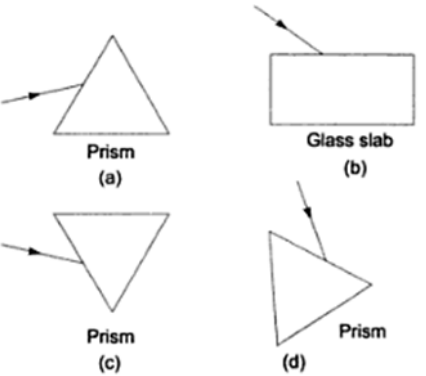
   Answer: (a)

12. Figure a, b, c respectively; indicate the point in case of:



a. The Hypermetropia eye, the myopic eye and normal eye
b. The normal eye, the myopic eye and Hypermetropia eye
c. The normal eye, the Hypermetropia eye and myopic eye
d. The myopic eye, the normal eye and Hypermetropia eye
Answer: c. The normal eye, the Hypermetropia eye and myopic eye

13. In which of the following cases will no dispersion take place when sunlight passes through it?



Answer: (b)

14. A: Astigmatism usually is caused by an irregularly shaped cornea.
B: Rainbow is the natural phenomenon in which dispersion takes place.
a. Both 'A' and 'B' are true statements
b. Both 'A' and 'B' are false statements.
c. 'A' is true while 'B' is false.
d. 'A' is false while 'B' is true
Answer: a. Both 'A' and 'B' are true statements

15. Having two eyes facilitates in:
A: Increasing the field of view
B: Bringing three dimensional view
C: Developing the concept of distance/size.

Then the correct option is/are:

a. A only b. A and B only c. B only d. A, B and C

Answer: d. A, B and C

MCQS: ELECTRICITY

1. Which of the given is the SI Unit of Electric Current?
   a. Ohm B. Ampere C. Volt D. Faraday
2. The hindrance presented by material of conductor to the smooth passing of electric current is known as:
   a. Resistance B. Conductance C. Inductance D. None of these
3. A fuse wire is inserted in which wire?
   a. Live wire B. In the neutral wire
   c. In the earth wire D. May be connected in any line
4. The rate of flow of an electric charge is known as:
   a. Electric potential B. Electric conductance
   c. Electric current D. None of these
5. The instrument used for measuring electric current is:
   a. Ammeter B. Galvanometer
   c. Voltmeter D. Potentiometer
6. The amount of work done in joules, when one unit electric charge moves from one point to another point in an electric circuit is called:
   a. Electric current B. Electric resistance
   c. Electric conductance D. Potential difference
7. The unit of potential difference is:
   a. Volt b. Ohm c. Ampere d. Faraday
8. The relation between potential difference (V) and current (I) is:
   a. V α I2 b. V α 1/I c. V2 α I d. V α I
9. The relation between potential difference (V) and current (I) was discovered by:
   a. Newton b. Ampere c. Ohm d. Volta
10. The obstruction offered by material of conductor to the passage of electric current is known as:
    a. Resistance b. Conductance c. Inductance d. None of these
11. The SI unit of resistance is:
    a. Newton b. Ohm c. Watt d. Joule
12. Which of the given statements is not true, regarding the electrical set-up for the verification of Ohm's law:
    a. The voltmeter is connected in parallel with the known resistance
    b. The ammeter is connected in series circuit
    c. The rheostat can only increase the resistance in electric circuit
    d. The single key is used to switch on/off the electric circuit
13. A voltmeter is used to find p.d. in any electrical circuit which of the

statement given below is true:

a. A voltmeter is a high resistance instrument and is connected in series circuit

b. A voltmeter is a low resistance instrument and is connected in series circuit

c. A voltmeter is a high resistance instrument and is connected in parallel circuit

d. A voltmeter is a low resistance instrument and is connected in series circuit

14. A battery of 12V is connected in series with resistors of 0.2 ohm, 0.3 ohm, 0.4 ohm, 0.5 ohm and 12 ohm. How much current would flow through the 0.3 ohm resistor?
    a. 0.895A
    b. 1.11A
    c. 0.5A
    d. None of these
15. On which of the given resistance does not depend:
    a. Length of conductor
    b. Area of cross-section
    c. Temperature
    d. Density
16. In parallel combination of electrical appliances, total electrical power
    a. Increase
    b. Decrease
    c. Does not change
    d. Remain same
17. How the charge will flow?
    a. By heating them
    b. By applying potential difference
    c. Both
    d. None of these
18. If length of a conductor and it's radius is increased twice, how the resistance will change?
    a. Resistance will remain unchanged
    b. Resistance increase twice
    c. Resistance will become half
    d. Resistance will increase 4 times
19. The potential difference applied is directly proportional to current only if
    a. Always
    b. Never
    c. Sometimes
    d. When temperature is constant

20. Equipment resistance of 4 4Ω resistance in parallel is
    a. 4Ω b. 1Ω c. 2Ω d. 16Ω
21. Which of the given conditions represent more resistance at constant temperature?
    a. The red line b. The yellow line
    c. Both are equal d. Can't be said
22. There is wire of length I and cross section A. Which of the given have least resistance?
    a. Length doubled, Area halved b. Length tripled, Area doubled
    c. Length halved, Area doubled d. The original wire
23. On which of the given parameters specific resistance depends?
    a. Length of wire b. Area of wire
    c. Current passing through it d. Temperature
24. A resistor of length l is connected to a battery and current l is given through it. If it is divided into 3 parts by length. And all having the same cross-sectional area are connected in series with the same battery, the current flowing through them will be?
    a. l/3 b. 3l c. l d. 3l/2
25. Two resistances R1 and R2 are connected with a cell in parallel. Find the ratio of current flowing through R1 to the current flowing through R2.
    a. R1:R2 b. R2:R1 c. 1.01 d. Data not sufficient
26. Which of the given statements is true regarding ammeter and voltmeter?
    a. Ammeter is connected in series with the required device, Voltmeter in parallel
    b. Both ammeter and voltmeter are connected in series with required device
    c. The voltmeter is connected in series with the device, Ammeter in parallel
    d. They can be connected in any way
27. Amount of energy delivered by a power of one kilowatt in one hour is called _____
    a. Kilogram-second b. Kilowatt-second
    c. Watt-hour d. Kilowatt-hour
28. In SI unit, JC^{-1} is equal to
    a. Volt b. Newton's law c. Pascal d. Omega
29. Materials having nonlinear voltage current relationship are ____
    a. Ohmic b. Non-ohmic c. Batteries d. Capacitors
30. Due to flow of positive or negative charges or both charges at a same time, _____
    a. Electric current is produced b. Light is produced

c. Heat is produced d. Air is produced

31. In a filament type light bulb, most of the electric power consumed appears as:
    a. Visible light b. Infra-red rays
    c. Ultraviolet rays d. Fluorescent light
32. At a given time, a house is supplied with 100 A at 220 V. How many 75 W, 220 V light bulbs could be switched on in the house at the same time (if they are all connected in parallel)?
    a. 93 b. 193 c. 293 d. 393
33. If the current flowing through a fixed resistor is halved, the heat produced in it will become:
    a. Double b. Half c. One-fourth d. Four times
34. A wire of resistance R1 is cut into five equal pieces. These five pieces of wire are then connected in parallel. If the resultant resistance of this combination be R2, then the ratio R1 / R2 is:
    a. Jan-25 b. 01-May c. 5 d. 25
35. The heat produced by passing an electric current through a fixed resistor is proportional to the square of:
    a. Magnitude of resistance of the resistor
    b. Temperature of the resistor
    c. Magnitude of current
    d. Time for which current is passed
36. An electric heater is rated at 2 Kw. Electrical energy costs Rs 4 per k Wh. What is the cost of using the heater for 3 hours?
    a. Rs. 12 b. Rs. 24 c. Rs. 36 d. Rs. 48
37. The commercial unit of energy is:
    a. Watt b. Watt-hour c. Kilowatt-hour d. Kilo-joule
38. An electric fuse works on the:
    a. Chemical effect of current b. Magnetic effect of current
    c. Lighting effect of current d. Heating effect of current
39. If the amount of electric charge passing through a conductor in 10 minutes is 300 C, the current flowing is:
    a. 30 A b. 12.03 AM c. 12.05 AM d. 5.00 AM
40. The resistivity of copper metal depends on only one of the following factors. This factor is:
    a. Length b. Thickness
    c. Temperature d. Area of cross-section
41. When a 4 Ω resistor is connected across the terminals of a 12 V battery, the number of coulombs passing through the resistor per second is:
    a. 0.3 b. 3 c. 4 d. 12
42. The device used for measuring potential difference is known as:

a. Potentiometer b. Ammeter c. Galvanometer d. Voltmeter

43. Keeping the potential difference constant, the resistance of a circuit is doubled. The current will become:
    a. Double b. Half c. One-fourth d. Four times
44. The unit for measuring potential difference is:
    a. Watt b. Ohm c. Volt d. kWh
45. The resistivity of a certain material is 0.6 Ωm. The material is most likely to be:
    a. An insulator b. A superconductor
    c. A conductor d. A semiconductor
46. The resistance of a wire of length 300 m and cross-section area, 1.0 mm^2 made of material of resistivity 1.0 x 10^{-7} Ω is:
    a. 2 Ω b. 3 Ω c. 20 Ω d. 30 Ω
47. The other name of potential difference is:
    a. Amphereage b. Wattage c. Voltage d. Potential energy
48. The unit of electrical resistance is:
    a. Ampere b. Volt c. Coulomb d. Ohm
49. If the resistance of a certain copper wire is 1Ω, then the resistance of a similar nichrome wire will be about:
    a. 25 Ω b. 30 Ω c. 60 Ω d. 45 Ω
50. A car headlight bulb working on a 12 V car battery draws a current of 0.5 A. The resistance of the light bulb is:
    a. 0.5 Ω b. 6 Ω c. 12 Ω d. 24 Ω

Answer Key for Electricity MCQs

Q	A	Q	A	Q	A	Q	A	Q	A
1	B	**11**	B	**21**	A	**31**	B	**41**	B
2	A	**12**	C	**22**	C	**32**	D	**42**	D
3	A	**13**	C	**23**	D	**33**	C	**43**	B
4	C	**14**	A	**24**	C	**34**	D	**44**	C
5	A	**15**	D	**25**	B	**35**	C	**45**	D
6	D	**16**	D	**26**	A	**36**	B	**46**	D
7	A	**17**	B	**27**	D	**37**	C	**47**	C
8	D	**18**	C	**28**	A	**38**	D	**48**	D
9	C	**19**	D	**29**	B	**39**	C	**49**	C
10	A	**20**	B	**30**	A	**40**	C	**50**	D

51. What is the amount of current flowing through an electric press, if the amount of charge passing through a conductor in 10 minutes is 300 C?

a. 30 A b. 0.3 A c. 0.5 A d. 5 A

Answer: c. 0.5 A

52. An electrical appliance has a resistance of 25 Ω. When this electrical appliance is connected to a 230 V supply line, the current passing through it will be:

a. 0.92 A b. 2.9 A c. 9.2 A d. 92 A

Answer: c. 9.2 A

53. When a 4 Ω resistor is connected across the terminals of a 2 V battery, the number of coulombs passing through the resistor per second is:

a. 0.5 b. 1 c. 2 d. 4

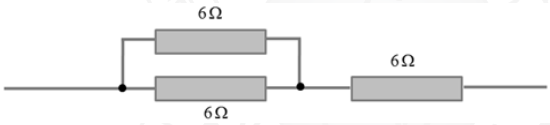
Answer: a. 0.5

54. Keeping the potential difference constant, the resistance of the circuit is halved. The current will become:

a. One-fourth b. Four times c. Half d. Double

Answer: d. Double

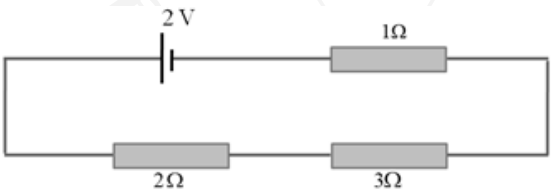
55. If in the given arrangement, the three resistors are to be replaced by a single resistor. What will be the value of this resistor?



a. 4Ω b. 6Ω c. 9Ω d. 18Ω

Answer: c. 9Ω

56. The potential difference across the 3 Ω resistor in the following diagram is:

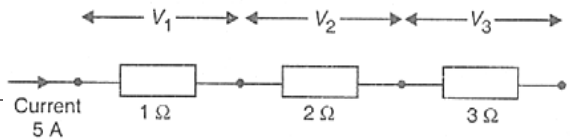


a. 1/9 V b. 1/2 V

c. 2V d. 1V

Answer: d. 1V

57. V_1, V_2 and V_3 are the potential differences across the 1Ω, 2Ω and 3Ω resistors in the following diagram, and the current is 5A.



Which of the following shows the correct values of V_1, V_2 and V_3 measured in volts?

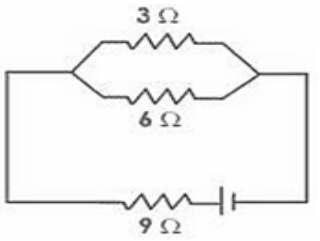
a. V_1 =1, V_2 = 2 and V_3 = 3 b. V_1 =5, V_2 = 10 and V_3 = 15
c. V_1 =5, V_2 = 2.5 and V_3 = 1.6 d. V_1 =4, V_2 = 3 and V_3 = 2

Answer: b. V_1 =5, V_2 = 10 and V_3 = 15

58. A wire of resistance R_1 is cut into five equal pieces. These five pieces of wire are then connected in parallel. If the resultant resistance of this combination be R_2, then the ratio R_1/R_2 is:
a. 1/25 b. 1/5 c. 5 d. 25
Answer: d. 25
59. Two appliances of rating 200 watt-250 volts and 100 watt-250 volts are joined in series to a 250 volts supply. Total power consumed in the circuit is
a. 46 watt b. 67 watt c. 10 watt d. 30 watt
Answer: b. 67 watt
60. When a current 'I' flows through a resistance 'R' for time 't' the electrical energy spent is given by
a. IRt b. I^2Rt c. IR^2t d. I^2R/t
Answer: b. I^2Rt
61. Two electric bulbs have resistances in the ratio 1:2. If they are joined in series, the energy consumed in them is in the ratio.
a. 2:1 b. 1:2 c. 4:1 d. 1:1
Answer: b. 1:2
62. At a given time, a house is supplied with 100 A at 220 V. How many 75 W, 220 V light bulbs could be switched on in the house at the same time (if they are all connected in parallel)?
a. 93 b. 193 c. 293 d. 393
Answer: c. 293
63. If the current flowing through a fixed resistor is halved, the heat produced in it will become:
a. One-fourth b. One-half
c. Double d. Four times
Answer: a. One-fourth
64. You are given four ammeters A, B, C and D having least counts mentioned below:
i. Ammeter A with least count 0.25 A
ii. Ammeter B with least count 0.5 A
iii. Ammeter C with least count 0.05 A
iv. Ammeter D with least count 0.1 A
65. Which of the ammeters would you prefer for doing an experiment to determine the equivalent resistance of two resistances most accurately, when connected in parallel?

a. Ammeter A b. Ammeter B c. Ammeter C d. Ammeter D
Answer: c. Ammeter

66. In the given figure, the resistors

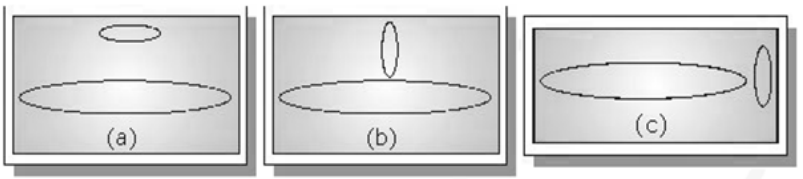


a. 6 Ω, 3 Ω and 9 Ω are in series
b. 9 Ω and 6 Ω are in parallel and the combination is in series with 3 Ω
c. 3 Ω, 6 Ω and 9 Ω are in parallel
d. 3 Ω and 6 Ω are in parallel and the combination is in series with 9 Ω
Answer: d. 3 Ω and 6 Ω are in parallel and the combination is in series with 9 Ω

MCQS: MAGNETIC EFFECTS OF ELECTRIC CURRENT

1. The magnetic field lines outside a bar magnet:
   a. Originate from the South pole and end at its North Pole
   b. Originate from the North pole and end at its East Pole
   c. Originate from the North Pole and end at its South Pole
   d. Originate from the South pole and end at its West Pole
   Answer: c. Originate from the North Pole and end at its South Pole
2. The north pole of Earth's magnet is in the:
   a. Geographical South b. Geographical East
   c. Geographical West d. Geographical North
   Answer: a. Geographical South
3. A soft iron bar is inserted inside a current-carrying solenoid. The magnetic field inside the solenoid:
   a. Will decrease b. Will increase
   c. Will become zero d. Will remain the same
   Answer: b. Will increase
4. A current carrying conductor is held in exactly vertical direction. In order to produce a clockwise magnetic field around the conductor, the current should be passed in the conductor:
   a. From top to bottom b. From left to right
   c. From bottom to top d. From right to left
   Answer: a. From top to bottom

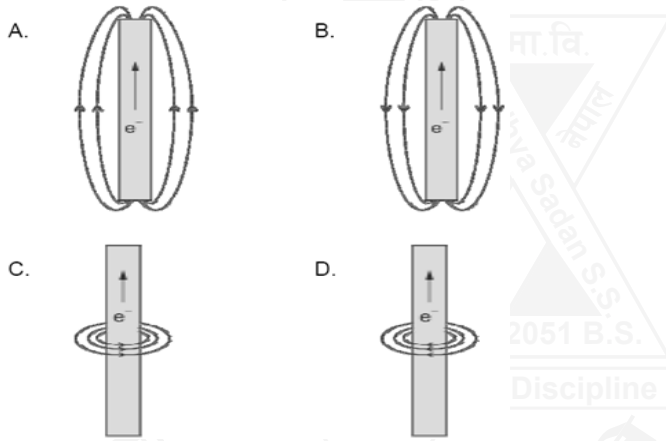
5. The force exerted on a current carrying wire placed in a magnetic field is zero when the angle between wire and the direction of magnetic field is:
   a. 45^o b. 60^o c. 90^o d. 180^o
   Answer: d. 180^o
6. An induced emf is produced when a magnet is moved into a coil. The magnitude of induced emf does not depend on:
   a. The speed with which the magnet is moved
   b. The number of turns of the coil
   c. The resistivity of the wire of the coil
   d. The strength of the magnet
   Answer: c. The resistivity of the wire of the coil
7. A positive charge is moving towards a person. The direction of magnetic field lines will be in
   a. Clockwise direction b. Anticlockwise direction
   c. Vertically upward direction d. Vertically downward direction
   Answer: b. Anticlockwise direction
8. A fuse should always be placed in the
   a. Live wire of the main circuit b. Neutral wire of the main circuit
   c. Earth wire of the main circuit d. Bothe live and neutral wire of the main circuit.
   Answer: a. Live wire of the main circui
9. If two circular coils can be arranged in any of the three situations as shown in the diagrams below, then their mutual induction will be:



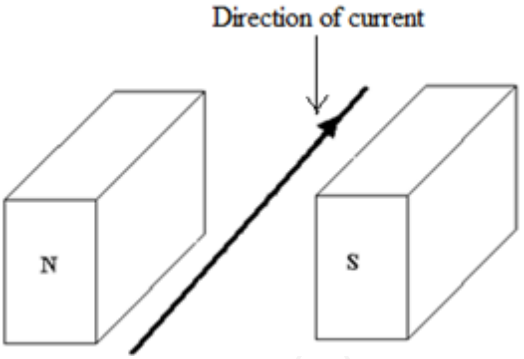
   a. Maximum in situation a b. Maximum in situation b
   c. Maximum in situation c d. The same in all situations
   Answer: a. Maximum in situation a
10. A coil of insulated copper wire is connected to a galvanometer forming a loop and a magnet is:
    A: Held stationary
    B: Moved away along its axis
    C: Moved towards along its axis
    D: There will be a induced current in:
    a. A only b. A and B only
    c. B and C only d. A, B and C

Answer: c. B and C only

11. The shape of the magnetic field lines produced by a current carrying conductor are:
    a. Straight lines
    b. Concentric circles
    c. Concentric ellipse
    d. Concentric parabolas
    Answer: b. Concentric circle
12. An electric motor is a device which transforms
    a. Mechanical energy into electrical energy
    b. Electrical energy into mechanical energy
    c. Kinetic energy into potential energy
    d. Electrical energy into Potential energy
    Answer: b. Electrical energy into mechanical energy
13. Which of the following diagrams correctly shows the magnetic field produced by a current- carrying wire?



    a. A
    b. B
    c. C
    d. D
    Answer: d. D
14. The frequency of electricity produced by DC generator is equal to
    a. 0 Hz
    b. 50 Hz
    c. 100 Hz
    d. 200 Hz
    Answer: a. 0 Hz
15. A current flows in a wire running between the S and N poles of a magnet lying horizontally as shown in the figure below:



The force on the wire due to the magnet is directed:

a. From N to S b. From S to N

c. Vertically downwards d. Vertically upwards

Answer: c. Vertically downwards

MCQS: GRAVITATION

1. A body of mass 1kg is attracted by the earth with a force which is equal to

a. 9.8N b. 6.67×10^{11} c. 1 N d. 9.8m/s

2. What is the gravitational force between two objects?

a. attractive at large distances only

b. attractive at small distances only

c. attractive at all distances

d. attractive at large distances but repulsive at small distances

3. The value of 'g'

a. Increases as we go above the earth's surface

b. Decreases as we go to the centre of the earth

c. Remains constant

d. Is more at equator and less at poles

4. The ball is thrown up, the value of 'g' will be

a. Zero b. positive c. negative d. negligible

5. The gravitational force causes

a. Tides b. Motion of moon

c. None of them d. Both a n b

6. The mass of the body on moon is 40kg, what is the weight on the earth.

a. 240kg b. 392N c. 240N d. 400kg

7. Newton's law of gravitation applies to

a. Small bodies only b. Plants only

c. All bodies irrespective of their size d. For solar system

8. The gravitational force between two objects is F. If masses of both the objects are halved without altering the distance between them, then the gravitational force would become
a. f/4 b. f/2 c. f d. 2f

9. The Earth attracts the moon with a gravitational force of 1020N. The moon attracts the earth with a gravitational force of
a. Less than 10^{20}N b. 10^{20}N
c. Greater than 10^{20}N d. 10^{-20}N

10. The distance between two bodies becomes 6 times more than the usual distance. The the F becomes
a. 36 times b. 6 times c. 12 times d. 1/36 times

ANSWERS

1. A	2. C	3. B	4. C
5. D	6. B	7. C	8. A
9. C	10. D		

11. Two objects of different masses falling freely near the surface of the moon would
a. have same velocities at any instant
b. have different acceleration
c. experience forces of same magnitude
d. undergo a change in their inertia
Answer: a. have same velocities at any instant

12. The value of acceleration due to gravity
a. is same on equator and poles b. is least on poles
c. is least on equator d. increases from pole to equator
Answer: c. is least on equator

13. The gravitational force between two objects is F. If masses of both objects are halved without changing the distance between them, then the gravitational force would become
a. F/4 b. F/2 c. F d. 2F
Answer: a. F/4

14. A boy is whirling a stone tied to a string in a horizontal circular path. If the string breaks, the stone
a. will continue to move in the circular path
b. will move along a straight line towards the centreof the circular path
c. will move along a straight line tangential to the circular path
d. will move along a straight line perpendicular to the circular path away from the boy
Answer: c. will move along a straight line tangential to the circular

path

15. An object is put one by one in three liquids having different densities. The object floats with 19, 211 and 37 parts of their volumes outside the liquid surface in liquids of densities d_1, d_2 and d_3 respectively. Which of the following statement is correct?
    a. $d_1 > d_2 > d_3$ b. $d_1 > d_2 < d_3$
    c. $d_1 < d_2 > d_3$ d. $d_1 < d_2 < d_3$
    Answer: d. $d_1 < d_2 < d_3$
16. In the relation $F = GM\ mld^2$, the quantity G
    a. depends on the value ofg at the place of observation
    b. is used only when the Earth is one of the two masses
    c. is greatest at the surface of the Earth
    d. is universal constant of nature
    Answer: d. is universal constant of nature
17. Law of gravitation gives the gravitational force between
    a. the Earth and a point mass only
    b. the Earth and Sun only
    c. any two bodies having some mass
    d. two charged bodies only
    Answer: c. any two bodies having some mass
18. The value of quantity G in the law of gravitation
    a. depends on mass of Earth only
    b. depends on radius of Earth only
    c. depends on both mass and radius of Earth
    d. is independent of mass and radius of the Earth
    Answer: d. is independent of mass and radius of the Earth
19. Two particles are placed at some distance. If the mass of each of the two particles is doubled, keeping the distance between them unchanged, the value of gravitational force between them will be
    a. 14 times b. 4 times c. 12 times d. unchanged
    Answer: b. 4 times
20. The atmosphere is held to the Earth by
    a. gravity b. wind c. clouds d. Earth's magnetic field
    Answer: a. gravity
21. The force of attraction between two unit point masses separated by a unit distance is called
    a. gravitational potential b. acceleration due to gravity
    c. gravitational field d. universal gravitational constant
    Answer: d. universal gravitational constant
22. The weight of an object at the centre of the Earth of radius R is
    a. zero b. infinite

c. R times the weight at the surface of the Earth
d. $1/R^2$ times the weight at surface of the Earth
Answer: a. zero

23. An object weighs 10 N in air. When immersed fully in water, it weighs only 8 N. The weight of the liquid displaced by the object will be
a. 2 N b. 8 N c. 10 N d. 12 N
Answer: a. 2 N

24. A girl stands on a box having 60 cm length, 40 cm breadth and 20 cm width in three ways. In which of the following cases, pressure exerted by the box will be
a. maximum when length and breadth form the base
b. maximum when breadth and width form the base
c. maximum when width and length form the base
d. the same in all the above three cases
Answer: b. maximum when breadth and width form the base

25. An apple falls from a tree because of gravitational attraction between the Earth and the apple. If F_1 is the magnitude of force exerted by the Earth on the apple and F_2 is the magnitude of force exerted by the apple on the Earth, then
a. F_1 is very much greater than F_2
b. F_2 is very much greater than F_1
c. F_1 is only a little greater than F_2
d. F_1 and F_1 are equal
Answer: d. F_1 and F_1 are equal

26. The acceleration due to gravity on the Earth depends upon the
a. mass of the body b. mass of the Earth
c. shape and size of the body d. volume of the body
Answer: b. mass of the Earth

27. When a mango falls from a mango tree then
a. only the Earth attracts the mango.
b. only the mango attracts the Earth.
c. both the mango and the Earth attract each other.
d. both the mango and the Earth repel each other.
Answer: c. both the mango and the Earth attract each other.

28. When a ship floats in sea water
a. The weight of water displaced is greater than the weight of ship
b. The weight of water displaced is less than the weight of the ship
c. The weight of water displaced is equal to the weight of the ship
d. It displaces no water.
Answer: c. The weight of water displaced is equal to the weight of the ship

29. The SI unit of pressure is
    a. Nm^2 b. N/m c. N/m^2 d. N^2/m^2
    Answer: c. N/m^2
30. If the gravitational attraction of the Earth suddenly disappears, which of the following statements will be true?
    a. The weight of body will become zero but the mass will remain same.
    b. The weight of a body will remain same but the mass will become zero.
    c. Both mass and weight become zero.
    d. Neither mass nor weight becomes zero.
    Answer: a. The weight of body will become zero but the mass will remain same.

Fill in the blanks

1. Gravitational force is always ……. in nature.
2. …… of a body is the quantity of matter contained in it.
3. SI unit of mass is …….
4. Weight of an object is the force with which it is attracted towards the ……
5. The acceleration due to gravity of moon is …… of that of the Earth.
6. Every fluid exerts an ……. force on a body immersed in it. This force is called ……
7. Density of a substance is defined as mass per unit …….
8. The force acting on an object …… to the surface is called thrust.
9. The relative density of a substance is the ratio of its density to that of …….

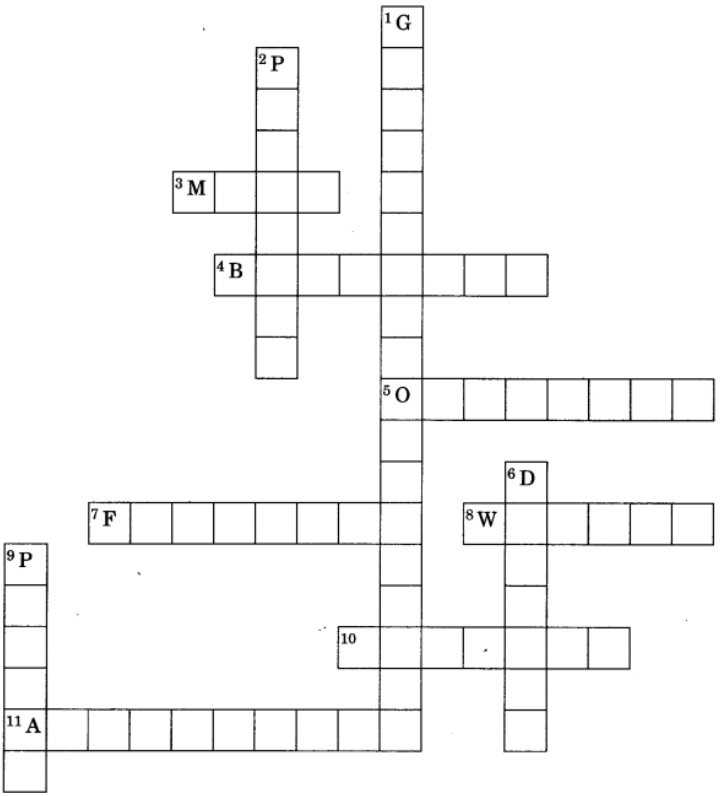
Match the following columns

Column A	Column B
a. SI unit of Weight	(i) Kilogram
b. mass	(ii) $F = Gm_1m_2r_2$
c. Weight	(iii) mg
d. Buoyant force	(iv) newton
(e) Relative density	(v) Ratio of density of the substance to that of water
(f) SI unit of mass	(vi) Quantity of matter contained in a body
(g) Gravitational force between two bodies (expression)	(vii) Force acting on body due to Earth's attraction

(viii) Weight of an object (expression)

(viii) Upward force on a body placed in a fluid

Complete the crossword given below



Across

3. Quantity of matter contained in a body
4. The property due to which a body immersed in fluid experiences upward force.
5. Acceleration due to gravity of moon is how much time that of Earth
7. Whenever objects fall towards the Earth under gravitational force alone, we say that objects are in
8. The force with which a body is attracted towards the Earth
10. Force of gravitation due to Earth is called
11. Nature of gravitational force is always

Down

1. Force between two bodies due to their masses

2. Thrust on unit area
6. Mass per unit volume
9. SI unit of pressure

MCQS: WORK, POWER AND ENERGY

1. The rate of work doing is called :
   a. VELOCITY b. ACCELERATION
   c. POWER d. MOTAY
2. The work will be positive ,of the angle between force and displacement is
   a. 90 b. 180 c. 60 d. 0
3. 1Kw = _____ watts
   a. 10 b. 100 c. 1000 d. 0.001
4. Whenever work is done on an object, it gains
   a. Force b. Power c. Sweat d. Energy
5. The SI unit of enery is
   a. Joule b. Metre c. Newton d. Time
6. The capability of doing some work is called
   a. Power b. Work c. Energy d. None
7. Power is the product of _____ and _____
   a. Force b. Velocity c. Both d. Non of them
8. Power is a _____ quantity
   a. Scaler b. Vector c. Both of them d. Non of them
9. The unit of work is
   a. W b. P c. T d. None of them
10. The rate of doing work is called
    a. Power b. Work c. Energy d. Non of them
11. The produce of force and displacement is equal to
    a. Work b. Power c. Enery d. Non of them
12. The unit of velocity is
    a. m/s^2 b. m c. mm d. m/s^2
13. The unit of speed is
    a. m/s b. m/s^2 c. m d. g
14. The unit of distance is
    a. m b. mm c. g d. m/s
15. The unit of acceleration is
    a. m b. t c. m/s^2 d. m/s
16. Rate of change of velocity is called
    a. Acceleration b. Velocity c. Speed d. Time
17. Distance covered by a body in unit time in a particular direction is called
    a. Velocity b. Speed c. Distance d. Displacement

18. Distance covered by a body in unit time is called
    a. Speed b. Velocity c. Distance d. Displacement
19. If a body change its position then it is said to be in sa state of
    a. Motion b. Rest c. Kinematics d. Linear motion
20. If a body does not change its position then it is said to be in sa state of
    a. Rest b. Motion
    c. Translatory motion d. Circular motion
21. The work will be positive if the angle between force and displacement is _____
    a. 90 Degree b. 180 Degree c. 0 Degree d. 30 Degree
22. The energy stored in a stretched or compressed elastic material such as spring is called _____
    a. Gravitational potential energy b. Elastic potential energy
    c. Kinetic energy d. All of them
23. The potential energy possessed by a body in gravitational fields is called _____
    a. Gravitational potential energy b. Elastic potential energy
    c. Kinetic energy d. None of these
24. When a body is capable of doing work by virtue of its motion, the energy is called _____
    a. Gravitational potential energy b. Elastic potential energy
    c. Kinetic energy d. None of these
25. The _____ of a body is its capacity of doing work.
    a. Work b. Power c. Energy d. None of these
26. _____ is the rate of doing work.
    a. Work b. Power c. Energy d. None of these

MCQS: FORCE AND PRESSURE

1. What is force?
    a. pull b. push c. push and push both d. none
2. What is state of motion?
    a. position of rest b. position of motion
    c. both by the state of rest or motion d. none of these
3. The strength of force is expressed by?
    a. weight b. mass
    c. magnitude d. longitudinal force
4. The force between two charged bodies is called
    a. muscular force b. gravitational force
    c. magnetic force d. electrostatic force
5. When two forces act in opposite directions, then net force acting two forces

a. sum of two factors b. difference bwteen two factors
c. both of these d. none of these

6. Magnetic force is
a. contact force b. non-contact force
c. both a and b d. none of these

7. Force acts on an object may change
a. direction b. shape
c. speed d. all of above

8. Leaves or fruits fall on the ground due to
a.magnetic force b. gravitational force
c. electrostatic force d. muscular force

ANSWERS

1. C	2. C	3. C	4. D
5. B	6. B	7. D	8. B

MCQS: SOURCES OF ENERGY

1. A good fuel is one that possesses:
a. High calorific value and low ignition temperature
b. Low calorific value and low ignition temperature
c. High calorific value and moderate ignition temperature
d. Low calorific value and moderate ignition temperature
Answer: c. High calorific value and moderate ignition temperature

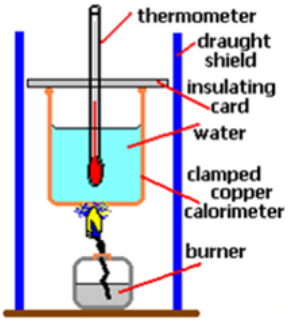
2. There are four fuels which all contain only carbon and hydrogen. The fuel having highest calorific value will be one which has:
a. More of carbon but less of hydrogen
b. Less of carbon but more of hydrogen
c. Equal proportions of carbon and hydrogen
d. Less of carbon as well as less of hydrogen
Answer: b. Less of carbon but more of hydrogen

3. Coke is more valuable when used:
a. As a fuel for industrial boilers b. As an oxidizing agent
c. As a reducing agent d. As a fuel in domestic ovens
Answer: c. As a reducing agent

4. In a hydroelectric power plant more electrical power can be generated if water falls from a greater height because:
a. Its temperature increases.
b. Larger amount of potential energy is converted into kinetic energy.
c. The electricity content water increases with height.
d. More water molecules dissociate into ions.
Answer: b. Larger amount of potential energy is converted into kinetic energy.

5. In order to make efficient solar cooker, the cover of cooker box should be made of:
   a. Transparent plastic sheet
   b. Shining aluminium sheet
   c. Butter paper sheet
   d. Transparent glass
   Answer: d. Transparent glass
6. Which of the followings is not a fossil fuel?
   a. Coal b. Petroleum c. Natural gas d. Nuclear fuel
   Answer: d. Nuclear fuel
7. The rise of sea-water during high tide is caused by the gravitational pull of the:
   a. Sun b. Earth c. Moon d. Mars
   Answer: c. Moon
8. What is the energy equivalent of one atomic mass unit?
   a. 93.1 MeV b. 9.31 MeV c. 1 MeV d. 931 MeV
   Answer: d. 931 MeV
9. How many joules are there in 1eV?
   a. 1.6×10^{-19} J b. 9.1×10^{-31} J c. 6.0×10^{23} J d. 1.6×10^{-13} J
   Answer: a. 1.6×10^{-19} J
10. The disposal of wastes produced in a nuclear power plant is a big problem because it is:
    a. Highly radioactive b. Highly inflammable
    c. Extremely foul smelling d. Too heavy
    Answer: a. Highly radioactive
11. The energy efficient device for producing light is:
    a. DLF b. CFL c. FCL d. LPG
    Answer: b. CFL
12. The radiation present in the sunlight that gives us the feeling of hotness is
    a. Visible radiation b. Infra-red
    c. Red d. Ultra-violet
    Answer: b. Infra-red
13. The major constituent of biogas is
    a. Methane b. Ethane c. Propane d. Butane
    Answer: a. Methane
14. The process by which energy is produced in the sun is
    a. Nuclear fission b. Nuclear fusion
    c. Both nuclear fusion and fission d. Combustion of hydrogen
    Answer: b. Nuclear fusion
15. The diagram shows a simple calorimeter system for measuring the heat given out by a liquid fuel contained in the burner. The

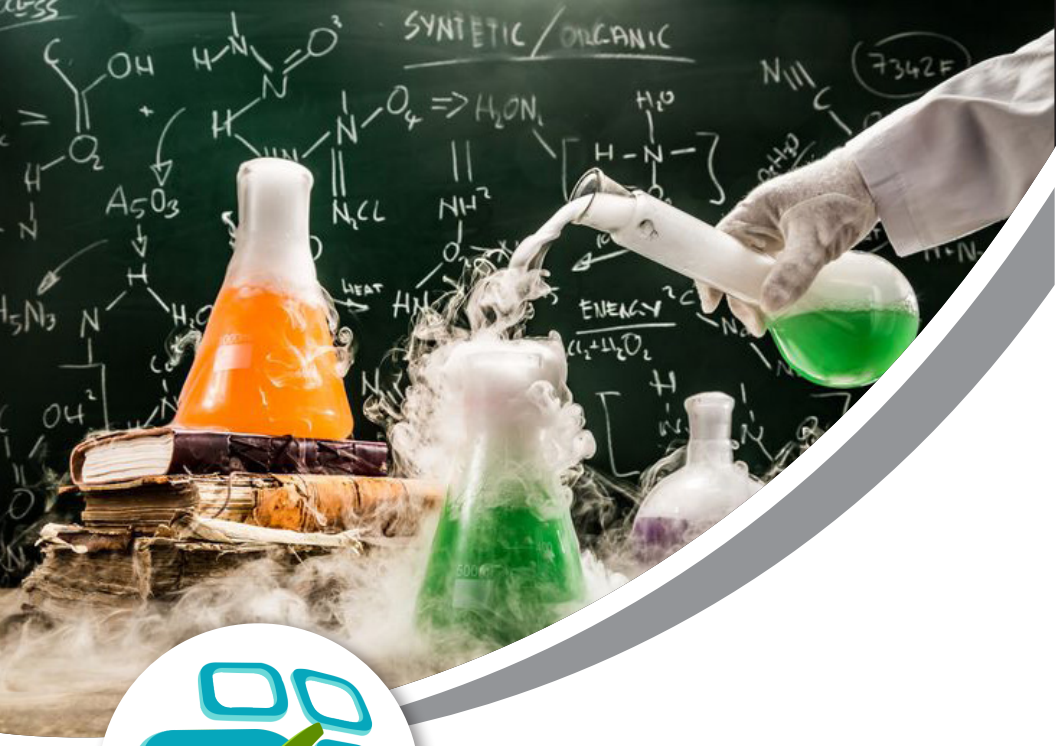
experimental data for four fuels A, B, C and D is given below. 100 ml (100g) of water was put in the calorimeter and a thermometer is used to measure the change in temperature. With the help of the data find the fuel which is the least efficient?



Mass of fuel	Rise in temperature
0.80 g	12°C
1.20 g	24°C
0.50 g	9°C
1.75g	28°C

a. A b. B c. C d. D

Answer: a. A



MCQs

Multiple Choice Question Collection

Subject:

CHEMISTRY

MCQS: CHEMICAL REACTIONS AND EQUATIONS

1. Before burning in air, the magnesium ribbon is cleaned by rubbing with a sand paper to:
a. Make the ribbon surface shinier
b. Remove the layer of magnesium oxide from the ribbon surface
c. Remove the layer of magnesium carbonate from the ribbon surface
d. Remove the moisture from the ribbon surface
Answer: c. Remove the layer of magnesium carbonate from the ribbon surface.

2. In a chemical reaction between sulphuric acid and barium chloride solution the white precipitates formed are of:
a. Hydrochloric acid b. Barium sulphate
c. Chlorine d. Sulphur
Answer: b. Barium sulphate

3. The respiration process during which glucose undergoes slow combustion by combining with oxygen in the cells of our body to produce energy, is a kind of:
a. Exothermic process b. Endothermic process
c. Reversible process d. Physical process
Answer: a. Exothermic process

4. A chemical reaction does not involve:
a. Formation of new substances having entirely different properties than that of the reactants
b. Breaking of old chemical bonds and formation of new chemical bonds
c. Rearrangement of the atoms of reactants to form new products
d. Changing of the atoms of on element into those of another element to form new products
Answer: d. Changing of the atoms of on element into those of another element to form new products

5. One of the following processes does not involve a chemical reaction. That is:
a. Melting of candle wax when heated
b. Burning of candle wax when heated
c. Digestion of food in our stomach
d. Ripening of banana
Answer: a. Melting of candle wax when heated

6. It is necessary to balance a chemical equation in order to satisfy the law of:
a. Conservation of motion b. Conservation of momentum
c. Conservation of energy d. Conservation of mass

Answer: d. Conservation of mass

7. All the methods mentioned below can be used to prevent the food from getting rancid except:
i. Storing the food in the air-tight containers
ii. Storing the food in refrigerator
iii. Keeping the food in clean and covered containers
iv. Always touching the food with clean hands
a. (i) and (ii) b. (i) and (iii)
c. (i), (iii) and (iv) d. (iii) and (iv)
Answer: d. (iii) and (iv)

8. Rusting of iron involves a chemical reaction which is a combination of:
a. Reduction as well as combination reactions
b. Oxidation as well as combination reactions
c. Reduction as well as displacement reactions
d. Oxidation as well as displacement reactions
Answer: b. Oxidation as well as combination reactions

9. You are given the following chemical reaction:

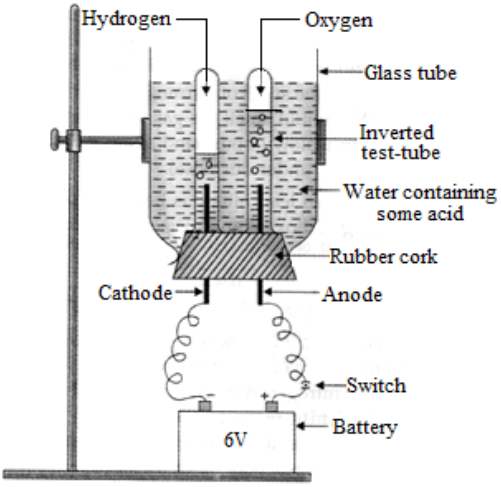
$$CuO + H_2 \xrightarrow{\text{Heat}} Cu + H_2O$$

This reaction represents:
a. Combination reaction as well as double displacement reaction
b. Redox reaction as well as displacement reaction
c. Double displacement reaction as well as redox reaction d. Decomposition reaction as well as displacement reaction
Answer: b. Redox reaction as well as displacement reaction

10. When ferrous sulphate is heated strongly it undergoes decomposition to form ferric oxide as a main product accompanied by a change in colour from:
a. Blue to green. b. Green to blue.
c. Green to brown. d. Green to yellow.
Answer: c. Green to brown

11. Which of the following gases is used in the storage of fat and oil containing foods for a long time?
a. Carbondioxide gas b. Nitrogen gas
c. Oxygen gas d. Neon gas
Answer. b. Nitrogen gas

12. Following is given a diagram showing an experimental set-up:



The given set-up is used to carry out:

a. Distillation of water b. Purification of water
c. Electrolysis of water d. Hydrolysis

Answer: c. Electrolysis of water

13. The displacement reaction between iron (III) oxide and a metal X is used for welding the rail tracks. Here X is:

a. Copper granules b. Magnesium ribbon
c. Sodium pellets d. Aluminium dust

Answer: d. Aluminium dust

14. The neutralization reaction between an acid and a base is a type of:

a. Double displacement reaction b. Displacement reaction
c. Addition reaction d. Decomposition reaction

Answer: a. Double displacement reaction

15. The chemical reaction between Hydrogen sulphide and iodine to give Hydrogen iodide and sulphur is given below:

$$H_2S + I_2 \rightarrow 2HI + S$$

The reducing and oxidizing agents involved in this redox reaction are:

a. Iodine and sulphur respectively
b. Iodine and hydrogen sulphide respectively
c. Sulphur and iodine respectively
d. Hydrogen sulphide and sulphur

Answer: b. Iodine and hydrogen sulphide respectively

MCQS: CARBON AND ITS COMPOUNDS

1. The isomeric pair is
a. ethane and propane
b. propane and butane
c. ethane and ethane
d. butane and 2-methyl propane

2. Which of the following is used to oxidise ethanol to ethanoic acid?
a. Alkaline $KMnO_4$
b. Conc. H_2SO_4
c. Acidified $K_2Cr_2O_7$
d. All of above

3. Which is denatured spirit?
a. ethanol only
b. ethanol and methanol (50%)
c. ethanol and methanol (5%)
d. methanol only

4. Tertiary butane gets oxidised with oxidising agents like alkaline $KMNO_4$ to
a. Isobutane
b. Ter-butyl alcohol
c. Seconadary-propyl alcohol
d. All of above

5. The substnace not responsible for the hardness of water is
a. Sodium nitrate
b. calcium hydrogen carbonate
c. calcium carbonate
d. magnesium carbonate

6. The by product of soap is
a. isoprene
b. glycerol
c. butene
d. ethylene glycol

7. Covalent compounds
a. have high melting and boiling point
b. are mostly soluble in water
c. are formed between atoms of metals and non-metals
d. are formed by the sharing of electrons in the bonding atoms.

8. Vinegar is a solution of
a. 30% - 40% acetic acid in alcohol
b. 5% - 8% acetic acid in alcohol
c. 5% - 8% acetic acid in water
d. 15% - 20% acetic acid in water

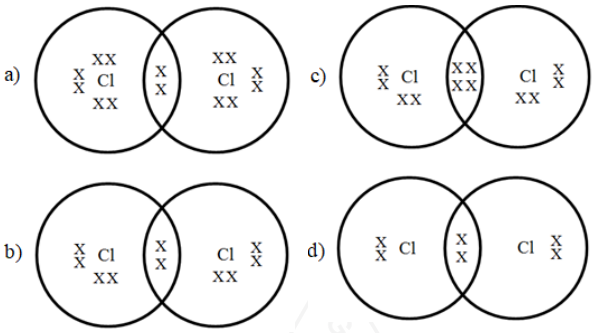
9. Which of the following can be used for the denaturation of ethyl alcohol?
a. Methyl alcohol
b. Pyridines
c. Copper sulphate
d. All of above

10. Soaps are formed by saponification of
a. alcohols
b. glycosides
c. simple esters
d. carboxylic acids

Answers

1. (d)	2. (d)	3. (c)	4. (b)	5. (a)
6. (b)	7. (d)	8. (c)	9. (d)	10. (c)

1. Which of the following structures correctly represents the electron dot structure of a chlorine molecule?



Answer: (a)
Explanation: In an electron dot structure of a molecule there must be shown eight electrons (in the form of dots or crosses) around each element of the molecule, to represent the complete octet of the element.

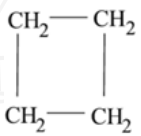
2. While cooking, if the bottom of the vessel is getting blackened on the outside, it means that:
   a. The food is not cooked completely
   b. The fuel is not burning completely
   c. The fuel is wet
   d. The fuel is burning completely
   Answer: b. The fuel is not burning completely
   Explanation: In case the fuel doesn't burn completely, i.e., there is not enough oxygen to react with the carbon to produce carbon dioxide, then the unburnt carbon particles are left behind in the form of black particles known as soot. These soot particles stick to the bottom of the vessel making it black.

3. Cation is formed when:
   a. Atom gains electrons b. Atom loses electrons
   c. Proton is lost by the atom d. Atom shares electrons
   Answer: b. Atom loses electrons
   Explanation: A cation is formed by loss electrons from the atom of an element which acquires positive charge due to the presence of greater number of protons as compared to that of electrons.

4. The I.U.P.A.C name of $CH_3CH_2CH{=}CH_2$ is?
   a. 3-Butene b. Prop-1-ene c. But-1-ene d. Butyne
   Answer: c. But-1-ene

Explanation: As the compound, $CH_3CH_2CH=CH_2$ contains four carbon atoms and a double bond attached to the first carbon, so the I.U.P.A.C name of $CH_3CH_2CH=CH_2$ is But-1-ene.

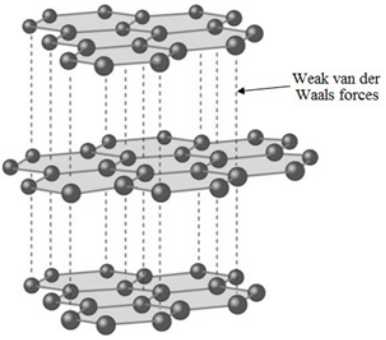
5. Which of the following compounds of carbon does not consist of ions?
   a. $CHCl_3$ b. $CaCO_3$ c. $NaHCO_3$ d. Ca_2C
   Answer: a. $CHCl_3$
   Explanation: Carbon always forms covalent compounds by sharing its electrons with other atoms. Now, in covalent bonding, the two electrons shared by the atoms are attracted to the nucleus of both atoms and neither atom completely loses or gains electrons as in ionic bonding. So the compounds in which all the atoms are directly attached to C-atom, contain covalent bonding and no ionic bond. In $CHCl_3$, all the three chlorine atoms are bonded covalently to the carbon atom, not to the hydrogen atom. So $CHCl_3$ is a covalent compound and does not consist of ions.
6. The property of self-linkage among identical atoms to form long chain compounds is known as:
   a. Catenation b. Isomerisation c. Superposition d. Halogenation
   Answer: a. Catenation
   Explanation: Catenation is the property of self-linking of an element by which an atom combines with the other atoms of the same element to form long chains.
7. Which of the following is the molecular formula of cyclobutane?
   a. C_4H_{10} b. C_4H_6 c. C_4H_8 d. C_4H_4
   Answer: c. C_4H_8
   Explanation: Cyclobutane is a cyclic hydrocarbon consisting of four carbon atoms where each carbon atom is attached to the two other carbon atoms and two hydrogen atoms, as shown below:



8. Which of the following statements about graphite and diamond is true?
   a. They have the same crystal structure
   b. They have the same degree of hardness
   c. They have the same electrical conductivity
   d. They can undergo the same chemical reactions
   Answer: d. They can undergo the same chemical reactions
   Explanation: Both Graphite and diamond being the allotropes of

the same element, carbon, have similar chemical properties. So they undergo the same chemical reactions.

9. How many number of carbon atoms are joined in a spherical molecule of buckminsterfullerene?
   a. 30 b. 60 c. 90 d. 120
   Answer: b. 60
   Explanation: Buckminsterfullerene is a molecule of carbon in the form of a hollow sphere consisting of 60 C-atoms and is having the formula C_{60}.
10. Which of the followings is the major constituent of the liquefied petroleum gas?
    a. Methane b. Ethane c. Propane d. Butane
    Answer: d. Butane
    Explanation: The major constituent of the liquefied petroleum gas is butane.
11. The organic compounds having functional group are known as:
    a. Aldehyde b. Ketone c. Carboxylic acids d. Alcohol
    Answer: c. Carboxylic acids
    Explanation: Carboxylic acids are compounds which contain a group also known as carboxyl group.
12. From which of the following substance pencil lead is formed?
    a. Charcoal b. Wood c. Lead d. Graphite
    Answer: d. Graphite
    Explanation: Pencil lead is formed of graphite. Graphite is an allotropic form of carbon in which each carbon atom is joined to three others, forming layers:



These layers are put together by weak van der Waals forces which enable the layers to slide over each other, making graphite soft and slippery. So graphite is used as pencil 'lead'. As the pencil moves across the paper, layers of graphite rub off leaving the dark marks on

paper.

13. Ester is formed by the reaction between:
    a. An acid and an alcohol b. An acid and a base
    c. A base and an alcohol d. An acid and an alkene
    Answer: a. An acid and an alcohol
    Explanation: Reaction between an acid and an alcohol results in the formation of ester, and the reaction is named as estrification.
    For example: Acetic acid reacts with ethyl alcohol in the presence of concentrated sulphuric acid to form Ethyl acetate:

$$CH_3COOH + C_2H_5OH \xrightarrow{Conc.H_2SO_4} CH_3COOC_2H_5 + H_2O$$

14. What is denatured alcohol?
    a. Ethyl alcohol which has been made unfit for drinking purpose by adding small amount of poisonous substance
    b. Methyl alcohol which has been made unfit for drinking purpose by adding small amount of poisonous substance
    c. Alcohol having properties of an acid
    d. Ethyl alcohol containing 60% of water by weight
    Answer: a. Ethyl alcohol which has been made unfit for drinking purpose by adding small amount of poisonous substance
    Explanation: Denatured alcohol is the ethyl alcohol which has been made unfit for drinking purpose by adding small amount of poisonous substance like methanol, pyridine, etc. This is mainly done to prevent the misuse of industrial alcohol for drinking purposes.
15. Which of the following substance produces brisk effervescence with baking soda solution?
    a. Ethanoic acid b. Table salt c. Vinegar d. Sunflower oil
    Answer: a. Ethanoic acid
    Explanation: Ethanoic acid when treated with baking soda (Sodium hydrogencarbonate) gives brisk effervescence of Carbon dioxide gas.

MCQS: ACIDS, BASES AND SALTS

1. Which one of the following is acidic?
    a. Lemon juice b. Tomatoes c. Milk d. All

2. Which one of the following will turn red litmus blue?
    a. Vinegar b. Baking soda solution
    c. Lemon juice d. Soft drinks

3. Which one of the following will turn blue litmus red?
    a. Vinegar b. Lime water
    c. Baking soda solution d. Washing soda solution

4. Methyl orange is
a. Pink in acidic medium, yellow in basic medium
b. Yellow in acidic medium, pink in basic medium
c. Colourless in acidic medium, pink in basic medium
d. Pink in acidic medium, colourless in basic medium.

5. Lime water is
a. CaO b. Ca(OH)2 c. CaCO3 d. CaCI2

6. The nature of calcium phosphate is present in tooth enamel is
a. Basic b. Amphoteric c. Acidic d. Neutral

7. Which of the following salts has no water of crystallization?
a. Blue vitriol b. Washing soda c. Baking soda d. Gypsum

8. The function of quick lime in soda lime mixture is to
a. Absorb moisture present in soda lime
b. Increase the efficiency of soda lime
c. Increase the pH of soda lime
d. Take part in reaction with NaOH

9. The pH of a solution of HCL is 4. This shows that the molarity of the solution is
a. 4.0M b. 0.4M c. 0.0001M d. 0.001M

10. The difference of molecules of water in gypsum and PoP is
a. 5/2 b. 2b c. 3/2 d. ½

11. Which of the following does not form an acidic salt?
a. Phosphoric acid b. Carbonic acid
c. Hydrochloric acid d. Sulphuric acid

12. The chemical formula of caustic potash is
a. NaOH b. $Ca(OH)_2$ c. NH_4OH d. KOH

ANSWERS

1. d. 2. b. 3. a. 4. (a)
5. b. 6. a. 7. c. 8. (a)
9. a. 10. c. 11. b. 12. (d)

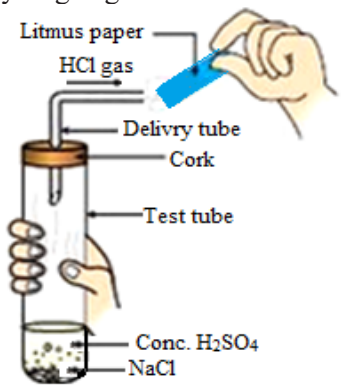
13. Some fruits like mango, lemon, raw grapes, orange, etc., have a sour taste due to the presence of:
a. Acetic acid b. Citric acid c. Lactic acid d. Oxalic acid
Answer: b. Citric acid

14. Zinc granules on treating with an acid X, form the zinc sulphate (ZnSO4) salt along with the evolution of a gas Y which burns with a pop sound when brought near to a burning candle. Identify the acid X and gas evolved Y.
a. X- Sulphuric acid and Y- Oxygen gas
b. X- Hydrochloric acid and Y- Oxygen gas
c. X- Sulphuric acid and Y- Hydrogen gas

d. X- Hydrochloric acid and Y- Hydrogen gas

Answer: c. X- Sulphuric acid and Y- Hydrogen gas

15. The figure given below represents the experiment carried out between conc. sulphuric acid and sodium chloride, which react with each other to form HCl gas. Blue litmus paper is brought near the mouth of the delivery tube to check the presence of HCl acid but no change is observed in the color of litmus paper because:



a. The litmus paper used is dry

b. The litmus paper used is moist

c. Blue litmus paper does not change its color with an acid

d. The litmus paper is kept very close to the mouth of the delivery tube

Answer: a. The litmus paper used is dry

16. Which of the following phenomena occur, when a small amount of acid is added to water?

i. Ionisation ii. Neutralisation iii. Dilution iv. Salt formation

a. i. and (ii) b. i. and (iii) c. ii. and (iii) d. ii. and (iv)

Answer: b. (i) and (iii)

17. Which of the following indicators turn red in an acidic solution?

i. Phenolphthalein ii. Litmus

iii. Turmeric iv. Methyl orange

Choose the correct option:

a. i. and (ii) b. ii. and (iii) c. Only (ii) d. ii. and (iv)

Answer: d. (ii) and (iv)

18. Dilute acid does not produce carbon dioxide on being treated with:

a. Marble b. Lime c. Baking soda d. Limestone

Answer: b. Lime

19. The sample of soil from a particular place was tested for its pH value. It came out to be 5. Which one of the following should be added to the soil to make it suitable for the plant growth?

i. Calcium chloride

ii. Calcium Hydroxide

iii. Calcium oxide

Choose the correct option:

a. Both (i) and (ii) b. Both (ii) and (iii)

c. Only (i) d. Only (iii)

Answer: b. Both (ii) and (iii)

20. Identify the products of the following reaction:

$CaCO_3 + 2HCl \rightarrow .....+.....$

a. Calcium hydrogencarbonate and chlorine gas
b. Calcium chloride and water
c. Calcium oxide, carbon dioxide and water
d. Calcium chloride, carbon dioxide and water
Answer: d. Calcium chloride, carbon dioxide and water

21. An ant's sting can be treated with ……which will neutralise the effect of the chemical injected by the ant's sting into our skin. Choose the correct option from the following to be filled in the blank space:
a. Methanoic acid b. formic acid
c. Baking soda d. Caustic soda
Answer: c. Baking soda

22. In the following reaction, identify the salt formed
$NH_4OH\ (aq) + H_2SO_4\ (aq) \rightarrow$ _____ + $2H_2O\ (l)$
a. NH_4NO_3 b. $(NH_4)_2SO_4$ c. $(NH_4)_3PO_4$ d. $(NH_4)_2S$
Answer: b. $(NH_4)_2SO_4$

23. Which of the following salt will give acidic solution when dissolved in water?
a. NH_4Cl b. NaCl c. Na_2CO_3 d. CH_3COONa
Answer: a. NH_4Cl

24. Bleaching powder is used as a disinfectant for water to:
a. Make water tastier b. Remove all the dirt from water
c. Make water germ-free d. Make water clear
Answer: c. Make water germ-free

25. Which among the following represents the chemical formula for 'Plaster of Paris'?

a. $CaSO_4.2H_2O$

b. $CaSO_4.\frac{1}{2}H_2O$

c. $CaSO_4.H_2O$

d. $CaSO_4.10H_2O$

Answer. b. $CaSO_4.\frac{1}{2}H_2O$

26. Which one of the following salts will dissolve in water to form an alkaline solution?
a. Potassium carbonate b. Sodium chloride
c. Sodium carbonate d. Potassium sulphate

Answer: a. Potassium carbonate

27. Copper sulphate crystals when heated strongly, lose their water of crystallization to give anhydrous copper sulphate accompanied by a change in color from:

a. Blue to green b. Blue to white
c. Blue to sky blue d. Blue to grey

Answer: b. Blue to white

MCQS: METALS AND NON-METALS

1. Which of the following metals is present in the anode mud during the electrolytic refining of copper?

a. Sodium b. Aluminium c. Gold d. Iron

2. An element reacts with oxygen to give a compound with a high melting point. The compound is soluble in water. The element is likely to be

a. calcium b. carbon c. iron d. silicon

3. The second most abundant metal in the earth's crust is

a. oxygen b. silicon c. aluminium d. iron

4. An alloy of Zn and Cu is dissolved in dil. HC1. Hydrogen gas is evolved. In this evolution of gas

a. only zinc reacts with dil. HC1
b. only copper reacts with dil. HC1
c. both zinc and copper react with dil. HC1
d. only copper reacts with water

5. A greenish coating develops on copper utensils due to formation of

a. $CuCo_3$ b. $Cu(OH)_2$ c. $Cu(OH)_2.CuCO_3$ d. CuO

6. Rusting of iron takes place in

a. ordinary water b. distilled water
c. both ordinary and distilled water d. none of the above

7. The bronze medals are made up of

a. Cu and Zn b. Zn and Ni c. Cu and Sn d. Cu, Zn, Tn

8. Silver articles becomes black on prolonged exposure to air. This is due to the formation of

a. Ag2O b. Ag2S c. AgCN d. Ag2O and Ag2S

9. During smelting, an additional substance is added which combines with impurities to form a fusible product known as

a. slag b. mud c. gangue d. flux

10. A student placed an iron nail in copper sulphate solution. He observed the reddish brown coating on the iron nail which is

a. soft and dull b. hard and flading
c. smooth and shining d. rough and granular

11. Which among the following alloys contain non-metal as one of its

constituents?

a. Brass b. Amalgam c. Gun metal d. None of these

12. An aluminium strip is kept immersed in freshly prepared ferrous sulphate solution taken in a test tube, the change observed is that

a. Green solution slowly turns brown

b. Lower end of test tube become slightly warm

c. A colourless gas with the smell of burning sulphur is observed

d. Light green solution changes to blue.

Answers

1. d.	2. c.	3. d. 4.	a.
5. a.	6. c.	7. c.	8. (b)
9. a.	10. d.	11. b.	11. (a)

13. The non-metal which is liquid at room temperature is:

a. Mercury b. Bromine c. Carbon d. Helium

Answer: b. Bromine

Explanation: Bomine is the only non-metal which exists as a liquid at room temperature.

14. The number of protons in an atom of an element A is 19 then, the number of electron in its ion A^+ is:

a. 18 b. 19 c. 20 d. 21

Answer: a. 18

Explanation: In the neutral atom of an element,

Number of protons = Number of electrons

$\therefore$ Number of electrons in element A = 19

Now, in A^+ ion, the positive charge is acquired by the loss of one electron.

$\therefore$ Number of electrons in ion $A^+ = 19 - 1 = 18$

15. Bauxite is an ore of

a. Iron b. Aluminium c. Mercury d. Copper

Answer: b. Aluminium

Explanation: Bauxite is a commercial ore of aluminium which consists largely of hydrated aluminium oxide, $Al_2O_3.2H_2O$.

16. The metal which is liquid at room temperature is

a. Bromine b. Mercury c. Iodine d. Potassium

Answer: b. Mercury

Explanation: Mercury is the only metal which exists as a liquid at room temperature.

17. The sulphide ores are converted into oxides by heating strongly in

the presence of excess air. This process is known as
a. Roasting b. Smelting c. Calcination d. Refining
Answer: a. Roasting
Explanation: The process of heating the sulphide ore strongly in the presence of air to convert it into metal oxide, is known as roasting.

18. In electrolytic refining, the cathode is made up of
a. Pure metal b. Impure metal c. Alloy d. Metallic salt
Answer: a. Pure metal
Explanation: In electrolytic refining of a metal, the cathode is made up of pure metal whereas the anode is made up of impure metal.

19. In the given reaction, $Al_2O_3 + NaOH \rightarrow$ ……X…… $+ H_2O$. What is element X?
a. $NaAlO_2$ b. Na_3Al c. Na_2O_3 d. $NaAl_2O_3$
Answer: a. $NaAlO_2$
Explanation: Aluminium oxide is amphoteric in nature, i.e., it reacts with acids as well as bases to form salt and water.
Here, aluminium oxide behaves as an acid as it reacts with NaOH, a base and forms sodium aluminate ($NaAlO_2$) and water:
$Al_2O_3 + NaOH \rightarrow 2NaAlO_2 + H_2O$

20. Which of the following represent the correct order of decreasing reactivity?
a. Mg > Al > Zn > Fe b. Mg > Zn > Al > Fe
c. Al > Zn > Fe > Mg d. Mg > Fe > Zn > Al
Answer: a. Mg > Al > Zn > Fe
Explanation: The decreasing order of the reactivity of the common metals is given below:
Li, K, Na, Ba, Ca, Mg , Al, Mn, Zn, Fe, Ni, Sn, Pb, [H], Cu,Hg, Ag, Au,Pt

21. An element reacts with oxygen to give a compound with a high melting point. This compound is also soluble in water. The element is likely to be
a. Ca b. C c. Si d. Fe
Answer: a. Ca
Explanation: Calcium reacts with oxygen to give calcium oxide (CaO) which is having a high melting point and dissolves in water to form calcium hydroxide ($Ca(OH)_2$)along with the release of large amount of thermal energy.

22. Which of the following pairs will give displacement reactions?
a. NaCl solution and copper metal
b. $MgCl_2$ solution and aluminium metal
c. $FeSO_4$ solution and silver metal
d. $AgNO_3$ solution and copper metal

Answer: d. $AgNO_3$ solution and copper metal

Explanation: Copper (Cu) being more reactive than silver (Ag), displaces silver from silver nitrate ($AgNO_3$) to form copper nitrate

$2AgNO_3 + Cu \rightarrow Cu(NO_3)_2 + 2Ag$

23. Which among the following is the most abundant metal found in the earth's crust?

a. Magnesium b. Aluminium c. Oxygen d. Iron

Answer: b. Aluminium

Explanation: Aluminium is the most abundant metal found in the earth's crust.

24. Which of the following pairs of reactants will go undergo a displacement reaction?

a. $CuSO_4 + Fe$ b. $ZnSO_4 + Fe$ c. $MgSO_4 + Fe$ d. $Ca(SO_4)_2 + Fe$

Answer: a. $CuSO_4 + Fe$

Explanation: As per the reactivity series of metals, iron is more reactive than copper metal so it can displace copper from copper sulphate solution and form iron (II) sulphate and copper:

25. Galvanisation is a method of protecting steel and iron from rusting by coating them with a thin layer of

a. Copper b. Aluminum c. Zinc d. Bauxite

Answer: c. Zinc

Explanation: In this method a thin layer of zinc metal is deposited over the surface of steel or iron objects, which does not corrode on exposure to damp air and prevents the coated metals from rusting.

26. Which of the following alloys contains a non-metal as one of its constituents?

a. Steel b. Brass c. Amalgam d. Bronze

Answer: a. Steel

Explanation: Stainless steel is an alloy of iron (a metal) and carbon (a non metal).

27. An element X is soft and can be cut with the help of a knife. It is very reactive to air and cannot be kept open in the air. It reacts vigorously with water. Identify the element from the following:

a. Mg b. Na c. P d. Ca

Answer: b. Na

Explanation: Na is a metal which is soft enough to be cut with a knife. It is so reactive that it reacts vigorously with air or moisture and catches fire when kept in open. So to prevent it from coming in contact with oxygen and moisture, it is kept in kerosene.

MCQS: PERIODIC CLASSIFICATION OF ELEMENTS

1. 14 elements after actinium is called
a. Lanthanides b. Actinides
c. D-block elements d. P block elements

2. An element has an atomic number of 15 with which of the following elements will it show similar chemical properties.
a. Be (4) b. Ne (10) c. N(7) d. O (8)

3. The group number and period number respectively of an element with atomic number 8 is.
a. 6,2 b. 16,2 c. 6,8 d. 16,4

4. An element belongs to period 2 and group 2 th number of valence electrons in the atoms of this element is.
a. 2 b. 4 c. 3 d. 1

5. In the third period of the periodic table the element having smallest size is
a. Na b. Ar c. Cl d. Si

6. Electronic configuration of Al+3 is
a. 2,8,3 b. 2,8,8 c. 2,8 d. 2,8,8,3

7. Identify the group which is not a Dobereiner triad
a. Li, Na, K b. Be, Mg, Cr c. Ca, Sr, Ba d. Cl, Br, I

8. Which is not true about the noble gases?
a. They are non metallic in nature
b. They exist in atomic form
c. They are radioactive in nature
d. Xenon is the most reactive among these

9. Identify the wrong sequence of the elements in a group
a. Ca, Br, Ba b. Cu, Au, Ag c. N,P, As d. Cl, Br, I

10. An element with atomic number will form a basic oxide_____
a. 7 b. 17 c. 14 d. 11

ANSWERS

1. B 2. C 3. A 4. A
5. B 6. C 7. B 8. C
9. B 10. D

11. How many periods and groups are present in the periodic table?
a. 7 periods and 18 groups b. 8 periods and 7 groups
c. 7 periods and 7 groups d. 8 periods and 8 groups
Answer: a. 7 periods and 18 groups
Explanation: Modern periodic table consists of 7 horizontal rows known as periods and 18 vertical columns named as groups.

12. Which of the following forms the basis of the modern periodic table?
a. Atomic mass b. Atomic number

c. Number of nucleons d. All of these

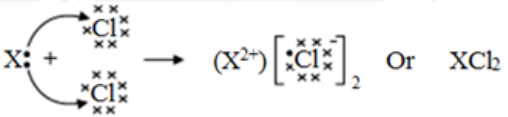
Answer: b. Atomic number

Explanation: Modern periodic table is based on the atomic numbers of elements as according to the modern periodic law the properties of elements are a periodic function of their atomic numbers.

13. What happens to the electropositive character of elements on moving from left to right in a periodic table?
    a. Increase b. Decreases
    c. First increases than decreases d. First decreases than increases
    Answer: b. Decreases
    Explanation: Electropositive character of an element is its ability to lose electrons and form positive ions. Now, as on moving from left to right in a period of periodic table, the nuclear charge increases due to the gradual increase in number of protons, so the valence electrons are pulled more strongly by the nucleus. Thus, it becomes more and more difficult for the atoms to lose electrons causing a decrease in the electropositive character of elements on moving from left to right in a periodic table.
14. The electronic configuration of an element M is 2, 8, 4. In modern periodic table, the element M is placed in
    a. 4^{th} group b. 2^{nd} group c. 14^{th} group d. 18^{th} group
    Answer: c. 14^{th} group
    Explanation: In the periodic table, elements having 4 valence electrons are placed in group 14.
15. Which of the following is the correct order of the atomic radii of the elements oxygen, fluorine and nitrogen?
    a. O < F < N b. N < F < O
    c. O < N < F d. F < O < N
    Answer: d. F < O < N
    Explanation: Oxygen (8), fluorine (9) and nitrogen (7) belong to the same period of the periodic table, in the order nitrogen, oxygen and fluorine. Now in a period, on moving from left to right the atomic radius of the elements decreases. Therefore, the atomic radius of nitrogen is the largest.
16. What is the other name for group 18^{th} elements?
    a. Noble gases b. Alkali metals
    c. Alkali earth metals d. Halogens
    Answer: a. Noble gases
    Explanation: Group 18^{th} elements are named as noble gases as they are very stable due to having the maximum number of valence electrons their outermost shell can hold, hence they rarely react with other elements.

17. Which of the following is the most reactive element of the group 17?
a. Oxygen b. Sodium c. Fluorine d. Magnesium
Answer: c. Fluorine
Explanation: As we move down in a group, the size of the atoms of elements goes on increasing. So, fluorine being on the top position in the halogen's group, is the smallest element and has the maximum tendency to gain an electron to complete its octet. Thus fluorine is the most reactive element of the group 17.

18. Element X forms a chloride with the formula XCl_2, which is a solid with a high melting point. X would most likely be in the same group of the Periodic Table as
a. Na b. Mg c. Al d. Si
Answer: b. Mg
Explanation: Group 2 alkaline earth metal atoms have two valence electrons each. They can donate their two valence electrons to two other chlorine atoms to form the solid compounds of the form XCl_2.



This XCl_2 compound being ionic in nature, has a very strong electrostatic forces of attraction between 2 chloride atoms and 1 metal atom. Thus, a large amount of heat is required to break these strong bonds, causing the compound to have very high melting and boiling points.

19. Which group elements are called transition metals?
a. Group number 1 to 2 b. Group number 13 to 18
c. Group number 3 to 12 d. Group number 1 to 8
Answer: c. Group number 3 to 12
Explanation: The elements occurring in the group 3 to 12 are named as transition metals because they are metallic elements that form a transition between the main group elements, which occur in groups 1 and 2 on the left side, and groups 13–18 on the right side of the periodic table.

20. Which of the following elements has 2 shells and both are completely filled?
a. Helium b. Neon c. Calcium d. Boron
Answer: b. Neon
Explanation: Neon with the atomic number 10, has the electronic configuration as:

Ne[Z = 10] =	K	L
	2	8

Hence, both its K and L shells are completely filled.

21. Which of the following is the atomic number of an element that forms basic oxide?
a. 18 b. 17 c. 19 d. 15
Answer: c. 19
Explanation: The elements which can donate their valence electrons to other atoms are the metallic elements which form basic oxides as they give hydroxides in their aqueous solutions.

22. The elements A, B and C belong to group 2, 14 and 16 respectively, of the periodic table. Which of the two elements will form covalent bonds?
a. A and B b. B and C c. C and A d. None of these
Answer: b. B and C
Explanation: The covalent bond is formed by the sharing of electrons between two atoms. As the element B (which belongs to group 14) has 4 valence electrons which it can share with two elements of C type (from group 16) electrons to complete the octet of each included atom:

23. Which of the following does not decrease while moving down the group of the periodic table?
a. Atomic radius b. Metallic character
c. Number of shells in the atom d. Valence electrons
Answer: d. Valence electrons
Explanation: Number of valence electrons in a group remain the same.

24. An element X belongs to the 3rd period and 1st group of the periodic table. What is the number of valence electrons in its atom?
a. 1 b. 3 c. 6 d. 8
Answer: a. 1
Explanation: As the element belongs to the 1st group of the periodic table, so the number of valence electrons in its atom is one.

25. An element M is in group 13th of the periodic table, the formula for its oxide is
a. MO b. M_2O_3 c. M_3O_2 d. None of these
Answer: b. M_2O_3
Explanation: As the element M belongs to group 13th of the periodic table so it has 3 valence electrons, i.e., it can have +3 oxidation state while oxygen atom (with 2 valency) has −2 oxidation state. So the formula for the corresponding oxide is M_2O_3.

MCQs

Multiple Choice Question Collection

Subject:

BIOLOGY

MCQS: LIFE PROCESSES

1. Which of the following is not a digestive enzyme contained in the pancreatic juice?
   i. Lipase ii. Hydrochloric acid
   iii. Mucus iv. Trypsin
   a) (i) and (ii) b) (i) and (iv) c) (ii) and (iii) d) (i) and (iii)
   Answer: c. (ii) and (iii)
   Explanation: The enzymes lipase and trypsin are present in the pancreatic juice that breakdown emulsified fats and degrade proteins respectively.
2. The enzymes pepsin and trypsin are secreted respectively by
   a. Stomach and pancreas b. Salivary gland and stomach
   c. Liver and pancreas d. Liver and salivary gland
   Answer: a. Stomach and pancreas
   Explanation: Stomach secretes the enzyme pepsin and pancreas produces trypsin. Both of them breakdown protein.
3. Among the following choose the correct option which includes the organisms that have a holozoic mode of nutrition:
   a. Plasmodium and Amoeba b. Parakeet and Amoeba
   c. Paramecium and Plasmodium d. Paramecium and Parasite
   Answer: b. Parakeet and Amoeba
   Explanation: Holozoic nutrition involves the ingestion of organic food particles and later its assimilation for the purpose of supplying energy to the whole body.
4. Raw materials required in the autotrophic mode of nutrition involves:
   i. Carbon dioxide and water ii. Chlorophyll
   iii. Nitrogen iv. Sunlight
   a) (i), (ii) and (iii) b) (i) and (ii)
   c) (i), (ii) and (iv) d) All (i), (ii), (iii) and (iv)
   Answer: c. (i), (ii) and (iv)
   Explanation: Autotrophic mode of nutrition involves the use of sunlight, chlorophyll, carbon dioxide and water to produce starch.
5. The enzymes contained in pancreatic juices help in the digestion of:
   a. Fats and carbohydrates b. Proteins and fats
   c. Proteins and carbohydrates d. Proteins, fats and carbohydrates
   Answer: d. Proteins, fats and carbohydrates
   Explanation: The pancreas contains all kinds of enzymes that can digest proteins, fats and carbohydrates.
6. Which of the following help in protecting the inner lining of the stomach from the harmful effect of hydrochloric acid?
   a. Mucus b. Pepsin c. Trypsin d. Bile

Answer: a. Mucus
Explanation: Mucus is a viscous secretion that protects the inner lining of the stomach from the action of HCl.

7. Sometimes we get painful cramps in our leg muscles after running for a long time due to the accumulation of:
   a. Hydrochloric acid b. Fat
   c. Carbon dioxide d. Lactic acid
   Answer: d. Lactic acid
   Explanation: The build-up of lactic acid in our muscles while running (less oxygen conditions) causes cramps.
8. The vein which brings clean blood from the lungs into the heart is known as:
   a. Pulmonary vein b. Hepatic vein
   c. Superior vena cava d. Pulmonary artery
   Answer: a. Pulmonary vein
   Explanation: The pulmonary vein is responsible for bringing oxygenated and pure blood into the heart.
9. Movement of the synthesized products from the leaves to the roots and other parts of a plant's body takes place through the phloem. This process is known as:
   a. Translocation b. Transpiration
   c. Transportation d. Excretion
   Answer: a. Translocation
   Explanation: The transport of soluble products of photosynthesis through all parts of the plant by specialized structures called phloem is translocation.
10. The process of diffusion of solvent particles from the region of less solute concentration to a region of high solute concentration through semi-permeable membrane is known as
    a. Diffusion b. Osmosis c. Translocation d. Transpiration
    Answer: b. Osmosis
    Explanation: The diffusion of solvent particles from a region of less concentration to high concentration (concentration gradient) through a semi permeable membrane is called osmosis.
11. Which among the following procedures is used for cleaning the blood of a person by separating the waste substance from it?
    a. Kidney transplant b. Blood transfusion
    c. Dialysis d. Hydrolysis
    Answer: c. Dialysis
    Explanation: Dialysis is the procedure of detoxifying the blood by isolating the waste and unwanted constituents in it.
12. The excretory unit of the human excretory system is known as:

a. Nephridia b. Neuron c. Nephron d. kidneys
Answer: c. Nephron
Explanation: Each kidney has large numbers of the filtration units called nephrons.

13. Plants use the energy stored in ATP to accomplish the process of transportation of:
a. Water and minerals b. Oxygen
c. Water, minerals and food d. Food
Answer: d. Food
Explanation: Translocation of food by phloem is achieved by utilizing energy from ATP.

14. Which among the following is necessary to carry out the blood coagulation in a cut or wound?
a. White Blood Cells b. Blood plasma
c. Platelets d. Red blood cells
Answer: c. Platelets
Explanation: Platelets coagulate blood whenever there is a cut or a wound. This stops excess flow of blood or hemorrhagic conditions.

15. Arteries and veins are connected by a network of extremely narrow tubes called:
a. Sieve tubes b. Capillaries c. Vena cava d. Valves
Answer: b. Capillaries
Explanation: Blood capillaries are vessels that connect arteries and veins and help in blood circulation.

MCQS: CONTROL AND COORDINATION

1. The movement of a plant part in response to the force of attraction exerted by the earth is called:
a. Hydrotropism b. Geotropism
c. Chemotropism d. Phototropism
Answer: b. Geotropism

2. A big tree falls in a forest, but its roots are still in contact with the soil. The branches of this fallen tree grow straight up (vertically). This happens in response to:
a. Water and light b. Water and minerals
c. Gravity and water d. Light and gravity
Answer: d. Light and gravity

3. The main function of the plant hormone called abscisic acid is to:
a. Increase the length of cells b. Promote cell division
c. Inhibit growth d. Promote growth of stem and roots
Answer: c. Inhibit growth

4. The growth of tendrils in pea plants is due to the:

a. Effect of sunlight on the tendril cells facing the sun
b. Effect of gravity on the part of tendril hanging down towards the earth
c. Rapid cell division and elongation in tendril cells that are away from the supportd. Rapid cell division and elongation in tendril cells in contact with the support
Answer: c. Rapid cell division and elongation in tendril cells that are away from the support

5. The plant hormone which triggers the fall of mature leaves and fruits from the plant body is:
   a. Auxin b. Gibberellin c. Abscisic acid d. Cytokinin
   Answer: c. Abscisic acid
6. The stimulus in the process of thigmotropism is:
   a. Touch b. Gravity c. Light d. Chemical
   Answer: a. Touch
7. A growing seedling is kept in a dark room. A burning lamp is placed near to it for a few days. The top part of seedling bends towards the burning candle. This is an example of:
   a. Chemotropism b. Hydrotropism
   c. Phototropism d. Geotropism
   Answer: c. Phototropism
8. Dandelion flowers open the petals in bright light during the daytime but close the petals in dark at night. This response of dandelion flowers to light is called:
   a. Phototropism b. Thigmonasty
   c. Chemotropism d. Photonasty
   Answer: d. Photonasty
9. The number of pairs of nerves which arises from the spinal cord is:
   a. 21 b. 31 c. 41 d. 51
   Answer: b. 31
10. Iodine is necessary for the synthesis of which of the following hormone?
    a. Adrenaline b. Auxin c. Thyroxine d. Insulin
    Answer: c. Thyroxine
11. Which of the following controls the involuntary actions in the body?
    a. Medulla in forebrain b. Medulla in hindbrain
    c. Medulla in spinal cord d. Medulla in midbrain
    Answer: b. Medulla in hindbrain
12. Which of the following control and regulate the life process?
    a. Reproductive and endocrine systems
    b. Respiratory and nervous systems
    c. Endocrine and digestive systems

d. Nervous and endocrine systems
Answer: d. Nervous and endocrine systems

13. A doctor advised a person to take injection of insulin because his:
a. Blood pressure was high b. Heart beat was high
c. Blood sugar was high d. Thyroxine level in blood was high
Answer: c. Blood sugar was high

14. The dramatic changes in body features associated with puberty are mainly because of the secretions of:
a. Estrogen from testes and testosterone from ovary b. Estrogen from adrenal gland and testosterone from pituitary gland
c. Testosterone from testes and estrogen from ovary d. Testosterone from thyroid gland and estrogen from pituitary gland
Answer: c. Testosterone from testes and estrogen from ovary

15. Electrical impulse travels in a neuron from:
a. Dendrite → axon → axon end → cell body b. Cell body → dendrite → axon → axon end
c. Dendrite → cell body → axon → axon end d. Axon end →axon → cell body → dendrite
Answer: c. Dendrite → cell body → axon → axon end

MCQS: HOW DO ORGANISMS REPRODUCE

1. Which among the following is a unicellular organism that reproduces by budding:
a. Hydra b. Planaria c. Yeast d. Spirogyra
Answer: c. Spirogyra

2. Which among the following does not reproduce by spore formation:
a. Penicillium fungus b. Yeast fungus
c. Mucor fungus d. Rhizopus fungus
Answer: b. Yeast fungus

3. The rapid spreading of bread mould on slices of bread are due to:
i. Presence of large number of spores in air
ii. Presence of large number of thread-like branched hyphae
iii. Presence of moisture and nutrients
iv. Formation of round shaped sporangia
a. (i) and (iii) b. (ii) and (iv)
c. (i) and (ii) d. (iii) and (iv)
Answer: a. (i) and (iii)

4. The asexual reproduction in the Spirogyra involves:
a. Breaking up of filaments into smaller bits
b. Division of a cell into many cells
c. Division of a cell into two cells
d. Formation of a large number of buds

Answer: b. Division of a cell into many cells

5. Reason for the greater similarities among the offsprings produced by asexual reproduction, is:
   i. Asexual reproduction involves only one parent
   ii. Asexual reproduction involves two parents
   iii. Asexual reproduction involves gametes
   iv. Asexual reproduction does not involve gametes
   a. (i) and (ii) b. (i) and (iii) c. (ii) and (iv) d. (i) and (iv)
   Answer: d. (i) and (iv)
6. The process of the division of cell into several cells during reproduction in Plasmodium is termed as:
   a. Fragmentation b. Budding
   c. Multiple fission d. Binary fission
   Answer: c. Multiple fission
7. The number of chromosomes in parents and offsprings of a particular species remains constant due to:
   a. Doubling of chromosomes after zygote formation b. Halving of chromosomes during gamete formation
   c. Doubling of chromosomes after gamete formation d. Halving of chromosomes after gamete formation
   Answer: b. Halving of chromosomes during gamete formation
8. A Planaria worm is cut horizontally in the middle into two halves P and Q such that the part P contains the whole head of the worm. Another Planaria worm is cut vertically into two halves R and S in such a way that both the cut pieces R and S contain half head each. Which of the cut pieces of the two Planaria worms could regenerate to form the complete respective worms?
   a. Only P b. Only R and S
   c. P, Rand S d. P, Q, R and S
   Answer: d. P, Q, R and S
9. The number of chromosomes in both parents and offsprings of a particular species remains constant because:
   a. Chromosomes get doubled after zygote formation
   b. Chromosomes get doubled after gamete formation
   c. Chromosomes get halved during gamete formation
   d. Chromosomes get halved after gamete formation
   Answer: c. Chromosomes get halved during gamete formation
10. The figure given alongside shows the human male reproductive organs. Which structures make sperms and seminal fluid?
    a. V makes sperms and X makes seminal fluid
    b. W makes sperms and Y makes seminal fluid
    c. X makes sperms and W makes seminal fluid

d. Y makes sperms and V makes seminal fluid

Answer: d. Y makes sperms and V makes seminal fluid

11. An organism capable of reproducing by two asexual reproduction methods one similar to the reproduction in yeast and the other similar to the reproduction in Planaria is:
    a. Spirogyra b. Hydra c. Bryophyllum d. Paramecium
    Answer: b. Hydra
12. Among the following select the statements that are true regarding the sexual reproduction in flowering plants?
    i. Fertilisation is a compulsory event
    ii. It always results in the formation of zygote
    iii. Offsprings formed are clones
    iv. It requires two types of gametes
    a. (i) nad (iv) b. (i), (ii) and (iii)
    c. (i), (ii) and (iv) d. (ii), (iii) and (iv)
    Answer: c. (i), (ii) and (iv)
13. Which among the following are not the functions of testes at puberty?
    i. Formation of germ cells
    ii. Secretion of testosterone
    iii. Development of placenta
    iv. Secretion of estrogen
    a. (i) and (ii) b. (i) and (iii) c. (ii) and (iv) d. (iii) and (iv)
    Answer: d. (iii) and (iv)
14. Which out of the following processes does not lead to the formation of clones:
    a. Fertilisation b. Fission
    c. Tissue culture d. Fragmentation
    Answer: a. Fertilisation
15. The ratio of number of chromosomes in a human zygote and a human sperm is:
    a. 2 : 1 b. 3 : 1 c. 1 : 2 d. 1 : 3
    Answer: a. 2 : 1

MCQS: HEREDITY AND EVOLUTION

1. The sequence of gradual changes which takes place in the primitive organisms over millions of years in which new species are produced is known as
    a. Evolution b. Heredity c. Generation d. Inheritance
    Answer: a. Evolution
    Explanation: Evolution is a series of gradual changes in an organism, wherein in the end, the organism is evolved and advanced.

2. If a normal cell of human body contains 46 pairs of chromosomes then the numbers of chromosomes in a sex cell of a human being is most likely to be:
   a. 60 b. 23 c. 22 d. 40
   Answer: b. 23
   Explanation: The sex gametes are always haploid. They have 23 chromosomes.
3. In the human blood grouping, the four basic blood types are type A, type B, type AB, and type O. They are:
   a. Simple dominant and recessive traits b. Co-dominant traits
   c. Recessive traits d. Inherited traits
   Answer: b. Co-dominant traits
   Explanation: A co-dominant trait is the one in which neither allele is dominant or recessive and both are expressed equally.
4. A pregnant woman has an equal chance of her baby being blood group A or blood group AB. Which one of the following shows the possible genotypes of the woman and the father of her child?
   a. $I^A I^A$ and $I^B I^O$ b. $I^A I^B$ and $I^B I^O$
   c. $I^A I^O$ and $I^B I^O$ d. $I^O I^B$ and $I^A I^O$
   Answer: a. $I^A I^A$ and $I^B I^O$
   Explanation:

	I^B	I^O
I^A	$I^A I^B$ means AB	$I^A I^O$ means A
I^A	$I^A I^B$ means AB	$I^A I^O$ means A

   Ratio of AB: A= 1:1. Hence, first answer is correct.
5. What will be the number of chromosomes present in each gamete produced by the plants if the palisade cells of a species of plant contain 28 chromosomes in all?
   a. 56 b. 28 c. 14 d. 4
   Answer: c. 14
   Explanation: Gamete cells are always haploid.
6. The following results were obtained by a scientist who crossed the F_1 generation of pure-breeding parents for round and wrinkled seeds.

Dominants trait	Recessive trait	No. of F_2 offspring
Round seeds	Wrinkled seeds	7524

   From these results, it can be concluded that the actual number of round seeds he obtained was:
   a. 1881 b. 22572 c. 2508 d. 5643
   Answer: d. 5643
   Explanation: The actual number of seeds obtained were 5643.

7. A cross between a tall plant (TT) and short plant (tt) resulted in progeny that were all tall plants as:
   a. Tallness is the dominant trait
   b. Shortness is the dominant trait
   c. Tallness is the recessive trait
   d. Height of plant is not governed by gene t or t
   Answer: a. Tallness is the dominant trait
   Explanation: The best traits are always superior. For instance, tallness and round seeds are dominant traits.
8. In peas, a pure tall plant (TT) is crossed with a pure short plant (tt). The ratio of pure tall plants to pure short plants in F_2 generation will be:
   a. 1 : 3 b. 3 : 1 c. 1 : 1 d. 2 : 1
   Answer: c. 1 : 1
   Explanation: The ratio of TT and tt plants of F_2 generation will be the same.
9. In human males, all the chromosomes are paired perfectly except one. These unpaired chromosomes are:
   i. Large chromosome ii. Small chromosome
   iii. Y chromosome iv. X chromosome
   a. (i) and (ii) b. (iii) and (ii)
   c. (iii) and (iv) d. (ii) and (iv)
   Answer: c. (iii) and (iv)
   Explanation: X and Y are sex chromosomes.
10. Which of the following determines the sex of a child?
    a. The length of the mother's pregnancy
    b. The length of time between ovulation and copulation
    c. The presence of an X chromosome in an ovum
    d. The presence of a Y chromosome in a sperm
    Answer: d. The presence of a Y chromosome in a sperm
    Explanation: The male sex chromosome is the deciding factor for the gender of the child. If the X part fertilizes with the ovum, girl is born. If Y fertilizes, then a boy is born.
11. Which is the one characteristic of the parents that can be inherited by their children?
    a. Deep scar on chin b. Snub nose
    c. Technique of swimming d. Cut nose
    Answer: b. Snub nose
    Explanation: A dominant inherent character can only be inherited by the children.
12. What could be the reason for the fossil of an organism to be found in the deeper layers of the earth?

a. The extinction of organism has occurred few years back
b. The extinction of organism has occurred thousands of years ago
c. The position of fossil in the layers of earth is not related to its time of extinction
d. Time of extinction cannot be determined.
Answer: b. The extinction of organism has occurred thousands of years ago
Explanation: The deeper the fossil is embedded in the earth, the more likely it is to be very old.

13. What is the ancient name for all human beings?
a. Monkey b. Chimpanzee c. Homo sapiens d. Invertebrates
Answer: c. Homo sapiens
Explanation: The scientific name of human is Homo sapiens.

14. The organs present in two organisms indicate that they are derived from the same ancestor are:
a. Analogous Organs b. Respiratory Organs
c. Sense organs d. Homologous Organs
Answer: d. Homologous Organs
Explanation: The structures which are similar in their morphology, anatomy, and embryology but dissimilar in their functions are homologous organs.

15. Which of the following pair of organ is not homologous?
a. Forelimbs in humans and lizard
b. Forelimbs in lizard and frog
c. Wings in butterfly and bat
d. None of these
Answer: c. Wings in butterfly and bat
Explanation: Wings of a bat and a butterfly are considered as analogous organs.

MCQS: OUR ENVIRONMENT

1. Every food chain in the ecosystem begins with……. which are the original source of food.
a. Saprophytes b. Parasites c. Producers d. Herbivores
Answer: c. Producers
Explanation: All green plants and few blue-green algae which can produce food by photosynthesis are called the producers.

2. We should reduce the use of the plastic bags, bottles etc. because:
a. They are not durable
b. They are non-biodegradable
c. They are made of toxic materials
d. They react with the atmospheric gases

Answer: b. They are non-biodegradable
Explanation: Plastics bags and bottles come under the category of non-biodegradable products because they cannot be broken down by natural process and tend to damage the safety of the environment.

3. Among the following choose the correct option which contains only biodegradable items?
   i. Wood, paper, PVC
   ii. Paper, seeds, detergent,
   iii. Paper, animal excreta, wood
   iv. Wool, leaves, paper
   a. (i), (ii) and (iii) b. (i) and (iii)
   c. (ii), (iii) and (iv) d. (iii) and (iv)
   Answer: d. (iii) and (iv)
   Explanation: All natural things produced by nature are biodegradable.
4. Which among the following statements is incorrect in view of the plants?
   a. They convert the solar energy into mechanical energy
   b. They prepare their food from organic compounds
   c. They are also called producers
   d. They are the initial source of energy in a food chain
   Answer: b. They prepare their food from organic compounds
   Explanation: Plants prepare food from sunlight and inorganic constituents like carbon dioxide and water.
5. In a food chain the second trophic level is occupied by:
   a. Carnivores b. Autotrophs c. Herbivores d. Producers
   Answer: c. Herbivores
   Explanation: Herbivores occupy the second trophic level after autotrophs or producers.
6. Green plants utilize …… percent of sun's energy to prepare their food by the process of photosynthesis?
   a. 1 percent b. 10 percent c. 20 percent d. 99 percent
   Answer: a. 1 percent
   Explanation: The study of flow of energy between various ecosystems state that the autotrophs in a terrestrial ecosystem capture about 1% of the energy of sunlight that falls on their leaves and convert it into feed.
7. The process of accumulation of harmful chemical substances like pesticides, in the body of living organisms at each trophic level of a food chain is known as:
   a. Biological magnification b. Biological accumulation
   c. Chemical magnification d. Chemical accumulation

Answer: a. Biological magnification
Explanation: The build-up of toxic and chemical constituents like pesticides, DDT, herbicides in the body of biotic organisms through food web/chain is bio-magnification.

8. Which of the following may be a conclusion of the excessive exposure of humans to sun's ultraviolet rays?
   i. Peptic ulcers
   ii. Eye disease like cataract
   iii. Damage to lungs
   iv. Skin cancer
   a. (i) and (iv) b. (ii), (iii) and (iv)
   c. (ii) and (iv) d. Only (iv)
   Answer: c. (ii) and (iv)
   Explanation: Too much exposure to the ultraviolet rays in the sun can increase the risk of cataract and skin cancer.
9. Which among the following is a correct full form for DDT?
   a. Dichlorodiphenyltrichloroethane
   b. Dichlorodiphenyltetrachloroethane
   c. Dichlorodecaphenyltrichloroethane
   d. Dichlorodiethyltrichloroethane
   Answer: a. Dichlorodiphenyltrichloroethane
   Explanation: The full form of DDT is Dichlorodiphenyltrichloroethane. It is known for its insecticidal properties.
10. If 100 J energy is available at the producer level in a food chain then the energy available to the secondary consumer will be:
    a. 10 J b. 0.1 J c. 1 J d. 0.01 J
    Answer: c. 1 J
    Explanation: Producers convert sunlight into chemical energy and when one form of energy is changed to another, some energy is lost to the environment in forms which cannot be used again.
11. Which of the following radiations is responsible for the conversion of atmospheric oxygen to ozone?
    a. Gamma radiations b. Cosmic radiations
    c. Infrared radiations d. Ultraviolet radiations
    Answer: d. Ultraviolet radiations
    Explanation: UV radiation is a highly damaging radiation, which when enters the environment can change atmospheric nitrogen into ozone.
12. The substance which is chiefly responsible for the depletion of ozone layer is:
    a. CFCs b. CH_4 c. DDT d. O_3

Answer: a. CFC_s

Explanation: The use of chemicals like CFCs has endangered the ozone layer.

13. What will happen if deer is missing in the food chain given below?
Grass → Deer → Tiger
a. The population of tiger increases
b. The population of grass decreases
c. Tiger will start eating grass
d. The population of tiger decreases and the population of grass increases
Answer: d. The population of tiger decreases and the population of grass increases
Explanation: If herbivores start missing, the producer population will increase and the population of carnivores will decrease dramatically.

14. Which of the following substances will not be converted to compost when added in a composting pit?
a. Waste paper b. Fruit and vegetable peels
c. Human and animal excreta d. Plastic bags
Answer: d. Plastic bags
Explanation: Plastics bags and bottles come under the category of non-biodegradable products because they cannot be broken down by natural process and tend to damage the safety of the environment.

15. Global warming is a phenomenon related to:
a. Evaporation b. Ecological balance
c. Greenhouse effect d. Desertification
Answer: c. Greenhouse effect
Explanation: The increase in greenhouse gases in the environment leads to global warming.

MCQS: MANAGEMENT OF NATURAL RESOURCES

1. Which of the following is/ are not the consequence/consequences of building high-rise dams?
i. Loss of biodiversity
ii. Depletion of the natural habitats of wild animals
iii. Soil erosion leading to the infertility of land
iv. Fall in the groundwater level
Choose the correct option from the following:
a. (i) and (iv) b. (ii) and (iii)
c. (iii) and (iv) d. (ii) and (iv)
Answers: c. (iii) and (iv)
Explanation: Building of dams causes environmental problems

because they contribute enormously to deforestation and the loss of biological diversity.

2. Which of the following activities will prove to be effective in preventing floods?
   i. Removing the topsoil ii. Afforestation
   iii. Construction of dams iv. Cutting of trees
   Choose the correct option from the following:
   a. (i) and (iv) b. (ii) and (iii)
   c. (iii) and (iv) d. (ii) and (iv)
   Answer: b. (ii) and (iii)
   Explanation: Planting of more trees and building more dams help combating floods.
3. Which among the following was a message conveyed by the 'Chipko Movement'?
   a. To promote more and more developmental projects
   b. To involve the community in forest conservation efforts
   c. To ignore the forest conservation efforts in sake of development
   d. None of these
   Answer: b. To involve the community in forest conservation efforts
   Explanation: The Chipko Movement objectives were to end the alienation of people from their forests and teach people to participate in the management of forest ecosystem.
4. The quality of environment can be improved by-
   a. Deforestation b. Overuse of natural environment
   c. Erosion d. Conservation
   Answer: d. Conservation
   Explanation: We can improve the quality of the environment by conserving the biodiversity and looking after it.
5. Which among the following is an eco-friendly activity?
   a. Making use of automobiles
   b. Making use of poly bags for shopping
   c. Making use of dyes for colouring the clothes
   d. Making windmill to generate power for irrigation
   Answer: d. Making windmill to generate power for irrigation
   Explanation: Wind is a natural resource and energy, it can be used by the windmill to generate power for irrigation.
6. Which of the following does not lead to the depletion of groundwater?
   a. Establishing thermal power plants
   b. Cultivation of high yielding varieties of crops
   c. Process of deforestation
   d. Process of afforestation

Answer: d. Process of afforestation
Explanation: The planting of trees does not deplete the groundwater level.

7. Government launched the 'Ganga Action Plan' (GAP) project in 1985. The main purpose of this project was to:
   a. Build new dams over the Ganga river
   b. Make its water pollution free
   c. Utilise the river water for irrigation purposes
   d. Promote the growth of water animals like fish, in the river
   Answer: b. Make its water pollution free
   Explanation: The aim of GAP is to reduce pollution load in the river Ganga. Pollutants include human, industrial and religious wastes.
8. Which among the following factors help in confirming the contamination of river water?
   i. Measurement of pH of river water
   ii. Presence of chlorine in river water
   iii. Existence of diverse life forms in river water
   iv. Presence of coliform bacteria in river water
   Choose the correct option from the following:
   a. (i) and (iv) b. (ii) and (iii) c. (iii) and (iv) d. (ii) and (iv)
   Answer: a. (i) and (iv)
   Explanation: The pH of water and coliform presence in water indicates contamination by disease-causing microorganisms
9. Among the following choose the correct option which includes acts related to the three R's strategy which can be useful for conserving our natural resources?
   a. Recycle, regenerate, reuse b. Reduce, regenerate, reuse
   c. Reduce, reuse, redistribute d. Reduce, recycle, reuse
   Answer: d. Reduce, recycle, reuse
   Explanation: The three R's- reduce, recycle, reuse helps in the conservation of our natural resources.
10. Who started chipko andalon?
    a. A. K. Banerjee b. Amrita devi bisni
    c. Sundar lal Bahuguna d. Medha patkart
    Answer: c. Sundar lal Bahuguna
    Explanation: Sundar lal Bahuguna was a noted Garhwali environementalist who started the chipko andolan.
11. Sardar Sarovar Dam is situated on river:
    a. Ganga b. Narmada c. Yamuna d. Godavari
    Answer: b. Narmada
    Explanation: The high rise dam the Sardar Sarovar is situated on

the river Narmada.

12. Which among the following is a major programme that was started to replenish the damaged forests?
a. Agriculture b. Tissue culture c. Silviculture d. Horticulture
Answer: c. Silviculture
Explanation: Silviculture is the practice of controlling the composition, growth, health and quality of forests for various needs.

13. In our country, there are attempts to increase the height of several existing dams like Tehri and Almati dams across the Narmada. Choose the correct statements among the following that are a consequence of raising the height of dams
i. Terrestrial flora and fauna of the area is destroyed completely
ii. Dislocation of people and domestic animals living in the area
iii. Valuable agricultural land may be permanently lost
iv. It will generate permanent employment for people
Choose the correct option from the following:
a. (i) and (ii) b. (i), (ii) and (iii)
c. (ii) and (iv) d. (i) (iii) and (iv)
Answer: b. (i), (ii) and (iii)
Explanation: A large area of land is covered in building the dams which causes the devastation of the terrestrial flora and fauna. Masses of people have to be displaced to other locations and also there is a loss of a large part of the valuable agricultural land.

14. Given below are a few statements related to biodiversity. Pick those that correctly describe the concept of biodiversity
i. Biodiversity refers to the different species of flora and fauna present in an area
ii. Biodiversity refers to only the flora of a given area
iii. Biodiversity is greater in a forest
iv. Biodiversity refers to the total number of individuals of a particular species living in an area
Choose the correct option from the following:
a. (i) and (ii) b. (ii) and (iv)
c. (i) and (iii) d. (ii) and (iii)
Answer: c. (i) and (iii)
Explanation: The term biodiversity refers to the variety of life forms on Earth. Forests are rich in biodiversity as a number of forms of life are found in forests, including trees, plants, animals, fungi and micro-organisms, and their roles in nature.

15. Which among the statements given below is incorrect?
a. Sustainable development does not take into consideration the viewpoints of all stakeholders b. Sustainable development is a

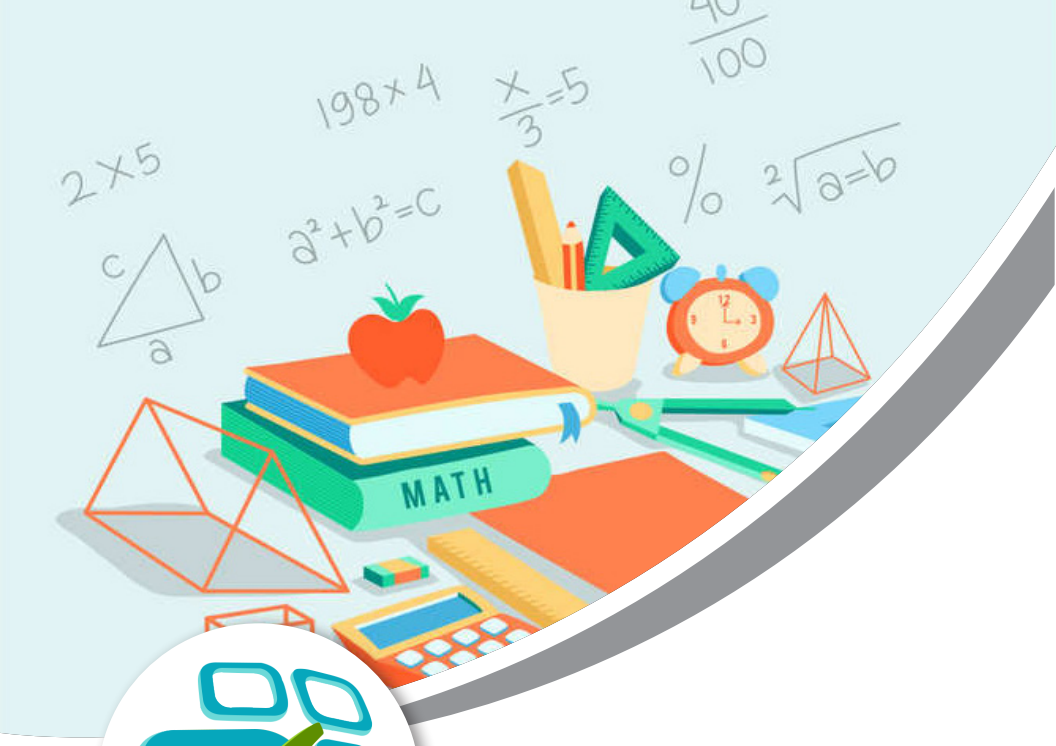
long planned and persistent development

c. Economic development is linked to environmental development

d. Sustainable development meets the current basic human needs along with preserving resources for future generations

Answer: a. Sustainable development does not take into consideration the viewpoints of all stakeholders

Explanation: Management of forest resources has to take into account the interests of various stakeholders.



MCQs

Multiple Choice Question Collection

Subject:

MATHS

CLASS 11 ENTRANCE EXAM QUESTIONS

Here we have some Mathematics MCQ for Class 11 entrance exam. Tick the correct answers

1. What is the value of x and y if (2x – 1, – 3) = (1, y + 3)?
   a. x= 1 & y = 2 b) x= 1 & y = 6 c) x= 1 & y = -6 d) x= 1 & y = 3
2. What is the range of the relation R = {(x, y): y = x^2} and x is natural number less than 4?
   a. { 0,1,2,3} b) {1,2,3} c) {1,4,9,16} d) {1,4,9}
3. If f is the function such that f(x+3) = f(x) + f(3) find the value of f(0).
   a. 1 b) 2f(3) c) –f(3) d) 0
4. If f (x) = g(x) and f(x) = 2x + 6 and g(x) = 8x – 6 find the value of x.
   a. 1 b) 2 c) 3 d) 0
5. A function f from A to B is said to be ……. Function if the range of the function is the proper subset of the domain.
   a. One to one b) many to one c) into d) onto
6. What element in the domain has image 7 in the function f(x) = x^2 – 2?
   a. 3 b) 9 c) -1 d) 4
7. What is the product of the polynomials (x-1) and (x^2 + x + 1)?
   a. x^3 – 1 b) x^3 + 1 c) x^3 – x^2 + 1 d) x^2– 1
8. In the sequence 3, 7, 11, 15……. what is the tenth term?
   a. 37 b) 38 c) 39 d) 40

CLASS 11 ENTRANCE EXAM QUESTIONS MATHS

1. If the range of the function f(x) = 7x – 8 is 13 find the element of the domain.
   a. 1 b) 2 c) 3 d) 4
2. If f(x) = 3x -1 what is the value of f (2.001)
3. f f(x) = 2x + 2 what is the value of f (0.999)
4. A scalar matrix is also a ……. Matrix.
   a. Square b) rectangular c) null d) unit
5. What is the order of a matrix having 3 rows and 4 columns?
   (3,4) b. 3×4 c. 4×3 d. (4,3)
6. Find the value of x and y if [-7 x] + [y – 2] = [-5 3].
   x= 2, y = 3 b. x = 5, y = 2 c. x = 5, y = 3 d. x = 5 y = 4
7. If A = [1 -2 5] find the additive inverse of matrix A.
8. [-1 -2 5] b. [-1 2 -5] c. [1 -2 -5] d. [1 2 5]
9. Find the sum of the given matrices A = [2x -3y] and B = [-4x 7y].
   [-6x -10y] b. [-2x 4y] c. [-6x 10y] d. [-2x -4y]
10. For ……the order of two matrices must be same.
    Multiplication b. addition c. division d. all of above

11. What is the midpoint of the line joining the points (3, 2) and (1, 4)?
(2, 1) b. (2, -1) c. (-2, 1) d. (2, 3)

NEB ENTRANCE EXAM QUESTIONS

1. In a triangle the centroid divides the median in the ratio …… from the vertex?
3: 1 b. 2: 1 c. 4: 1 d. 1:2
2. Which point lies in the locus $2x + y - 1 = 0$
(2,3) b. (2, -3) c. (-2,3) d. (0, 5)
3. Find the equation of the straight line parallel to X axis and 3 units above x axis?
$X + 3 = 0$ b. $x - 3 = 0$ c. $y = 3$ d. $y = -3$
4. What is the slope of the line $y = 2x - 5$
5 b. -5 c. 2 d. -2
5. What is the equation of straight line with x intercept 2 and y intercept 2?
$x+ y = 4$ b. $x+ y = 2$ c. $x+ y = -2$ d. $x - y = 2$
6. what is the y intercept of the line $2y = 3x + 8$
8 b. 4 c. 3 d. 2

ENTRANCE EXAM QUESTIONS

1. What is the slope of the line passing through the points (3, 2) and (5, 8)
1/3 b. 3 c. 2 d. – 3
2. Find the area of the triangle with the vertices A (3, -5), B (-2, -7) and C (18, 1) such that A, B and C are collinear.
10 sq. units b. 15 sq. units c. 0 sq. units d. 12 sq. units
3. In a right angled triangle if one of the acute angle is 50 grade find the other acute angle in degree.
50 b. 45 c. 60 d. 90

1. What is $\pi/2$ radian in degree?
180 b. 90 c. 100 d. 200

1. Find the angle in radian subtended by an arc of length 7 cm and radius 7 cm.
½ b. 1 c ¾ d. 2/5
2. Find the product of SinA and CotA.
tanA b. cosA c. cotA d. sinA
3. If SinA is 3/5 find the value of CosA.
¾ b. 4/5 c. 5/4 d. 4/3
4. Find the value of $\sin^2 60 - \cos^2 45$.
1/3 b. ¼ c. ½ d. 1/5

5. What is the value of sin (- 2130°)?
   0.26 b. 0.25 c. 0.5 d. 1.5
6. cosA.cosB – sinA.sinB is same as ……
   Sin (A + B) b. Sin (A – B) c. Cos (A + B) d. Cos (A – B)
7. Find the value of sin20cos70 + cos20 sin70
   0 b. 1 c. – 1 d. 2
8. What is the radius of the circle if 7 cm long arc subtend 1 radian angle at the center?
   a.14 cm b. 7 cm c. 10 cm d. 21 cm
37. What is the magnitude of the vector OA = (3 4)
   a. – 5 b. 5 c. 4 d. 3
38. If two vectors have same magnitude and same direction they are called……. Vectors.
   a. Row b. column c. equal d. null
39. Find the vector PQ joining the point P(1, 2) and Q(3, 0)
   a. (2 2) b. (-2 2) c. (2 -2) d. (-2 -2)
40. If OA = (3 -5) find 4 OA
   a. (12,0) b. (12 -20) c. (-12 20) d. (12 -20)
41. What is the image of A (3, -5) when reflected by X axis?
   a. (-3, -5) b. (3, -5) c. (3, 5) d. (-3, 5)
42. Find the image of the point (1, 2) when reflected by the line x = – 1
   i. (3, 2) b. (-3, 2) c. (3, -2) d. (-3, -2)
43. What is the image of P (3, 5) when rotated by positive quarter turn?
   a. (5, 3) b. (5 -3) c. (-5, 3) d.(5, -3)
44. If a point (3, 4) is translated to (-1, 2) what is the translation vector?
   a. (4 -2) b. (-4 -2) c. (4 2) d. (-4 -2)
45. Find the image of A (5, -3) under the enlargement E [0, 2]
   a. (10, 6) b. (-10, 6) c. (10, -6) (10, -6)
46. What is the coefficient of range of the following data?
   25, 62, 98, 10, 6, 90, 108
   a. 0.79 b. 0.89 c. 0.99 d. 0.88
47. If Q1 is 32 and Q3 is 88 find the quartile deviation.
   a. 27 b. 28 c. 29 d. 30
48. Calculate the coefficient of mean deviation if mean deviation from median is 0.9 and median is 3.
   a. 2.7 b. 0.3 c. 0.03 d. 0.31
49. If standard deviation is 9.16 and mean is 35 find the coefficient of standard deviation.
   a. 0.265 b. 0.267 c. 0.262 d. 0.269

MCQS: REAL NUMBERS

1. The decimal form of 129225775 is
   a. terminating b. non-termining
   c. non-terminating non-repeating d. none of the above
   Answer: c
2. HCF of 8, 9, 25 is
   a. 8 b. 9 c. 25 d. 1
   Answer: d
3. Which of the following is not irrational?
   a. $(2 - \sqrt{3})2$ b. $(\sqrt{2} + \sqrt{3})2$ c. $(\sqrt{2} - \sqrt{3})(\sqrt{2} + \sqrt{3})$ (d)$27\sqrt{7}$
   Answer: c
4. The product of a rational and irrational number is
   a. rational b. irrational
   c. both of above d. none of above
   Answer: b
5. The sum of a rational and irrational number is
   a. rational b. irrational
   c. both of above d. none of above
6. The product of two different irrational numbers is always
   a. rational b. irrational
   c. both of above d. none of above
7. The sum of two irrational numbers is always
   a. irrational b. rational
   c. rational or irrational d. one
   Answer: a
8. If b = 3, then any integer can be expressed as a =
   a. 3q, 3q+ 1, 3q + 2 b. 3q
   c. none of the above d. 3q+ 1
   Answer:
9. The product of three consecutive positive integers is divisible by
   a. 4 b. 6
   c. no common factor d. only 1
   Answer: b
10. The set A = {0,1, 2, 3, 4, …} represents the set of
    a. whole numbers b. integers
    c. natural numbers d. even numbers
    Answer
11. Which number is divisible by 11?
    a. 1516 b. 1452 c. 1011 d. 1121
    Answer: b
12. LCM of the given number 'x' and 'y' where y is a multiple of 'x' is given by

a. x b. y c. xyd. xy

Answer: b

13. The largest number that will divide 398,436 and 542 leaving remainders 7,11 and 15 respectively is

a. 17 b. 11 c. 34 d. 45

Answer: a

Explanation:(a); [Hint. Algorithm 398 – 7 – 391; 436 – 11 = 425; 542 – 15 = 527; HCF of 391, 425, 527 = 17]

14. There are 312, 260 and 156 students in class X, XI and XII respectively. Buses are to be hired to take these students to a picnic. Find the maximum number of students who can sit in a bus if each bus takes equal number of students

a. 52 b. 56 c. 48 d. 63

Answer: a

Explanation:(a); [Hint. HCF of 312, 260, 156 = 52]

15. There is a circular path around a sports field. Priya takes 18 minutes to drive one round of the field. Harish takes 12 minutes. Suppose they both start at the same point and at the same time and go in the same direction. After how many minutes will they meet ?

a. 36 minutes b. 18 minutes

c. 6 minutes d. They will not meet

Answer: a

Explanation:(a); [Hint. LCM of 18 and 12 = 36]

16. Express 98 as a product of its primes

a. $2^2 \times 7$ b. $2^2 \times 7^2$ c. 2×7^2 d. $2^3 \times 7$

Answer: c

17. Three farmers have 490 kg, 588 kg and 882 kg of wheat respectively. Find the maximum capacity of a bag so that the wheat can be packed in exact number of bags.

a. 98 kg b. 290 kg c. 200 kg d. 350 kg

Answer: a

Explanation:(a); [Hint. HCF of 490, 588, 882 = 98 kg]

18. For some integer p, every even integer is of the form

a. 2p + 1 b. 2p c. p + 1 d. p

Answer: b

19. For some integer p, every odd integer is of the form

a. 2p + 1 b. 2p c. p + 1 d. p

Answer: a

20. $m^2 - 1$ is divisible by 8, if m is

a. an even integer b. an odd integer

c. a natural number d. a whole number

Answer: b

21. If two positive integers A and B can be ex-pressed as A = xy3 and B = xiy2z; x, y being prime numbers, the LCM (A, B) is
    a. xy^2 b. x^4y^2z c. x^4y^3 d. x^4y^3z
    Answer
22. The product of a non-zero rational and an irrational number is
    a. always rational b. rational or irrational
    c. always irrational d. zero
    Answer: c
23. If two positive integers A and B can be expressed as A = xy3 and B = x4y2z; x, y being prime numbers then HCF (A, B) is
    a. xy^2 b. x^4y^2z c. x^4y^3 d. x^4y^3z
    Answer: a
24. The largest number which divides 60 and 75, leaving remainders 8 and 10 respectively, is
    a. 260 b. 75 c. 65 d. 13
    Answer: d
25. The least number that is divisible by all the numbers from 1 to 5 (both inclusive) is
    a. 5 b. 60 c. 20 d. 100
    Answer: b
    Explanation:(b); [Hint. LCM of 2, 3, 4, 5 = 60
26. The least number that is divisible by all the numbers from 1 to 8 (both inclusive) is
    a. 840 b. 2520 c. 8 d. 420
    Answer: a
27. The decimal expansion of the rational number 14587250 will terminate after:
    a. one decimal place b. two decimal places
    c. three decimal places d. four decimal places
    Answer: c
28. The decimal expansion of the rational number $\frac{972}{54}$ will terminate after:
    a. one decimal place b. two decimal places
    c. three decimal places d. four decimal places
    Answer: d
29. The product of two consecutive natural numbers is always:
    a. prime number b. even number c. odd number d. even or odd
    Answer: b
30. If the HCF of 408 and 1032 is expressible in the form 1032 x 2 + 408 × p, then the value of p is
    a. 5 b. -5 c. 4 d. -4
    Answer: b

Explanation:(b); [Hint. HCF of 408 and 1032 is 24, .-. 1032 x 2 + 408 x (-5)]

31. The number in the form of 4p + 3, where p is a whole number, will always be
    a. even b. odd c. even or odd d. multiple of 3
    Answer: b
32. When a number is divided by 7, its remainder is always:
    a. greater than 7 b. at least 7 c. less than 7 d. at most 7
    Answer: c
33. $(6 + 5\sqrt{3}) - (4 - 3\sqrt{3})$ is
    a. a rational number b. an irrational number
    c. a natural number d. an integer
    Answer
34. If HCF (16, y) = 8 and LCM (16, y) = 48, then the value of y is
    a. 24 b. 16 c. 8 d. 48
    Answer: a
35. According to the fundamental theorem of arith-metic, if T (a prime number) divides b2, b > 0, then
    a. T divides b b. b divides T
    c. T2 divides b2 d. b2 divides T2
36. The number 'π' is
    a. natural number b. rational number
    c. irrational number d. rational or irrational
    Answer: c
37. If LCM (77, 99) = 693, then HCF (77, 99) is
    a. 11 b. 7 c. 9 d. 22
    Answer: a
38. Euclid's division lemma states that for two positive integers a and b, there exist unique integer q and r such that a = bq + r, where r must satisfy
    a. $a < r < b$ b. $0 < r \leq b$ c. $1 < r < b$ d. $0 \leq r < b$
    Answer: d

MCQS: POLYNOMIALS

1. If one zero of the quadratic polynomial $x^2 + 3x + k$ is 2, then the value of k is
    a. 10 b. -10 c. 5 d. -5
    Answer: b
2. Given that two of the zeroes of the cubic poly-nomial $ax^3 + bx^2 + cx$

    (a) $\frac{-b}{a}$ **(b)** $\frac{b}{a}$ **(c)** $\frac{c}{a}$ **(d)** $-\frac{d}{a}$

Answer: a

3. If one of the zeroes of the quadratic polynomial $(k - 1)x^2 + kx + 1$ is

   (a) $\frac{4}{3}$ (b) $\frac{-4}{3}$ (c) $\frac{2}{3}$ (d) $\frac{-2}{3}$

   Answer: a

4. A quadratic polynomial, whose zeroes are -3 and 4, is

   a. $x^2 - x + 12$ b. $x^2 + x + 12$ c. x22−x2−6 d. $2x^2 + 2x - 24$

   Answer: c

5. If the zeroes of the quadratic polynomial x2 + (a + 1) x + b are 2 and -3, then

   a. a = -7, b = -1 b. a = 5, b = -1

   c. a = 2, b = -6 d. a – 0, b = -6

   Answer: d

6. The number of polynomials having zeroes as -2 and 5 is

   a. 1 b. 2 c. 3 d. more than 3

   Answer: d

7. Given that one of the zeroes of the cubic polynomial $ax^3 + bx^2 + cx + d$ is zero, the product of the other two zeroes is

   (a) $-\frac{c}{a}$ (b) $\frac{c}{a}$ (c) 0 (d) $-\frac{b}{a}$

   Answer: b

8. If one of the zeroes of the cubic polynomial $x^3 + ax^2 + bx + c$ is -1, then the product of the other two zeroes is

   a. b – a + 1 b. b – a – 1 c. a – b + 1 d. a – b – 1

   Answer: a

9. The zeroes of the quadratic polynomial x2 + 99x + 127 are

   a. both positive b. both negative

   c. one positive and one negative d. both equal

   Answer: b

10. The zeroes of the quadratic polynomial $x^2 + kx + k$, k? 0,

    a. cannot both be positive b. cannot both be negative

    c. are always unequal d. are always equal

    Answer: a

11. If the zeroes of the quadratic polynomial $ax^2 + bx + c$, c # 0 are equal, then

    a. c and a have opposite signs b. c and b have opposite signs

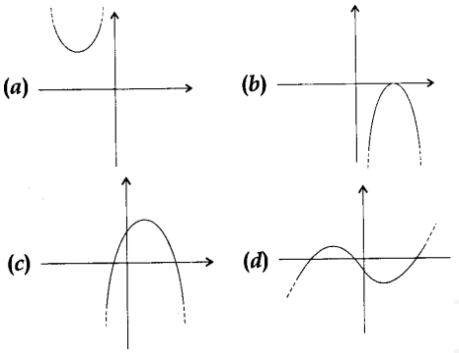
    c. c and a have the same sign d. c and b have the same sign

    Answer: c

12. If one of the zeroes of a quadratic polynomial of the form $x^2 + ax + b$ is the negative of the other, then it

a. has no linear term and the constant term is negative.
b. has no linear term and the constant term is positive.
c. can have a linear term but the constant term is negative.
d. can have a linear term but the constant term is positive.
Answer: a

13. Which of the following is not the graph of quadratic polynomial?



Answer: d

14. The number of polynomials having zeroes as 4 and 7 is
a. 2 b. 3 c. 4 d. more than 4
Answer: d

15. A quadratic polynomial, whose zeores are -4 and -5, is
a. x^2-9x + 20 b. x^2 + 9x + 20 c. x^2-9x- 20 d. x^2 + 9x- 20
Answer: b

16. The zeroes of the quadratic polynomial x^2 + 1750x + 175000 are
a. both negative b. one positive and one negative
c. both positive d. both equal
Answer: a

17. The zeroes of the quadratic polynomial x^2 – 15x + 50 are
a. both negative b. one positive and one negative
c. both positive d. both equal
Answer: c

18. The zeroes of the quadratic polynomial $3x^2$ – 48 are
a. both negative b. one positive and one negative
c. both positive d. both equal
Answer: b

19. The zeroes of the quadratic polynomial x^2 – 18x + 81 are
a. both negative b. one positive and one negative
c. both positive and unequal d. both equal and positive
Answer: d

20. The zeroes of the quadratic polynomial x^2 + px + p, p ≠ 0 are
a. both equal b. both cannot be positive

c. both unequal d. both cannot be negative

Answer: b

21. If one of the zeroes of the quadratic polynomial $(p - 1)x^2 + px + 1$ is -3, then the value of p is

(a) $\frac{3}{4}$ (b) $\frac{4}{3}$ (c) $\frac{-3}{4}$ (d) $\frac{-4}{3}$

Answer: b

22. If the zeroes of the quadratic polynomial $Ax^2 + Bx + C$, $C \neq 0$ are equal, then

a. A and B have the same sign b. A and C have the same sign
c. B and C have the same sign d. A and C have opposite signs

Answer: b

23. If $x^3 + 1$ is divided by $x^2 + 5$, then the possible degree of quotient is

a. 0 b. 1 c. 2 d. 3

Answer: b

24. If $x^3 + 11$ is divided by $x^2 - 3$, then the possible degree of remainder is

a. 0 b. 1 c. 2 d. less than 2

Answer: d

25. If $x^4 + 3x^2 + 7$ is divided by $3x + 5$, then the possible degrees of quotient and remainder are:

a. 3, 0 b. 4, 1 c. 3, 1 d. 4, 0

Answer: a

26. If $x^5 + 2x^4 + x + 6$ is divided by g(x), and quotient is $x^2 + 5x + 7$, then the possible degree of g(x) is:

a. 4 b. 2 c. 3 d. 5

Answer: c

27. If $x^5 + 2x^4 + x + 6$ is divided by g(x) and quo-tient is $x^2 + 5x + 7$, then the possible degree of remainder is:

a. less than 1 b. less than 2 c. less than 3 d. less than 4

Answer: c

28. What is the number of zeroes that a linear poly-nomial has/have:

a. 0 b. 1 c. 2 d. 3

Answer: b

29. What is the number(s) of zeroes that a quadratic polynomial has/ have:

a. 0 b. 1 c. 2 d. 3

Answer: c

30. What is the number(s) of zeores that a cubic polynomial has/have:

a. 0 b. 1 c. 2 d. 3

Answer: d

31. If one of the zeroes of the cubic polynomial $x^3 + px^2 + qx + r$ is -1,

then the product of the other two zeroes is

a. p + q + 1 b. p-q- 1 c. q – p + 1 d. q – p – 1

Answer: c

32. If one zero of the quadratic polynomial $x^2 + 3x + b$ is 2, then the value of b is

a. 10 b. -8 c. 9 d. -10

Answer: d

33. If 1 is one of the zeroes of the polynomial $x^2 + x + k$, then the value of k is:

a. 2 b. -2 c. 4 d. -4

Answer: b

MCQS: LINEAR EQUATIONS IN TWO VARIABLES

1. A pair of linear equations $a_1x + b_1y + c_1 = 0$; $a_2x + b_2y + c_2 = 0$ is said to be inconsistent, if

(a) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ (b) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

(c) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (d) $\frac{a_1}{a_2} \neq \frac{c_1}{c_2}$

Answer: b

2. Graphically, the pair of equations 7x – y = 5; 21x – 3y = 10 represents two lines which are

a. intersecting at one point b. parallel

c. intersecting at two points d. coincident

Answer: b

3. The pair of equations 3x – 5y = 7 and – 6x + 10y = 7 have

a. a unique solution b. infinitely many solutions

c. no solution d. two solutions

Answer: c

4. If a pair of linear equations is consistent, then the lines will be

a. always coincident b. parallel

c. always intersecting d. intersecting or coincident

Answer: d

5. The pair of equations x = 0 and x = 5 has

a. no solution b. unique/one solution

c. two solutions d. infinitely many solutions

Answer: c

6. The pair of equation x = – 4 and y = – 5 graphically represents lines which are

a. intersecting at (- 5, – 4) b. intersecting at (- 4, – 5)

c. intersecting at (5, 4) d. intersecting at (4, 5)

Answer: b

7. For what value of k, do the equations $2x - 3y + 10 = 0$ and $3x + ky + 15 = 0$ represent coincident lines

(a) $\left(\frac{-9}{2}\right)$ (b) -11

(c) $\frac{9}{2}$ (d) -7

Answer: a

8. If the lines given by $2x + ky = 1$ and $3x - 5y = 7$ are parallel, then the value of k is

(a) $\frac{-10}{3}$ (b) $\frac{10}{3}$

(c) -13 (d) -7

Answer: a

9. One equation of a pair of dependent linear equations is $2x + 5y = 3$. The second equation will be
   a. $2x + 5y = 6$ b. $3x + 5y = 3$
   c. $-10x - 25y + 15 = 0$ d. $10x + 25y = 15$
   Answer: c

10. If $x = a$, $y = b$ is the solution of the equations $x + y = 5$ and $2x - 3y = 4$, then the values of a and b are respectively
    a. 6, -1 b. 2, 3 c. 1, 4 d. 19/5, 6/5
    Answer: d

11. The graph of $x = -2$ is a line parallel to the
    a. x-axis b. y-axis
    c. both x- and y-axis d. none of these
    Answer: b

12. The graph of $y = 4x$ is a line
    a. parallel to x-axis b. parallel to y-axis
    c. perpendicular to y-axis d. passing through the origin
    Answer: d

13. The graph of $y = 5$ is a line parallel to the
    a. x-axis b. y-axis c. both axis d. none of these
    Answer: a

14. Two equations in two variables taken together are called
    a. linear equations b. quadratic equations
    c. simultaneous equations d. none of these
    Answer: c

15. If am bl then the system of equations $ax + by = c$, $lx + my = n$, has
    a. a unique solution b. no solution

c. infinitely many solutions d. none of these

Answer: a

16. If in the equation x + 2y = 10, the value of y is 6, then the value of x will be

a. -2 b. 2 c. 4 d. 5

Answer: a

17. The graph of the equation 2x + 3y = 5 is a

a. vertical line b. straight line

c. horizontal line d. none of these

Answer: b

18. The value of k, for which equations 3x + 5y = 0 and kx + lOy = 0 has a non-zero solution is

a. 6 b. 0 c. 2 d. 5

Answer: a

19. The value of k, for which the system of equations x + (k + l)y = 5 and (k + l)x + 9y = 8k – 1 has infinitely many solutions is

a. 2 b. 3 c. 4 d. 5

Answer: a

20. The value of k for which the equations (3k + l)x + 3y = 2; (k2 + l)x + (k – 2)y = 5 has no solution, then k is equal to

a. 2 b. 3 c. 1 d. -1

Answer: d

21. The pair of equations x = a and y = b graphically represents lines which are

a. parallel b. intersecting at (b, a)

c. coincident d. intersecting at (a, b)

Answer: d

22. Asha has only ₹1 and ₹2 coins with her. If the total number of coins that she has is 50 and the amount of money with her is ₹75, then the number of ₹1 and ₹2 coins are, respectively

a. 35 and 15 b. 15 and 35 c. 35 and 20 d. 25 and 25

Answer: d

23. The father's age is six times his son's age. Four years hence, the age of the father will be four times his son's age. The present ages of the son and the father are, respectively

a. 4 and 24 b. 5 and 30 c. 6 and 36 d. 3 and 24

Answer: c

24. The sum of the digits of a two-digit number is 9. If 27 is added to it, the digits of the number get reversed. The number is

a. 27 b. 72 c. 45 d. 36

Answer: d

MCQS: QUADRATIC EQUATIONS

1. Which of the following is not a quadratic equation
   a. $x^2 + 3x - 5 = 0$ b. $x^2 + x3 + 2 = 0$
   c. $3 + x + x^2 = 0$ d. $x^2 - 9 = 0$
   Answer: b
   Explanation: Reason: Since it has degree 3.
2. The quadratic equation has degree
   a. 0 b. 1 c. 2 d. 3
   Answer: c
   Explanation: Reason: A quadratic equation has degree 2.
3. The cubic equation has degree
   a. 1 b. 2 c. 3 d. 4
   Answer: c
   Explanation: Reason: A cubic equation has degree 3.
4. A bi-quadratic equation has degree
   a. 1 b. 2 c. 3 d. 4
   Answer: d
   Explanation: Reason: A bi-quadratic equation has degree 4.
5. The polynomial equation $x (x + 1) + 8 = (x + 2) \{x - 2)$ is
   a. linear equation b. quadratic equation
   c. cubic equation d. bi-quadratic equation
   Answer: a
   Explanation: Reason:
   We have $x(x + 1) + 8 = (x + 2) (x - 2)$
   $\Rightarrow x^2 + x + 8 = x^2 - 4$
   $\Rightarrow x^2 + x + 8 - x^2 + 4 = 0$
   $\Rightarrow x + 12 = 0$, which is a linear equation.
6. The equation $(x - 2)^2 + 1 = 2x - 3$ is a
   a. linear equation b. quadratic equation
   c. cubic equation
   d. bi-quadratic equation
   Answer: b
   Explanation: Reason: We have $(x - 2)^2 + 1 = 2x - 3$
   $\Rightarrow x^2 + 4 - 2 \times x \times 2 + 1 = 2x - 3$
   $\Rightarrow x^2 - 4x + 5 - 2x + 3 = 0$
   $\therefore x^2 - 6x + 8 = 0$, which is a quadratic equation.
7. The roots of the quadratic equation $6x^2 - x - 2 = 0$ are
   (a) $\frac{2}{3}, \frac{1}{2}$ **(b)** $-\frac{2}{3}, \frac{1}{2}$
   (c) $\frac{2}{3}, -\frac{1}{2}$ **(d)** $-\frac{2}{3}, -\frac{1}{2}$

Answer: c

Explanation: Reason: We have $6\times2 - x - 2 = 0$

$\Rightarrow 6x^2 + 3x-4x-2 = 0$

$\Rightarrow 3x(2x + 1) -2(2x + 1) = 0$

$\Rightarrow (2x + 1)(3x - 2) = 0$

$\Rightarrow 2x + 1 = 0$ or $3x - 2 = 0$

$\therefore x = -12, x = 23$

8. The quadratic equation whose roots are 1 and

a. $2x^2 + x - 1 = 0$ b. $2x^2 - x - 1 = 0$

c. $2x^2 + x + 1 = 0$ d. $2x^2 - x + 1 = 0$

Answer: b

Explanation: Reason: Required quadratic equation is

$$x^2 - \left(1-\frac{1}{2}\right)x + \left(1\times\frac{-1}{2}\right) = 0 \qquad \Rightarrow x^2 - \left(\frac{1}{2}x\right) - \frac{1}{2} = 0$$

$\therefore 2x^2 - x - 1 = 0$

9. The quadratic equation whose one rational root is $3 + \sqrt{2}$ is

a. $x^2 - 7x + 5 = 0$ b. $x^2 + 7x + 6 = 0$

c. $x^2 - 7x + 6 = 0$ d. $x^2 - 6x + 7 = 0$

Answer: d

Explanation: Reason: $\because$ one root is $3 + \sqrt{2}$

$\therefore$ other root is $3 - \sqrt{2}$

$\therefore$ Sum of roots $= 3 + \sqrt{2} + 3 - \sqrt{2} = 6$

Product of roots $= (3 + \sqrt{2})(3 - \sqrt{2}) = (3)^2 - (\sqrt{2})^2 = 9 - 2 = 7$

$\therefore$ Required quadratic equation is $x^2 - 6x + 7 = 0$

10. The equation $2x^2 + kx + 3 = 0$ has two equal roots, then the value of k is

a. $\pm\sqrt{6}$ b. ± 4 c. $\pm3\sqrt{2}$ d. $\pm2\sqrt{6}$

Answer: d

Explanation: Reason: Here $a = 2, b = k, c = 3$

Since the equation has two equal roots

$\therefore b^2 - 4AC = 0$

$\Rightarrow (k)^2 - 4 \times 2 \times 3 = 0$

$\Rightarrow k^2 = 24$

$\Rightarrow k = \pm \sqrt{24}$

$\therefore k = \pm \pm4\times6---\sqrt{} = \pm 2\sqrt{6}$

11. The roots of the quadratic equation $x+1x=3, x \neq 0$ are.

(a) $3+\sqrt{5}, 3-\sqrt{5}$ (b) $2+\sqrt{5}, 2-\sqrt{5}$

(c) $\frac{3+\sqrt{5}}{2}, \frac{3-\sqrt{5}}{2}$ (d) $\frac{3+\sqrt{3}}{2}, \frac{3-\sqrt{3}}{2}$

Answer: c

Explanation: Reason: We have x+1x=3

⇒ x2+1x=3

⇒ $x^2 + 1 = 3x$

On comparing with $ax^2 + bx + c = 0$

∴ a = 1, b = – 3, c = 1

⇒ $D = b^2 – 4ac = (-3)^2 – 4 \times (1) \times (1) = 9 – 4 = 5$

12. The roots of the quadratic equation $2x^2 – 2\sqrt{2}x + 1 = 0$ are

(a) $\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}$ (b) $\sqrt{2}, \sqrt{2}$

(c) $\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}$ (d) $\sqrt{2}, \frac{1}{\sqrt{2}}$

Answer: c

Explanation: Reason: Here $a = 2, b = -2\sqrt{2}, c = 1$

∴ $D = b^2 – 4ac = (-2\sqrt{2})^2 – 4 \times 2 \times 1 = 8 – 8 = 0$

$$x = \frac{-b \pm \sqrt{D}}{2a} = \frac{-(-2\sqrt{2}) \pm 0}{2 \times 2} = \frac{2\sqrt{2}}{4} = \frac{\sqrt{2}}{2} = \frac{1}{\sqrt{2}}$$

$$\therefore x = \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}$$

13. The sum of the roots of the quadratic equation 3×2 – 9x + 5 = 0 is

a. 3 b. 6 c. -3 d. 2

Answer: c

Explanation: Reason: Here a = 3, b = -9, c = 5

∴ Sum of the roots =−ba=−(−9)3=3

14. If the roots of ax2 + bx + c = 0 are in the ratio m : n, then

a. $mna^2 = (m + n)\, c^2$ b. $mnb^2 = (m + n)\, ac$

c. $mn\, b^2 = (m + n)^2\, ac$ d. $mnb^2 = (m – n)^2\, ac$

Answer: c

Explanation:

(c); **Reason:** We have $\frac{\alpha}{\beta} = \frac{m}{n}$ $\Rightarrow \frac{\alpha}{m} = \frac{\beta}{n} \Rightarrow \frac{\alpha+\beta}{m+n} = \sqrt{\frac{\alpha\beta}{mn}}$ by Ratio proportion.

$\therefore mn(\alpha + \beta)^2 = \alpha\beta(m + n)^2$ $\Rightarrow mn\left(\frac{-b}{a}\right)^2 = (m + n)^2 \frac{c}{a}$ $\therefore mn\, b^2 = (m + n)^2\, ac$

15. If one root of the equation $x^2 + px + 12 = 0$ is 4, while the equation $x^2 + px + q = 0$ has equal roots, the value of q is

(a) $\frac{49}{4}$ (b) $\frac{4}{49}$

(c) 4 (d) 49

Answer: a

Explanation: Reason: Since 4 is a root of $x^2 + px + 12 = 0$

$\therefore (4)^2 + p(4) + 12 = 0$

$\Rightarrow p = -7$

Also the roots of $x^2 + px + q = 0$ are equal, we have $p^2 - 4 \times 1 \times q = 0$

$\Rightarrow (-7)^2 - 4q = 0$

Undefined control sequence \therefore

16. a and p are the roots of $4x^2 + 3x + 7 = 0$, then the value of $1\alpha+1\beta$ is

(a) $\frac{-3}{4}$ (b) $\frac{-3}{7}$

(c) $\frac{3}{7}$ (d) $\frac{7}{4}$

(b); ***Reason:*** Here $\alpha + \beta = \frac{-3}{4}$ and $\alpha\beta = \frac{7}{4}$ $\therefore \frac{1}{\alpha}+\frac{1}{\beta}=\frac{\beta+\alpha}{\alpha\beta}=\frac{\frac{-3}{4}}{\frac{7}{4}}=-\frac{3}{7}$

17. If a, p are the roots of the equation $(x - a)(x - b) + c = 0$, then the roots of the equation $(x - a)(x - P) = c$ are

a. a, b b. a, c c. b, c d. none of these

Answer: a

Explanation: Reason: By given condition, $(x - a)(x - b) + c = (x - \alpha)(x - \beta)$

$\Rightarrow (x - \alpha)(x - \beta) - c = (x - a)(x - b)$

This shows that roots of $(x - \alpha)(x - \beta) - c$ are a and b

18. Mohan and Sohan solve an equation. In solving Mohan commits a mistake in constant term and finds the roots 8 and 2. Sohan commits a mistake in the coefficient of x. The correct roots are

a. 9,1 b. -9,1 c. 9, -1 d. -9, -1

Answer: a

Explanation: Reason: Correct sum = 8 + 2 = 10 from Mohan

Correct product = -9 x -1 = 9 from Sohan

$\therefore x^2 - (10)x + 9 = 0$

$\Rightarrow x^2 - 10x + 9 = 0$

$\Rightarrow x^2 - 9x - x + 9$

$\Rightarrow x(x - 9) - 1(x - 9) = 0$

$\Rightarrow (x-9)(x-l) = 0$.

$\Rightarrow$ Correct roots are 9 and 1.

19. If a and p are the roots of the equation $2x^2 - 3x - 6 = 0$. The equation whose roots are 1α and 1β is

a. $6x^2 - 3x + 2 = 0$ b. $6x^2 + 3x - 2 = 0$

c. $6x^2 - 3x - 2 = 0$ d. $x^2 + 3x-2 = 0$

Answer: b
Explanation:

(b); **Reason**: Here $a = 2, b = -3, c = -6$

$\alpha + \beta = \frac{-b}{a} = \frac{3}{2}$ and $\alpha\beta = \frac{c}{a} = \frac{-6}{2} = -3$

$\therefore s = \frac{1}{\alpha} + \frac{1}{\beta} = \frac{\beta+\alpha}{\alpha\beta} = \frac{\frac{3}{2}}{-3} = \frac{-1}{2}$

$p = \frac{1}{\alpha}, \frac{1}{\beta} = \frac{1}{\alpha\beta} = \frac{1}{-3}$

The equation is $x^2 - (s)\,x + p = 0$

$\Rightarrow x^2 - \left(-\frac{1}{2}\right)x + \left(-\frac{1}{3}\right) \quad \therefore 6x^2 + 3x - 2 = 0$

20. If the roots of px2 + qx + 2 = 0 are reciprocal of each other, then
a. P = 0 b. p = -2 c. p = ±2 d. p = 2
Answer: d
Explanation: Reason: here α = 1β
∴ αβ = 1
⇒ 2p = 1
∴ p = 2

21. If one root of the quadratic equation $2x^2 + kx - 6 = 0$ is 2, the value of k is
a. 1 b. -1 c. 2 d. -2
Answer: b
Explanation: Reason: Scice x = 2 is a root of the equation $2x^2 + kx - 6 = 0$
$\therefore 2(2)^2 + k(2) - 6 = 0$
$\Rightarrow 8 + 2k - 6 = 0$
$\Rightarrow 2k = -2$

22. $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}, a + b \neq 0$ is
a. a, b b. -a, b c. a, -b d. -a, -b
Answer: d
Explanation:

(d); **Reason**: We have $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$

$\Rightarrow \frac{1}{a+b+x} - \frac{1}{x} = \frac{1}{a} + \frac{1}{b}$

$\Rightarrow \frac{x-a-b-x}{x(a+b+x)} = \frac{a+b}{ab}$

$\Rightarrow \frac{-(a+b)}{x(a+b+x)} = \frac{a+b}{ab}$

$\Rightarrow ax + bx + x^2 = -ab$

$\Rightarrow x^2 + ax + bx + ab = 0$

$\Rightarrow x(x + a) + b(x + a) = 0$

$\Rightarrow (x + a)(x + b) = 0$

$\therefore x = -a, x = -b$

23. The roots of the equation $7x^2 + x - 1 = 0$ are
a. real and distinct b. real and equal
c. not real d. none of these

Answer: a

Explanation: Reason: Here a = 2, b = 1, c = -1

$\therefore D = b^2 - 4ac = (1)^2 - 4 \times 2 \times (-1) = 1 + 8 = 9 > 0$

$\therefore$ Roots of the given equation are real and distinct.

24. The equation $12x^2 + 4kx + 3 = 0$ has real and equal roots, if

a. $k = \pm 3$ b. $k = \pm 9$ c. $k = 4$ d. $k = \pm 2$

Answer: a

Explanation: Reason: Here a = 12, b = 4k, c = 3

Since the given equation has real and equal roots

$\therefore b^2 - 4ac = 0$

$\Rightarrow (4k)^2 - 4 \times 12 \times 3 = 0$

$\Rightarrow 16k^2 - 144 = 0$

$\Rightarrow k^2 = 9$

$\Rightarrow k = \pm 3$

25. If -5 is a root of the quadratic equation $2x^2 + px - 15 = 0$, then

a. p = 3 b. p = 5 c. p = 7 d. p = 1

Answer: c

Explanation: Reason: Since – 5 is a root of the equation $2x^2 + px -15 = 0$

$\therefore 2(-5)^2 + p(-5) - 15 = 0$

$\Rightarrow 50 - 5p - 15 = 0$

$\Rightarrow 5p = 35$

$\Rightarrow p = 7$

26. If the roots of the equations $ax^2 + 2bx + c = 0$ and $bx^2 - 2\sqrt{ac}\,x + b = 0$ are simultaneously real, then

a. b = ac b. b2 = ac

c. a2 = be d. c2 = ab

Answer: b

Explanation: Reason: Given equations have real roots, then

$\mathbf{D_1} \geq 0$ and $D_2 \geq 0$

$(2b)^2 - 4ac > 0$ and $(-2\sqrt{ac})^2 - 4b.b \geq 0$

$4b^2 - 4ac \geq 0$ and $4ac - 4b2 > 0$

$\mathbf{b^2 \geq ac}$ **and** $\mathbf{ac \geq b^2}$

$\Rightarrow b^2 = ac$

27. The roots of the equation $(b - c)x^2 + (c - a)x + (a - b) = 0$ are equal, then

a. 2a = b + c b. 2c = a + b c. b = a + c d. 2b = a + c

Answer: d

Explanation: Reason: Since roots are equal

$\therefore D = 0 \Rightarrow b^2 - 4ac = 0$

$\Rightarrow (c - a)^2 - 4(b - c)(a - b) = 0$

$\Rightarrow c^2 - b^2 - 2ac - 4(ab - b^2 + bc) = 0 \Rightarrow c + a - 2b = 0 \Rightarrow c + a = 2b$

$\Rightarrow c^2 + a^2 - 2ca - 4ab + 4b^2 + 4ac - 4bc = 0$
$\Rightarrow c^2 + a^2 + 4b^2 + 2ca - 4ab - 4bc = 0$
$\Rightarrow (c + a - 2b)^2 = 0$
$\Rightarrow c + a - 2b = 0$
$\Rightarrow c + a = 2b$

28. A chess board contains 64 equal squares and the area of each square is 6.25 cm^2. A border round the board is 2 cm wide. The length of the side of the chess board is
a. 8 cm b. 12 cm c. 24 cm d. 36 cm
Answer: c

29. One year ago, a man was 8 times as old as his son. Now his age is equal to the square of his son's age. Their present ages are
a. 7 years, 49 years b. 5 years, 25 years
c. 1 years, 50 years d. 6 years, 49 years
Answer: a

30. The sum of the squares of two consecutive natural numbers is 313. The numbers are
a. 12, 13 b. 13,14 c. 11,12 d. 14,15
Answer: a

MCQS: ARITHMETIC PROGRESSIONS

1. The n^{th} term of an A.P. is given by $a_n = 3 + 4n$. The common difference is
a. 7 b. 3 c. 4 d. 1
Answer: c
Explanation: Reason: We have an = 3 + 4n
$\therefore a_{n+1} = 3 + 4(n + 1) = 7 + 4n$
$\therefore d = a_{n+1} - a_n$
$= (7 + 4n) - (3 + 4n)$
$= 7 - 3$
$= 4$

2. If p, q, r and s are in A.P. then r – q is
a. s – p b. s – q c. s – r d. none of these
Answer: c
Explanation: Reason: Since p, q, r, s are in A.P.
$\therefore (q - p) = (r - q) = (s - r) = d$ (common difference)

3. If the sum of three numbers in an A.P. is 9 and their product is 24, then numbers are
a. 2, 4, 6 b. 1, 5, 3 c. 2, 8, 4 d. 2, 3, 4
Answer: d
Explanation: Reason: Let three numbers be a – d, a, a + d
$\therefore$ a – d +a + a + d = 9

$\Rightarrow 3a = 9$
$\Rightarrow a = 3$
Also $(a - d) . a . (a + d) = 24$
$\Rightarrow (3 - d) .3(3 + d) = 24$
$\Rightarrow 9 - d^2 = 8$
$\Rightarrow d^2 = 9 - 8 = 1$
$\therefore d = \pm 1$
Hence numbers are 2, 3, 4 or 4, 3, 2

4. The $(n - 1)^{th}$ term of an A.P. is given by 7,12,17, 22,… is
a. 5n + 2 b. 5n + 3 c. 5n – 5 d. 5n – 3
Answer: d
Explanation: Reason: Here a = 7, d = 12-7 = 5
$\therefore a_{n-1} = a + [(n - 1) - l]d = 7 + [(n - 1) -1] (5) = 7 + (n - 2)5 = 7 + 5n - 10 = 5M - 3$

5. The n^{th} term of an A.P. 5, 2, -1, -4, -7 … is
a. 2n + 5 b. 2n – 5 c. 8 – 3n d. 3n – 8
Answer: c
Explanation: Reason: Here a = 5, d = 2 – 5 = -3
$a_n = a + (n - 1)d = 5 + (n - 1) (-3) = 5 - 3n + 3 = 8 - 3n$

6. The 10^{th} term from the end of the A.P. -5, -10, -15,…, -1000 is
a. -955 b. -945 c. -950 d. -965
Answer: a
Explanation: Reason: Here l = -1000, d = -10 – (-5) = -10 + 5 = – 5
$\therefore 10^{th}$ term from the end = l – (n – 1)d = -1000 – (10 – 1) (-5) = -1000 + 45 = -955

7. Find the sum of 12 terms of an A.P. whose nth term is given by a_n = 3n + 4
a. 262 b. 272 c. 282 d. 292
Answer: a
Explanation: Reason: Here $a_n = 3n + 4$
$\therefore a_1 = 7, a_2 - 10, a_3 = 13$
$\therefore a= 7, d = 10 - 7 = 3$
$\therefore S_{12} = 122[2 \times 7 + (12 - 1) \times 3] = 6[14 + 33] = 6 \times 47 = 282$

8. The sum of all two digit odd numbers is
a. 2575 b. 2475 c. 2524 d. 2425
Answer: b
Explanation: Reason: All two digit odd numbers are 11,13,15,… 99, which are in A.P.
Since there are 90 two digit numbers of which 45 numbers are odd and 45 numbers are even
$\therefore$ Sum = $452[11 + 99] = 452 \times 110 = 45 \times 55 = 2475$

9. The sum of first n odd natural numbers is

a. $2n^2$ b. $2n + 1$ c. $2n - 1$ d. n^2

Answer: d

Explanation: Reason: Required Sum = 1 + 3 + 5 + … + upto n terms.

Here a = 1, d = 3 – 1 = 2

Sum = n2[2 × 1 + (n – 1) × 2] = n2[2 + 2n – 2] = n2 × 2n = n^2Reason: All two digit odd numbers are 11,13,15,… 99, which are in A.P.

Since there are 90 two digit numbers of which 45 numbers are odd and 45 numbers are even

∴ Sum = 452[11 + 99] = 452 × 110 = 45 × 55 = 2475

10. If $(p + q)^{th}$ term of an A.P. is m and $(p - q)^{tn}$ term is n, then pth term is

(a) mn (b) $\sqrt{mn}$

(c) $\frac{1}{2}(m - n)$ (d) $\frac{1}{2}(m + n)$

Answer: d

Explanation: Reason: Let a is first term and d is common difference

∴ $a_{p+q} = m$

$a_{p-q} = n$

⇒ a + (p + q – 1)d = m = …(i)

⇒ a + (p – q – 1)d = m = …(ii)

On adding (i) and (if), we get

2a + (2p – 2)d = m + n

⇒ a + (p -1)d = m+n2 …[Dividing by 2

∴ a_n = m+n2

11. If a, b, c are in A.P. then a−bb−c is equal to

(a) 1 (b) $\frac{b}{a}$

(c) $\frac{a}{c}$ (d) $\frac{c}{a}$

Answer: a

Explanation: Reason: Since a, b, c are in A.P.

∴ b – a = c – b

⇒ b−ac−b = 1

⇒ a−bb−c = 1

12. The number of multiples lie between n and n^2 which are divisible by n is

a. n + 1 b. n c. n – 1 d. n – 2

Answer: d

Explanation: Reason: Multiples of n from 1 to n^2 are $n \times 1, n \times 2, n \times 3, \ldots, m \times n$

$\therefore$ There are n numbers

Thus, the number of mutiples of n which lie between n and n^2 is $(n - 2)$ leaving first and last in the given list: Total numbers are $(n - 2)$.

13. If a, b, c, d, e are in A.P., then the value of $a - 4b + 6c - 4d + e$ is
a. 0 b. 1 c. -1. d. 2
Answer: a
Explanation: Reason: Let common difference of A.P. be x
$\therefore b = a + x, c = a + 2x, d = a + 3x$ and $e = a + 4x$
Given equation n-4b + 6c-4d + c
$= a - 4(a + x) + 6(A + 2r) - 4(n + 3x) + (o + 4.v)$
$= a - 4a - 4x + 6a + 12x - 4a - 12x + a + 4x = 8a - 8a + 16x - 16x = 0$

14. The next term of the sequence

$\frac{1}{1+\sqrt{x}}, \frac{1}{1-x}, \frac{1}{1-\sqrt{x}}$ **is** $(x \neq 1)$.

(a) $1+2\sqrt{x}$ (b) $1-2\sqrt{x}$

(c) $\frac{1-2\sqrt{x}}{1-x}$ (d) $\frac{1+2\sqrt{x}}{1-x}$

Answer: a
Explanation:

(d); ***Reason***: Given sequence is $\frac{1}{1+\sqrt{x}}, \frac{1}{1-x}, \frac{1}{1-\sqrt{x}} = \frac{1-\sqrt{x}}{1-x}, \frac{1}{1-x}, \frac{1+\sqrt{x}}{1-x}$

We have $\frac{1}{1-x} - \frac{1-\sqrt{x}}{1-x} = \frac{\sqrt{x}}{1-x}$ and $\frac{1+\sqrt{x}}{1-x} - \frac{1}{1-x} = \frac{\sqrt{x}}{1-x}$

$\therefore$ Given sequence is an A.P. with common difference $\frac{\sqrt{x}}{1-x}$.

Hence, the next term $(t_4) = \frac{1+\sqrt{x}}{1-x} + \frac{\sqrt{x}}{1-x} = \frac{1+2\sqrt{x}}{1-x}$

15. n^{th} term of the sequence a, a + d, a + 2d,… is
a. a + nd b. a – (n – 1)d c. a + (n – 1)d d. n + nd
Answer: a
Explanation: Reason: an = a + (n – 1)d

16. The 10th term from the end of the A.P. 4, 9,14, …, 254 is
a. 209 b. 205 c. 214 d. 213
Answer: a
Explanation: Reason**: Here l – 254, d = 9-4 = 5**
$\therefore 10^{th}$ term from the end = l – (10 – 1)d = 254 -9d = 254 = 9(5) =

254 – 45 = 209

17. If 2x, x + 10, 3x + 2 are in A.P., then x is equal to
a. 0 b. 2 c. 4 d. 6
Answer: d
Explanation: Reason: Since 2x, x + 10 and 3x + 2 are in A.P.
∴ 2(x + 10) = 2x + (3x + 2)
⇒ 2x + 20 – 5x + 2
⇒ 2x – 5x = 2 – 20
⇒ 3x = 18
⇒ x = 6

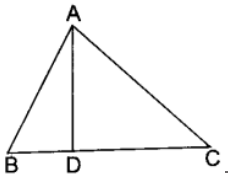
18. The sum of all odd integers between 2 and 100 divisible by 3 is
a. 17 b. 867 c. 876 d. 786
Answer: b
Explanation: Reason: The numbers are 3, 9,15, 21, …, 99
Here a = 3, d = 6 and a_n = 99
∴ a_n = a + (n – 1)d
⇒ 99 = 3 + (n – 1) x 6
⇒ 99 = 3 + 6n – 6
⇒ 6n = 102
⇒ n = 17
Required Sum = n2[a + a_n] = 172[3 + 99] = 172 × 102 = 867

19. If the numbers a, b, c, d, e form an A.P., then the value of a – 4b + 6c – 4d + e is
a. 0 b. 1 c. -1 d. 2
Answer: a
Explanation: Reason: Let x be the common difference of the given AP
∴ b = a + x, c = a + 2x, d = a + 3x and e = a + 4x
∴ a – 4b + 6c – 4d + e = a – 4 (a + x) + 6(a + 2x) – 4(a + 3x) + (a + 4x)
= a – 4a – 4x + 6a + 12x – 4a – 12x + a + 4x = 8a – 8a + 16x – 16x
= 0

20. If 7 times the 7th term of an A.P. is equal to 11 times its 11th term, then 18th term is
a. 18 b. 9 c. 77 d. 0
Answer: d
Explanation: Reason: We have $7a_7 = 11a_{11}$
⇒ 7[a + (7 – 1)d] = 11[a + (11 – 1)d]
⇒ 7(a + 6d) = 11(a + 10d)
⇒ 7a + 42d = 11a + 110d
⇒ 4a = -68d
⇒ a = -17d
∴ a_{18} = a + (18 – 1)d = a + 17d = -17d + 17d = 0

MCQS: TRIANGLES

1. O is a point on side PQ of a APQR such that PO = QO = RO, then
   a. $RS^2 = PR \times QR$ b. $PR^2 + QR^2 = PQ^2$
   c. $QR^2 = QO^2 + RO^2$ d. $PO^2 + RO^2 = PR^2$
   Answer: b
2. In ABC, DE || AB. If CD = 3 cm, EC = 4 cm, BE = 6 cm, then DA is equal to
   a. 7.5 cm b. 3 cm c. 4.5 cm d. 6 cm
   Answer: c
3. AABC is an equilateral A of side a. Its area will be…
   (a) $\frac{\sqrt{3}}{4}a^2$ **(b)** $\frac{\sqrt{3}}{4}a$ **(c)** $\frac{\sqrt{3}}{2}a^2$ **(d)** $\frac{\sqrt{3}}{2}a$
   Answer: a
4. In a square of side 10 cm, its diagonal = …
   a. 15 cm b. $10\sqrt{2}$ cm c. 20 cm d. 12 cm
   Answer: b
5. In a rectangle Length = 8 cm, Breadth = 6 cm. Then its diagonal = …
   a. 9 cm b. 14 cm c. 10 cm d. 12 cm
   Answer: c
6. In a rhombus if $d_1 = 16$ cm, $d_2 = 12$ cm, its area will be…
   a. 16×12 cm² b. 96 cm² c. 8×6 cm² d. 144 cm²
   Answer: b
7. In a rhombus if $d_1 = 16$ cm, $d_2 = 12$ cm, then the length of the side of the rhombus is
   a. 8 cm b. 9 cm c. 10 cm d. 12 cm
   Answer: c
8. If in two As ABC and DEF, ABDF=BCFE=CAED, then
   a. ΔABC ~ ΔDEF b. ΔABC ~ ΔEDF
   c. ΔABC ~ ΔEFD d. ΔABC ~ ΔDFE
   Answer: d
9. It is given that ΔABC ~ ΔDEF and BCEF=15. Then Undefined control sequence \operatorname is equal to
   a. 5 b. 25 c. 125 d. 15
   Answer: b
10. In ∠BAC = 90° and AD ⊥ BC. A Then



(a) $BD.CD = BC^2$
(б) $AB.AC = BC^2$
c. $BD.CD = AD^2$ d. $AB.AC = AD^2$
Answer: c

11. D and E are respectively the points on the sides AB and AC of a triangle ABC such that AD = 2 cm, BD = 3 cm, BC = 7.5 cm and DE || BC. Then, length of DE (in cm) is
a. 2.5 b. 3 c. 5 d. 6
Answer: b

12. If $\Delta ABC \sim \Delta DEF$ and ΔABC is not similar to ΔDEF then which of the following is not true?
a. BC.EF = AC.FD b. AB.ED = AC.DE
c. BC.DE = AB.EE d. BC.DE = AB.FD
Answer: c

13. If in two triangles DEF and PQR, ZD = ZQ and ZR = ZE, then which of the following is not true?

(a) $\frac{EF}{PR} = \frac{DF}{PQ}$ (b) $\frac{DE}{QR} = \frac{EF}{RP}$

(c) $\frac{DE}{QR} = \frac{DF}{PQ}$ (d) $\frac{EF}{RP} = \frac{DE}{QR}$

Answer: b

14. If $\Delta ABC \sim \Delta PQR$, BCQR=13 then Undefined control sequence \ operatorname is
a. 9 b. 3 c. 1/3 d. 1/9
Answer: a

15. If $\Delta ABC \sim \Delta QRP$, Undefined control sequence \operatorname, AB = 18 cm and BC = 15 cm, then PR is equal to
a. 10 cm b. 12 cm c. 203cm d. 8 cm
Answer: a

16. If in triangles ABC and DEF,ABDE=BCFD , then they will be similar, if
a. $\angle B = \angle E$ b. $\angle A = \angle D$ c. $\angle B = \angle D$ d. $\angle A = \angle F$
Answer: c

MCQS: COORDINATE GEOMETRY

1. The distance of the point P(2, 3) from the x-axis is
a. 2 b. 3 c. 1 d. 5
Answer: b
Explanation: Reason: The distance from x-axis is equal to its ordinate i.e., 3

2. The distance between the point P(1, 4) and Q(4, 0) is
   a. 4 b. 5 c. 6 d. $3\sqrt{3}$
   Answer: b
   Explanation: Reason: The required distance = (4−1)2+(0−4)2−−−−−−−−−−−−−−−√=9+16−−−−−√=25−−√=5

3. The points (-5, 1), (1, p) and (4, -2) are collinear if the value of p is
   a. 3 b. 2 c. 1 d. -1
   Answer/ Explanation: Reason: The points are collinear if area of Δ = 0
   = 12[-5(p + 2) +l(-2 -1) + 4(1 – p)] – 0
   ⇒ -5 p -10-3 + 4-4p = 0
   ⇒ -9p = +9
   ∴ p = -1

4. The area of the triangle ABC with the vertices A(-5, 7), B(-4, -5) and C(4, 5) is
   a. 63 b. 35 c. 53 d. 36
   Answer: c
   Explanation: Reason: Area of $\Delta ABC = 12\ [x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)]$
   $= 12[-5(-5 - 5) -4(5 - 7) + 4(7 - (-5))] = 12[-5(-10) -4(-2) + 4(12)]$
   $= 12[50 + 8 + 48] = 12 \times 106 = 53$ sq. units

5. The distance of the point (α, β) from the origin is
   a. α + β b. $\alpha^2 + \beta^2$ c. |α| + |β| d. α2+β2−√
   Answer/ Explanation: Reason: Distance of (α, β) from origin (0, 0) = (α−0)2+(β−0)2−−−−−−−−−−−−−−−−−√=α2+β2−−−−−−√

6. The area of the triangle whose vertices are A(1, 2), B(-2, 3) and C(-3, -4) is
   a. 11 b. 22 c. 33 d. 21
   Answer: a
   Explanation: Reason: Required area= 12[1(3 + 4) -2(-4 – 2) -3(2 – 3)]
   = 12[7 + 12 + 3]
   = 12 × 22 = 11

7. The line segment joining the points (3, -1) and (-6, 5) is trisected. The coordinates of point of trisection are
   a. (3, 3) b. (- 3, 3) c. (3, – 3) d. (-3,-3)
   Answer: b
   Explanation: Reason: Since the line segment AB is trisected

   ∴ PB : BQ = 2 : 1
   ∴ Coordinates of B are $= \left(\frac{2(-6)+1(3)}{2+1}, \frac{2(5)+1(-1)}{2+1}\right)$

   $= \left(\frac{-12+3}{3}, \frac{10-1}{3}\right) = \left(-\frac{9}{3}, \frac{9}{3}\right) = (-3, 3)$

8. The line $3x + y - 9 = 0$ divides the line joining the points (1, 3) and (2, 7) internally in the ratio
a. 3 : 4 b. 3 : 2 c. 2 : 3 d. 4 : 3
Answer: a
Explanation: Reason: Let the line $3x + y - 9 = 0$ divide the line segment joining A(l, 3) ad B(2, 7) in the ratio K : 1 at point C.

The coordinates of C are $\left(\frac{2K+1}{K+1}\right)+\frac{7K+3}{K+1}$
But the point C lies on the line $3x + y - 9 = 0$
$\therefore 3\left(\frac{2K+1}{K+1}\right)+\frac{7K+3}{K+1} - 9 = 0 \Rightarrow 6K + 3 + 7K + 3 - 9 - 9K = 0$
$\Rightarrow 4K - 3 = 0 \Rightarrow K = \frac{3}{4}$ $\therefore$ Required ratio = 3 : 4

9. The distance between A (a + b, a – b) and B(a – b, -a – b) is
Answer: c
Explanation:

Reason: $AB = \sqrt{(a-b-a-b)^2+(-a-b-a+b)^2} = \sqrt{(-2b)^2+(-2a)^2}$
$= \sqrt{4b^2+4a^2} = 2\sqrt{a^2+b^2}$

10. If (a/3, 4) is the mid-point of the segment joining the points P(-6, 5) and R(-2, 3), then the value of 'a' is
a. 12 b. -6 c. -12 d. -4
Answer: c
Explanation:

Reason: mid-point $= \left(\frac{-6-2}{2}, \frac{5+3}{2}\right) \Rightarrow \left(\frac{a}{3}, 4\right) = (-4, 4) \therefore \frac{a}{3} = -4 \Rightarrow a = -12$

11. If the distance between the points (x, -1) and (3, 2) is 5, then the value of x is
a. -7 or -1 b. -7 or 1 c. 7 or 1 d. 7 or -1
Answer/ Explanation: Reason: We have $(x-3)2+(-1-2)2-----\sqrt{}=5$
$\Rightarrow (x - 3)^2 + 9 = 25$
$\Rightarrow x^2 - 6x + 9 + 9 = 25$
$\Rightarrow x^2 - 6x - 7 = 0$
$\Rightarrow (x - 7)(x + 1) = 0$
$\Rightarrow x = 7$ or $x = -1$

12. The points (1,1), (-2, 7) and (3, -3) are
a. vertices of an equilateral triangle b. collinear
c. vertices of an isosceles triangled. none of these

Answer: b

Explanation: Reason: Let A(1, 1), B(-2, 7) and C(3, 3) are the given points, Then, we have

$$AB = \sqrt{(-2-1)^2+(7-1)^2} = \sqrt{9+36} = \sqrt{45} = 3\sqrt{5}$$

$$BC = \sqrt{(3+2)^2+(-3-7)^2} = \sqrt{25+100} = \sqrt{125} = 5\sqrt{5}$$

and $AC = \sqrt{(3-1)^2+(-3-1)^2} = \sqrt{4+16} = \sqrt{20} = 2\sqrt{5}$

Clearly BC = AB + AC. $\therefore$ A, B, C are collinear.

13. The coordinates of the centroid of a triangle whose vertices are (0, 6), (8,12) and (8, 0) is

a. (4, 6) b. (16, 6) c. (8, 6) d. (16/3, 6)

Answer/ Explanation: Reason: The co-ordinates of the centroid of the triangle is

$$\left(\frac{0+8+8}{3}, \frac{6+12+0}{3}\right) = \left(\frac{16}{3}, \frac{18}{3}\right) = \left(\frac{16}{3}, 6\right)$$

14. Two vertices of a triangle are (3, – 5) and (- 7,4). If its centroid is (2, -1), then the third vertex is

a. (10, 2) b. (-10,2) c. (10,-2) d. (-10,-2)

Answer: c

Explanation: Reason: Let the coordinates of the third vertex be (x, y)

then $\left(\frac{x+3-7}{3}, \frac{y-5+4}{3}\right) = (2, -1)$ $\Rightarrow \left(\frac{x-4}{3}, \frac{y-1}{3}\right) = (2, -1)$

$\Rightarrow \frac{x-4}{3} = 2, \frac{y-1}{3} = -1$ $\Rightarrow x - 4 = 6, y - 1 = -3$ $\Rightarrow x = 10, y = -2$

$\therefore$ Coordinates of third vertex is (10, –2)

15. The area of the triangle formed by the points A(-1.5, 3), B(6, -2) and C(-3, 4) is

a. 0 b. 1 c. 2 d. 3/2

Answer: a

Explanation: Reason: Area of $\Delta ABC = 12\ [-1.5(-2 - 4) + 6(4 - 3) + (-3)\ (3 + 2)] = 12\ [9 + 6 - 15] = 0$. It is a straight line.

16. If the points P(1, 2), B(0, 0) and C(a, b) are collinear, then

a. 2a = b b. a = -b c. a = 2b d. a = b

Answer: a

Explanation: Reason: Area of $\Delta PBC = 0$

$\Rightarrow 12[1(0 - b) + 0(6 - 1) + a(2 - 0)] = 0$

$\Rightarrow 12[-6 + 2a] = 0$
$\Rightarrow -b + 2a = 0$
$\therefore 2a = b$

MCQS: INTRODUCTION TO TRIGONOMETRY

1. The value of cos 0°. cos 1°. cos 2°. cos 3°… cos 89° cos 90° is
   a. 1 b. -1 c. 0d. 12√
   Answer: c
2. If x tan 45° sin 30° = cos 30° tan 30°, then x is equal to
   a. √3 b. 12 c. 12√ d. 1
   Answer: d
3. If x and y are complementary angles, then
   a. sin x = sin y b. tan x = tan y
   c. cos x = cos y d. sec x = cosec y
   Answer: d
4. sin 2B = 2 sin B is true when B is equal to
   a. 90° b. 60° c. 30° d. 0°
   Answer: d
5. If A, B and C are interior angles of a ΔABC then cos(B+C2) is equal to
   (a) $\sin \frac{A}{2}$ (b) $-\sin \frac{A}{2}$
   (c) $\cos \frac{A}{2}$ (d) $-\cos \frac{A}{2}$
   Answer: a
6. If A and (2A – 45°) are acute angles such that sin A = cos (2A – 45°), then tan A is equal to
   a. 0 b. 13√ c. 1 d. √3
   Answer: c
7. If y sin 45° cos 45° = tan2 45° – cos2 30°, then y = …
   a. –12 b. 12 c. -2 d. 2
   Answer: b
8. If $\sin \theta + \sin^2 \theta = 1$, then $\cos^2 \theta + \cos^4 \theta =$.
   a. -1 b. 0 c. 1 d. 2
   Answer: c
9. $5 \tan^2 A - 5 \sec^2 A + 1$ is equal to
   a. 6 b. -5 c. 1 d. -4
   Answer: d
10. If sec A + tan A = x, then sec A =
    (a) $\frac{x^2-1}{x}$ (b) $\frac{x^2-1}{2x}$
    (c) $\frac{x^2+1}{x}$ (d) $\frac{x^2+1}{2x}$

Answer: d

11. If sec A + tan A = x, then tan A =

(a) $\frac{x^2-1}{x}$ (b) $\frac{x^2-1}{2x}$

(c) $\frac{x^2+1}{x}$ (d) $\frac{x^2+1}{2x}$

Answer: b

12. $\frac{1-\cos A}{\sin A}$ **is equal to**

(a) $\frac{\sin A}{1-\cos A}$ (b) $\frac{\sin A}{1+\cos A}$

(c) $\frac{\cos A}{1-\cos A}$ (d) $\frac{\cos A}{1+\cos A}$

Answer: b

13. If x = a cos 0 and y = b sin 0, then b2x2 + a2y2 =
a. ab b. $b^2 + a^2$ c. a^2b^2 d. a^4b^4
Answer: c

14. What is the maximum value of 1cscA?
a. 0 b. 1 c. 12 d. 2
Answer: b

15. What is the minimum value of sin A, $0 \leq A \leq 90°$
a. -1 b. 0 c. 1 d. 12
Answer: b

16. What is the minimum value of cos θ, $0 \leq \theta \leq 90°$
a. -1 b. 0 c. 1 d. 12
Answer: b

17. Given that sin θ = ab , then tan θ =

(a) $\frac{b}{\sqrt{b^2-a^2}}$ (b) $\frac{\sqrt{b^2-a^2}}{b}$

(c) $\frac{a}{\sqrt{b^2-a^2}}$ (d) $\frac{\sqrt{b^2-a^2}}{a}$

Answer: c

18. If cos 9A = sin A and 9A < 90°, then the value of tan 5A is
a. 0 b. 1 c. 13√ d. √3

Answer: b

19. If in ΔABC, ∠C = 90°, then sin (A + B) =
    a. 0 b. 1/2 c. 12√ d. 1
    Answer: d
20. If sin A – cos A = 0, then the value of $\sin^4 A + \cos^4 A$ is
    a. 2 b. 1 c. 34 d. 12
    Answer: d
21. Ratios of sides of a right triangle with respect to its acute angles are known as
    a. trigonometric identities b. trigonometry
    c. trigonometric ratios of the angles d. none of these
    Answer: c
    Explanation: c. trigonometric ratios of the angles
22. If tan θ = ab then the value of

$$\frac{a\sin\theta + b\cos\theta}{a\sin\theta - b\cos\theta} \text{ is}$$

$$(a)\ \frac{a^2 - b^2}{a^2 + b^2} \qquad (b)\ \frac{a^2 + b^2}{a^2 - b^2}$$

$$(c)\ \frac{a}{a^2 + b^2} \qquad (d)\ \frac{b}{a^2 + b^2}$$

Answer: b
Explanation:

$$(b)\ \frac{a\sin\theta + b\cos\theta}{a\sin\theta - b\cos\theta} = \frac{\frac{a\sin\theta}{\cos\theta} + \frac{b\cos\theta}{\cos\theta}}{\frac{a\sin\theta}{\cos\theta} - \frac{b\cos\theta}{\cos\theta}}$$

$$= \frac{a\tan\theta + b}{a\tan\theta - b}$$

$$= \frac{a \times \frac{a}{b} + b}{a \times \frac{a}{b} - b} = \frac{a^2 + b^2}{a^2 - b^2}$$

23. Match the Columns:

1. $\frac{\text{Side opposite to angle } \theta}{\text{Hypotenuse}}$	(A) $\tan \theta$
2. $\frac{\text{Side adjacent to angle } \theta}{\text{Hypotenuse}}$	(B) $\sin \theta$
3. $\frac{\text{Side opposite to angle } \theta}{\text{Side adjacent to angle } \theta}$	(C) $\cos \theta$
	(D) $\sec \theta$

a. 1 – A, 2 – C, 3 – B
b. 1 – B, 2 – C, 3 – A
c. 1 – B, 2 – C, 3 – D
d. 1 – D, 2 – B, 3 – A

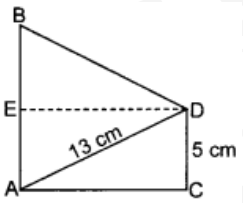
Answer: b
Explanation:

(*b*) $\frac{\text{Side adjacent to angle } \theta}{\text{Hypotenuse}} = \sin \theta$

$\frac{\text{Side adjacent to angle } \theta}{\text{Hypotenuse}} = \cos \theta$

$\frac{\text{Side opposite to angle } \theta}{\text{Side adjacent to angle } \theta} = \tan \theta$

24. In the given figure, if AB = 14 cm, then the value of tan B is:



(*a*) $\frac{4}{3}$
(*b*) $\frac{14}{3}$
(*c*) $\frac{5}{3}$
(*d*) $\frac{13}{3}$

Answer: a
Explanation:

(*a*) **Hint:** $AC = \sqrt{13^2 - 5^2} = 12$

$DE = AC = 12$ cm,

$BE = 14$ cm $- 5$ cm $= 9$ cm

In ΔBED, $\tan B = \frac{DE}{BE} = \frac{12}{9} = \frac{4}{3}$.

25. Match the Columns:

1. $\frac{\text{Hypotenuse}}{\text{Side adjacent to angle } \theta}$	(A) cosec θ
2. $\frac{\text{Side adjacent to angle } \theta}{\text{Side opposite to angle } \theta}$	(B) sec θ
3. $\frac{\text{Hypotenuse}}{\text{Side opposite to angle } \theta}$	(C) tan θ
	(D) cot θ
	(E) sin θ

a. 1 – A, 2 – C, 3 – B
b. 1 – C, 2 – A, 3 – D
c. 1 – B, 2 – A, 3 – E
d. 1 – B, 2 – D, 3 – A

Answer: d

Explanation: d. definition of trigonometric ratios.

26. The value of $\sin^2 30° - \cos^2 30°$ is

(*a*) $-\frac{1}{2}$ (*b*) $\frac{\sqrt{3}}{2}$

(*c*) $\frac{3}{2}$ (*d*) $\frac{2}{3}$

Answer/Explanation:

(*a*) $\sin^2 30° - \cos^2 30° = \left(\frac{1}{2}\right)^2 - \left(\frac{\sqrt{3}}{2}\right)^2$

$= \frac{1}{4} - \frac{3}{4}$

$= \frac{-2}{4} = \frac{-1}{2}$.

27. If 3 cot θ = 2, then the value of tan θ

(a) $\frac{2}{3}$ (b) $\frac{3}{2}$

(c) $\frac{3}{\sqrt{13}}$ (d) $\frac{2}{\sqrt{13}}$

Answer: b
Explanation:
3 cot θ = 2
⇒ cot θ 23
tan θ = 32

28. If ΔABC is right angled at C, then the value of cos (A + B) is

(a) 0 (b) 1

(c) $\frac{1}{2}$ (d) $\frac{\sqrt{3}}{2}$

Answer: a
Explanation:
a. Δ ABC is right angled at C,
∴ A + B + C = 180°
A + B = 180° – 90° = 90° (∵ ∠C = 90°)
cos (A + B) = cos 90° = 0

29. If 0° < θ < 90°, then sec 0 is
a. >1 b. < 1 c. =1 d. 0
Answer: a
Explanation:
a. ∵ sec θ = 1cosθ
∵ sce θ > 1.

30. If sin 0 = √3 cos θ, 0° < θ < 90°, then θ is equal to
a. 30° b. 45° c. 60° d. 90°
Answer: c
Explanation:

(c) $\sin\theta = \sqrt{3}\cos\theta \Rightarrow \frac{\sin\theta}{\cos\theta} = \sqrt{3}$

$\Rightarrow \tan\theta = \sqrt{3} = \tan 60° \Rightarrow \theta = 60°$

31. If cos (α + β) = 0, then sin (α – β) can be reduced to
a. cos β b. cos 2β c. sin α d. sin 2α
Answer: b
Explanation: b. cos (α + β) = 0 = cos 90°

$\Rightarrow \alpha + \beta = 90°$
$\sin(\alpha - \beta) = \sin(\alpha - \beta + \beta - \beta)$
$= \sin(\alpha + \beta - 2\beta)$
$= \sin(90° - 2\beta) = \cos 2\beta$

32. If $\cos 9\alpha = \sin a$ and $9\alpha < 90°$, then the value of $\tan 5\alpha$ is
a. $13\sqrt{}$ b. $\sqrt{3}$ c. 1 d. 0
Answer: c
Explanation:
$\cos 9\alpha = \sin \alpha$
$\Rightarrow \cos 9\alpha = \cos(90° - \alpha)$
$\Rightarrow 9\alpha = 90° - \alpha$
$\Rightarrow 10\alpha = 90°$
$\Rightarrow \alpha = 9°$
$\therefore \tan 5\alpha = \tan 5 \times 9°$
$= \tan 45° = 1$

33. $\sin(45° + \theta) - \cos(45° - \theta)$ is equal to
a. $2\cos\theta$ b. 0 c. $2\sin\theta$ d. 1
Answer: b
Explanation:
$\sin(45° + \theta) - \cos(45° - \theta)$
$= \sin\{90° - (45° - \theta)\} - \cos(45° - \theta)$
$= \cos(45° - \theta) - \cos(45° - \theta) = 0$

34. The value of $\sin^2 5° + \sin^2 10° + \sin^2 15° + \ldots + \sin^2 90°$ is equal to
a. 8 b. 8.5 c. 9 d. 9.5
Answer: d
Explanation:
$\sin^2 5° + \sin^2 10° + \sin^2 15° + \ldots + \sin^2 90°$
$= (\sin^2 5° + \sin^2 85°) + (\sin^2 10° + \sin^2 80°) + \ldots + (\sin^2 40° + \sin^2 50°) + \sin^2 45° + \sin^2 90°$
$= (\sin^2 5° + \cos^2 5°) + (\sin 10° + \cos^2 10°) + \ldots + (\sin^2 40° + \cos^2 40°) + (12\sqrt{})2 + 1$
$= 1 + 1 + 1 + \ldots$ 8 times $+ 12 + 1$
$= 912 = 9.5$

35. The value of the expression $[\text{cosec}(75° + \theta) - \sec(15° - \theta) - \tan(55° + \theta) + \cot(35° - \theta)]$ is
a. -1 b. 0 c. 1 d. 32
Answer: b
Explanation:
$\text{cosec}(75° + \theta) - \sec(15° - \theta) - \tan(55° + \theta) + \cot(35° - \theta)$
$= \text{cosec}\{90° - (15° - \theta)\} - \sec(15° - \theta) - \tan\{90° - (35° - \theta)\} + \cot(35° - \theta)$
$= \sec(15° - \theta) - \sec(15° - \theta) - \cot(35° - \theta) + \cot(35° - \theta) = 0$

36. $\sin(90° - A) =$
a. sin A b. tan A c. cos A d. cosec A
Answer: c

37. tan A =

$(a)\ \frac{\cos A}{\sqrt{1-\cos^2 A}}$ $(b)\ \frac{\sec A}{\sqrt{1-\sec^2 A}}$

$(c)\ \frac{\sin A}{\sqrt{1-\sin^2 A}}$ $(d)\ \frac{1}{\sqrt{1-\sin^2 A}}$

Answer: c
Explanation:

$(c)\ \tan A = \frac{\sin A}{\cos A} = \frac{\sin A}{\sqrt{1-\sin^2 A}}$

38. If cosec A – cot A = —, then cosec A =

$(a)\ \frac{47}{40}$ $(b)\ \frac{59}{40}$

$(c)\ \frac{51}{40}$ $(d)\ \frac{41}{40}$

Answer: d
Explanation:
cosec A – cot A = 45 ……(i)
Also $\text{cosec}^2 A - \cot^2 A = 1$
$\Rightarrow (\text{cosec } A - \cot A)(\text{cosec } A + \cot A) = 1$
$\Rightarrow 45(\text{cosec } A + \cot A) = 1$
$\Rightarrow \text{cosec } A + \cot A = 45$ …(ii)
From (i) and (ii), cosec A = 4140

39. If $\sin x + \text{cosec } x = 2$, then $\sin^{19} x + \text{cosec}^{20} x =$
a. 2^{19} b. 2^{20}
c. 2 d. 2^{39}
Answer: c
Explanation:
c. $\sin x + \text{cosec } x = 2$
$\Rightarrow \sin x + 1\sin x = 2$
$\Rightarrow \sin^2 x + 1 = 2 \sin x$
$\Rightarrow (\sin x - 1)^2 = 0 \Rightarrow \sin x = 1 \Rightarrow \text{cosec } x = 1$
$\therefore \sin^{19} x + \text{cosec}^{20} x = 1 + 1 = 2$

40. If $\sin\theta - \cos\theta = 0$, then the value of $(\sin^4\theta + \cos^4\theta)$ is

(a) 1 (b) $\frac{3}{4}$

(c) $\frac{1}{2}$ (d) $\frac{1}{4}$

Answer: c

Explanation:

$\sin\theta - \cos\theta = 0$

$\Rightarrow (\sin\theta - \cos\theta)^2 = 0$

$\Rightarrow \sin2^2\theta + \cos^2\theta - 2\sin\theta\cos\theta = 0$

$\Rightarrow -2\sin\theta\cos\theta = -1$

$\Rightarrow 2\sin\theta\cos\theta = 1$

$\Rightarrow \sin\theta\cos\theta = 12$

$\Rightarrow \sin^2\theta\cos^2\theta = 14$

$\sin^4\theta + \cos^4\theta = \sin^4\theta + \cos^4\theta + 2\sin^2\theta\cos^2\theta - 2\sin^2\theta\cos^2\theta$

$= (\sin^2\theta + \cos^2\theta)^2 - 2\sin^2\theta\cos^2\theta$

$= (1)^2 - 2 \times 14 = 1 - 12 = 12$

41. sec A =

(a) $\frac{1}{\cot A}$

(b) $\frac{1}{\operatorname{cosec} A}$

(c) $\frac{1}{\sqrt{1+\cot^2 A}}$

(d) $\frac{\sqrt{1+\cot^2 A}}{\cot A}$

Answer: d

Explanation:

(d) $\sec A = \frac{1}{\cos A} = \frac{\frac{1}{\sin A}}{\frac{\cos A}{\sin A}}$

$= \frac{\operatorname{cosec} A}{\cot A} = \frac{\sqrt{1+\cot^2 A}}{\cot A}$

42. $\frac{1+\cot^2 A}{1+\tan^2 A} =$

a. $\tan^2 A$ b. $\sec^2 A$
c. $\operatorname{cosec}^2 A - 1$ d. $1 - \sin^2 A$
Answer: c
Explanation:

$$(c)\ \frac{1+\cot^2 A}{1+\tan^2 A} = \frac{1+\cot^2 A}{1+\frac{1}{\cot^2 A}}$$

$$\frac{\cot^2 A(1+\cot^2 A)}{\cot^2 A+1} = \cot^2 A$$

$$= \operatorname{cosec}^2 A - 1$$

43. If sec A + tan A = x, then tan A =

$$(a)\ \frac{2}{x} \qquad (b)\ \frac{1}{2x} \qquad (c)\ \frac{x^2-1}{2x} \qquad (d)\ \frac{2x}{x^2-1}$$

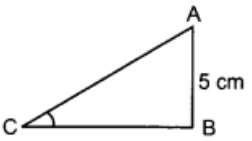
Answer: c
Explanation:
secA + tanA = x … (i)
Also $\sec^2 A - \tan^2 A = 1$
$\Rightarrow$ (sec A – tan A) (sec A + tan A) = 1
$\Rightarrow$ x (sec A – tan A)
$\therefore$ sec A – tan A = 1x …. (ii)
Now, subtracting (ii) from (i), we have
tan A = x2−12x

44. Reciprocal of cot A is _____ .
Answer: tan A
45. Reciprocal of cosec A is _____ .
Answer: sin A
46. In ΔABC, right angled at B, AB = 5 cm and sin C = 12. Determine the length of side AC.
Explanation:

$$\sin C = \frac{AB}{AC}$$

$$\Rightarrow \frac{1}{2} = \frac{5}{AC}$$

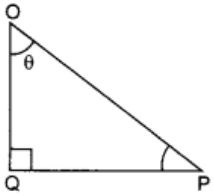
$$\Rightarrow AC = 10 \text{ cm}$$



47. If sec θ = 257, find the values of tan θ and cosec θ.

Answer/Explanation:

In ΔPQO, right angled at Q,



$$\sec\theta = \frac{OP}{OQ} = \frac{25}{7}$$

So, $OP = 25k$ and $OQ = 7k$

$$PQ^2 = OP^2 - OQ^2$$
$$= (25k)^2 - (7k)^2$$
$$= 625k^2 - 49k^2 = 576k^2$$

$$\Rightarrow \quad PQ = \sqrt{576\,k^2} = 24k$$

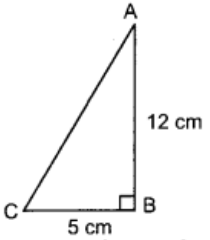
$$\therefore \quad \tan\theta = \frac{PQ}{OQ} = \frac{24}{7}$$

and $\operatorname{cosec}\theta = \frac{OP}{PQ} = \frac{25}{24}$.

48. In ΔABC, right angled at B, if AB = 12 cm and BC = 5 cm, find (i) sin A and tan A, (ii) sin C and cot C.

Answer/Explanation:

(*i*) In ΔABC, right-angled at B, AC is the hypotenuse.



Since, $AC^2 = BC^2 + AB^2$
$= 5^2 + 12^2 = 25 + 144$
$= 169$
$AC = \sqrt{169} = 13$ cm

Now, $\sin A = \frac{BC}{AC} = \frac{5}{13}$

and $\tan A = \frac{BC}{AB} = \frac{5}{12}$

(*ii*) $\sin C = \frac{AB}{AC} = \frac{12}{13}$

and $\cot C = \frac{BC}{AB} = \frac{5}{12}$

49. If $\sin A = \cos A$, $0° < A < 90°$, then A is equal to _____ .
Answer/Explanation
$\sin A = \cos A \sin A$
$\Rightarrow \sin A \cos A = 1$
$\Rightarrow \tan A = 1$
$\Rightarrow A = 45°$

50. If $\sin \theta_1 + \sin \theta_2 + \sin \theta_3 = 3$, $0° < \theta_1\ \theta_2, \theta_3 \leq 90°$, then $\cos \theta_1$, + $\cos \theta_2$, + $\cos \theta_3$ = _____ .
Answer/Explanation
Hint: Maximum value of $\sin 0 = 1$
$\sin \theta_1 + \sin \theta_2 + \sin \theta_3 = 3$
$\Rightarrow \sin \theta_1 = 1$, $\sin \theta_2 = 1$ and $\sin \theta_3 = 1$
$\Rightarrow \theta_1 = 90°$, $\theta_2 = 90°$ and $\theta_3 = 90°$
$\therefore \cos \theta_1 + \cos \theta_2 + \cos \theta_3 = 0$

51. Evaluate:
$\sin^2 60° + 2 \tan 45° - \cos^2 30°$ [Allahabad 2019]
Explanation:

$$\left(\frac{\sqrt{3}}{2}\right)^2 + 2\,(1) - \left(\frac{\sqrt{3}}{2}\right)^2$$

$$\Rightarrow \frac{3}{4} + 2 - \frac{3}{4} \Rightarrow 2$$

52. Given A = 30°, verify $\sin 2A = 2 \sin A \cos A$.
Explanation:

$$\text{LHS} = \sin 2A = \sin 2 \times 30° = \sin 60°$$

$$= \frac{\sqrt{3}}{2}$$

$$\text{RHS} = 2 \sin A \cos A = 2 \sin 30° \cos 30°$$

$$= 2 \times \frac{1}{2} \times \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{2}$$

So, LHS = RHS

53. If $\tan\theta = 13\sqrt{} = r$, then evaluate $\left[\frac{\operatorname{cosec}^2\theta - \sec^2\theta}{\operatorname{cosec}^2\theta + \sec^2\theta}\right]$

Answer/Explanation:

$$\tan\theta = \frac{1}{\sqrt{3}} \Rightarrow \theta = 30°$$

$$\frac{\operatorname{cosec}^2\theta - \sec^2\theta}{\operatorname{cosec}^2\theta + \sec^2\theta} = \frac{\operatorname{cosec}^2 30° - \sec^2 30°}{\operatorname{cosec}^2 30° + \sec^2 30°}$$

$$= \frac{(2)^2 - \left(\frac{2}{\sqrt{3}}\right)^2}{(2)^2 + \left(\frac{2}{\sqrt{3}}\right)^2} = \frac{4 - \frac{4}{3}}{4 + \frac{4}{3}} = \frac{1}{2}$$

54. If $\sin(A - B) = 12$, $\cos(A + B) = 12$, find A and B.
Answer/Explanation:
$\sin(A - B) = 12$
$\Rightarrow A - B = 30°$ ……(i)
and $\cos(A + B) = 12$
$\Rightarrow A + B = 60°$….(ii)
Solving equation (i) and (ii),
we get $A = 45°$ and $B = 15°$

55. Value of $\tan 65° \cot 25° =$ _____.
Answer/Explanation:

Hint: $\frac{\tan 65°}{\cot 25°} = \frac{\cot(90° - 65°)}{\cot 25°}$

$= \frac{\cot 25°}{\cot 25°} = 1$

56. If $\cos(40° + A) = \sin 30°$, the value of A is _____ .
Answer/Explanation:
Hint: $\cos(40° + A) = \sin 30°$
$\Rightarrow \cos(40° + A) = \cos(90° - 30°)$
$\Rightarrow 40° + A = 60° \Rightarrow A = 20°$

57. If $\tan\theta = \cot(30° + \theta)$, find the value of θ.
Answer/Explanation:
$\tan\theta = \cot(30° + \theta)$
$\Rightarrow \cot(90° - \theta)$
$= \cot(30° + \theta)$

$\Rightarrow 90° - \theta = 30° + \theta$
$\Rightarrow 2\theta = 60°$
$\Rightarrow \theta = 30°$

58. Find the value of $(\sin^2 33° + \sin^2 57°)$
Answer/Explanation:
$\sin^2 33° + \sin^2 57°$
$\Rightarrow \sin^2 33° + \sin^2(90° - 33°)$
$\Rightarrow \sin^2 33° + \cos^2 33°$ [Using $\sin(90° - \theta) = \cos\theta$]
$\Rightarrow 1$ [Using $\sin^2\theta + \cos^2\theta = 1$]

59. Express $\cot 85° + \cos 75°$ in terms of trigonometric ratios of angles between 0° and 45°.
Answer/Explanation:
$\cot 85° + \cos 75° = \tan(90° - 85°) + \sin(90° - 75°)$
$= \tan 5° + \sin 15°$

60. If $\sec A = 157$ and $A + B = 90°$, find the value of cosec B.
Answer/Explanation:
$\sec A = 157$
$\Rightarrow \sec(90° - B) = 157$ [$\because A + B = 90° \Rightarrow A = 90° - B$]
$\Rightarrow \text{cosec } B = 157$ [$\because \sec(90° - \theta) = \text{cosec}\,\theta$]

61. If $\tan A + \cot A = 4$, then $\tan^4 A + \cot^4 A =$
Answer/Explanation:
Hint: $(\tan A + \cot A)2 = 42$
$\Rightarrow \tan^2 A + \cot^2 A + 2 = 16$
$\Rightarrow \tan^2 A + \cot^2 A = 14$
$\Rightarrow (\tan^2 A + \cot^2 A)^2 = (14)^2$
$\Rightarrow \tan^4 A + \cot^4 A + 2 = 196$
$\tan^4 A + \cot^4 A = 194$

62. If $\sin x + \sin^2 x = 1$, then value of $\cos^2 x + \cos^4 x$
Answer/Explanation:
Hint: $\sin x + \sin^2 x = 1$
$\Rightarrow \sin x = 1 - \sin^2 x$
$\Rightarrow \sin x = \cos^2 x$
$\cos^2 x + \cos^4 x = \cos^2 x (1 + \cos^2 x)$
$= \sin x (1 + \sin x)$
$= \sin x + \sin^2 x = 1$

63. If $\tan A = 512$, find the value of $12 (\sin A + \cos A).\sec A$.
Answer/Explanation
Answer:c
Explanation:

$$(\sin A + \cos A)\cdot \sec A = \sin A \cdot \sec A + \cos A \cdot \sec A$$

$$= \sin A \times \frac{1}{\cos A} + 1$$

$$= \tan A + 1 = \frac{5}{12} + 1 = \frac{17}{12}$$

64. If $\cot \theta = 78$, evaluate

$$\frac{(1+\sin\theta)(1-\sin\theta)}{(1+\cos\theta)(1-\cos\theta)}$$

Answer/Explanation:

$$\frac{(1+\sin\theta)(1-\sin\theta)}{(1+\cos\theta)(1-\cos\theta)}$$

$$= \frac{1-\sin^2\theta}{1-\cos^2\theta} = \frac{\cos^2\theta}{\sin^2\theta}$$

$$= \cot^2\theta = \left(\frac{7}{8}\right)^2 = \frac{49}{64}$$

65. If $\sin \theta = 13$, then find the value of $(2 \cot^2 \theta + 2)$
Answer/Explanation:

$$2(\cot^2\theta + 1) = 2 \cdot \operatorname{cosec}^2\theta$$

$$= \frac{2}{\sin^2\theta}$$

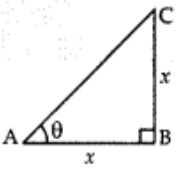
$$= \frac{2}{(1/9)} = 18$$

$$\left(\because \sin^2\theta = \frac{1}{9}\right)$$

MCQS: APPLICATION OF TRIGONOMETRY

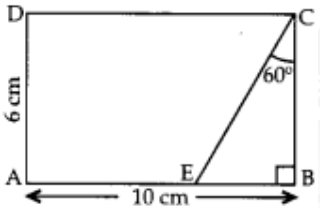
1. The shadow of a tower is equal to its height at 10-45 a.m. The sun's altitude is
   a. 30° b. 45°
   c. 60° d. 90°
   Answer: b
   Explanation: Reason: Let the height of tower BC = rm and sun's altitude = θ

Then Length of its shadow, AB = x m



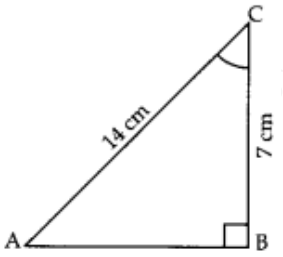
In rt. ΔABC, tan θ = BCAB = xx = 1
⇒ tan θ = tan 450
∴ θ = 45°

2. In given figure, the value of CE is



a. 12 cm b. 6 cm
c. 9 cm d. 6√3 cm
Answer: a
Explanation: Reason: In rt. ΔEBC, cos 60° = BCCE
⇒ 12 = 6CE
⇒ CE = 12 cm

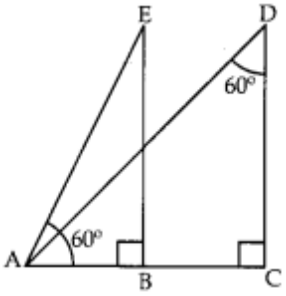
3. In given figure, the value of ZC is



a. 90° b. 45°
c. 30° d. 60°
Answer/ Explanation: Reason: In rt. ΔABC, cos C = BCAB = 714 = 12
⇒ cos C = cos 60°

$\therefore C = 60°$

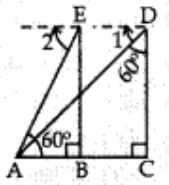
4. In given Fig., the angle of depression from the observing position D and E of the object at A are



a. 60°, 60° b. 30°, 30°
c. 30°, 60° d. 60°, 30°

Answer: c

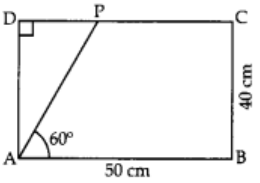
Explanation:



Reason: ∵ APD, $\angle 1 = 90° - 60° = 30°$
$\therefore$ APE, $\angle 2 = \angle EAB$ …[alt Zs]
$\therefore \angle 2 = 60°$
Hence the angles of depression at D and E are 30° and 60° respectively.

5. In given figure, the length of AP is

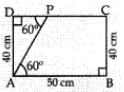
(a) $\frac{8\sqrt{3}}{3}$ cm
(b) $\frac{80\sqrt{3}}{3}$ cm
(c) $8\sqrt{3}$ cm
(d) $80\sqrt{3}$ cm



Answer: b

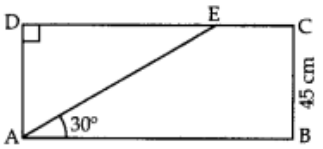
Explanation:

(b); **Reason:** ∵ ∠APD = ∠PAB ...(alternate angles)
∴ ∠APD = 60°
In rt. ΔADP, $\sin 60° = \frac{AD}{AP} \Rightarrow \frac{\sqrt{3}}{2} = \frac{AD}{AP} \Rightarrow \sqrt{3}\,AP = 80$
$\Rightarrow AP = \frac{80}{\sqrt{3}} \Rightarrow AP = \frac{80}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{80\sqrt{3}}{3}$ cm

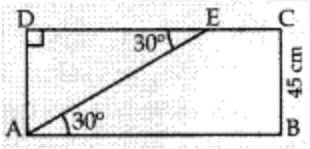


6. In given figure, the value of AE is

(a) 90 cm
(b) 45 cm
(c) $45\sqrt{2}$ cm
(d) $90\sqrt{2}$ cm



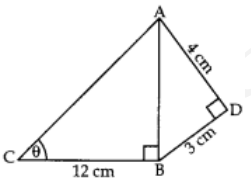
Answer: a
Explanation: Reason: ∠AED = ∠EAB = 30°



In rt. ΔAED, sin 30° = ADAP
⇒ 12 = 45AE
⇒ AE = 90 cm

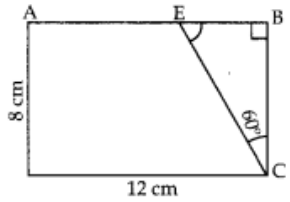
7. In given figure, AD = 4 cm, BD = 3 cm and CB = 12 cm. The value of tan θ is

(a) $\frac{5}{13}$
(b) $\frac{12}{13}$
(c) $\frac{5}{12}$
(d) $\frac{12}{5}$



Answer: c
Explanation: Reason: In rt ΔADB,
$AB^2 = AD^2 + BD^2 = (4)^2 + (3)^2 = 16 + 9 = 25$
∴ AB = √25 = 5
∴ In rt ΔABC, tan θ ABBC = 512

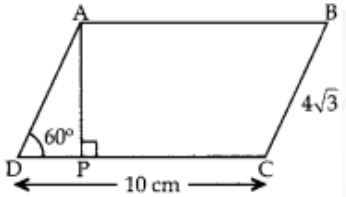
8. In figure given ABCD is a rectangle, the value of CE is



a. 1 cm b. 2 cm
c. 3 cm d. 4 cm

Answer/ Explanation: Reason: Since ABCD is a rectangle
∴ BC = AD = 8 cm and B = 90°
In rt ΔCBE, cos 60° = CEBC
⇒ 12 = CE8
∴ CE = 82 = 4 cm

Trigonometry MCQ Questions Question 9. In given figure, ABCD is a || gm. The lenght of AP is



a. 2 cm b. 4 cm
c. 6 cm d. 8 cm

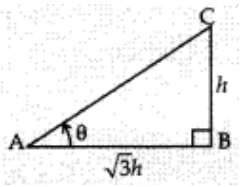
Answer: c

Explanation: Reason: Since ABCD is a || gm
∴ AD = BC = 4√3
In rt ΔAPD, sin 60° = APAD
⇒ 3√2=AP43√
⇒ 2AP = 4 × 3 = 12
∴ AP = 6 cm

10. When the length of shadow of a vertical pole is equal to √3 times of its height, the angle of elevation of the Sun's altitude is
a. 30° b. 45°
c. 60° d. 15°

Answer: a

Explanation: Reason: Let the height of the vertical pole, BC = h m
∴ Shadow AB = √3 h m and the angle of elevation ZBAC = θ



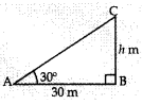
In rt ΔABC, tan θ = BCAB=h3√h=13√ = tan 30°
∴ θ = 30°
Hence the Sun's altitude is 30°

11. The angle of elevation of top of a tower from a point on the ground, which is 30 m away from the foot of the tower is 30°. The length of the tower is
a. √3 m b. 2√3 m
c. 5√3m d. 10√3 m
Answer/ Explanation:

(*d*); ***Reason:*** Let the height of the tower, BC = *h* m

∴ In rt ΔABC, $\tan 30^\circ = \frac{BC}{AB} \Rightarrow \frac{1}{\sqrt{3}} = \frac{h}{30}$

$\Rightarrow h = \frac{30}{\sqrt{3}} \Rightarrow h = \frac{30}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{30\sqrt{3}}{3} = 10\sqrt{3}$ cm



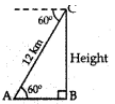
12. A plane is observed to be approaching the airport. It is at a distance of 12 km from the point of observation and makes an angle of elevation of 60°. The height above the ground of the plane is
a. 6√3 m b. 4√3 m
c. 3√3 m d. 2√3 m
Answer: a
Explanation:

(*a*); ***Reason:*** Here distance AC = 12 km

In rt ΔABC, $\sin 60^\circ = \frac{BC}{AC}$

$\Rightarrow \frac{\sqrt{3}}{2} = \frac{BC}{12} \Rightarrow 2BC = 12\sqrt{3}$

$\Rightarrow$ BC = $6\sqrt{3}$ km



13. The upper part of a tree is broken by the wind and makes an angle of 30° with the ground. The distance from the foot of the tree to the point where the top touches the ground is 5 m. The height of the tree is
a. 10√33 m b. 5√33 m
c. √3 m d. √3/5 m
Answer: b

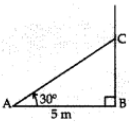
Explanation:

(b); ***Reason:*** Let BD be the height of the tree and C be the breaking point.

In rt ΔABC, $\tan 30° = \frac{BC}{AB} \Rightarrow \frac{1}{\sqrt{3}} = \frac{BC}{5} \Rightarrow BC = \frac{5}{\sqrt{3}}$

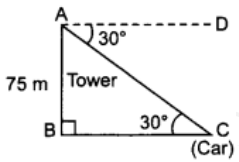
Also $\cos 30° = \frac{AB}{AC} \Rightarrow \frac{\sqrt{3}}{2} = \frac{5}{AC} \Rightarrow AC = \frac{10}{\sqrt{3}}$

$\therefore$ Height of the tree = $BC + AC = \frac{5}{\sqrt{3}} + \frac{10}{\sqrt{3}} = \frac{15}{\sqrt{3}} = \frac{15}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{15\sqrt{3}}{3} = 5\sqrt{3}$ m



14. The angles of elevation of the top of a rock from the top and foot of 100 m high tower are respectively 30° and 45°. The height of the rock is
    a. 50 m b. 150 m
    c. 5o√3m d. 50(3 + √3)
    Answer: d
15. The tops of two poles of height 20 m and 14 m are connected by a wire. If the wire makes an angle of 30° with horizontal, the length of the wire is
    a. 6 m b. 10 m
    c. 12 m d. 20 m
    Answer: c
16. The angle of depression of a car, standing on the ground, from the top of a 75 m high tower, is 30°. The distance of the car from the base of the tower (in m) is:
    a. 25√3 b. 50√3
    c. 75√3 d. 150
    Answer: c
    Explanation:

(c) In ΔABC,



$$\frac{AB}{BC} = \tan 30°$$

$$\Rightarrow \quad \frac{75}{BC} = \frac{1}{\sqrt{3}}$$

$$\Rightarrow \quad BC = 75\sqrt{3} \text{ m}$$

17. A ladder 15 m long just reaches the top of a vertical wall. If the ladder makes an angle of 60° with the wall, then the height of the wall is

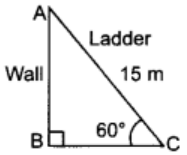
(*a*) $15\sqrt{3}$ m (*b*) $\frac{15\sqrt{3}}{2}$ m

(*c*) $\frac{15}{2}$ m (*d*) 15 m

Answer: b

Explanation:

(*b*) In ΔABC,



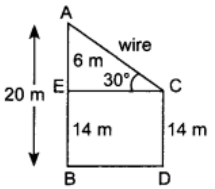
$$\frac{AB}{AC} = \sin 60°$$

$$\Rightarrow \quad \frac{AB}{15} = \frac{\sqrt{3}}{2}$$

$$\Rightarrow \quad AB = \frac{15\sqrt{3}}{2} \text{ m}$$

18. The line drawn from the eye of an observer to the point in the object viewed by the observer is known as
    a. horizontal line b. vertical line
    c. line of sight d. transversal line
    Answer: c
19. The tops of two poles of heights 20 m and 14 m are connected by a wire. If the wire makes an angle of 30° with the horizontal, then the length of the wire is
    a. 8 m b. 10 m c. 12 m d. 14 m
    Answer: c
    Explanation:

(*c*) $\frac{AE}{AC} = \sin 30°$



$$\Rightarrow \frac{6}{AC} = \frac{1}{2}$$

$$\Rightarrow \quad AC = 12 \text{ m}$$

20. If two towers of heights h_1 and h_2 subtend angles of 60° and 30° respectively at the mid-point of the line joining their feet, then $h_1 : h_2$ =

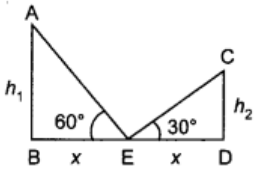
a. 1 : 2 b. 1 : 3 c. 2 : 1 d. 3 : 1

Answer: d

Explanation:

(*d*) $\frac{h_1}{x} = \tan 60° = \sqrt{3}$

$\Rightarrow h_1 = \sqrt{3}x$



$\frac{h_2}{x} = \tan 30° = \frac{1}{\sqrt{3}}$

$\Rightarrow h_2 = \frac{1}{\sqrt{3}}x$

$\frac{h_1}{h_2} = \frac{\sqrt{3}x}{\frac{1}{\sqrt{3}}x} = \frac{3}{1}$

$\Rightarrow h_1 : h_2 = 3 : 1$

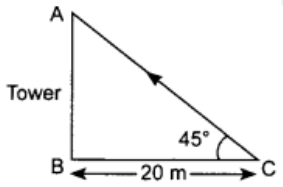
21. The angle of elevation of the top of a tower from a point 20 metres away from its base is 45°. The height of the tower is

a. 10 m b. 20 m c. 30 m d. 20√3 m

Answer: b

Explanation:

(*b*)



$\frac{AB}{BC} = \tan 45°$

$\Rightarrow \frac{AB}{20} = 1$

$\Rightarrow AB = 20$ m.

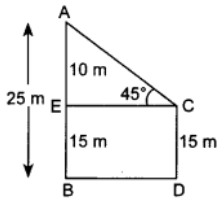
22. Two poles are 25 m and 15 m high and the line joining their tops makes an angle of 45° with the horizontal. The distance between these poles is

a. 5 m b. 8 m c. 9 m d. 10 m

Answer: c

Explanation:

(*d*)



$$\frac{AE}{EC} = \tan 45°$$

$$\Rightarrow \quad \frac{10}{EC} = 1$$

$$\Rightarrow \quad EC = 10 \text{ m.}$$

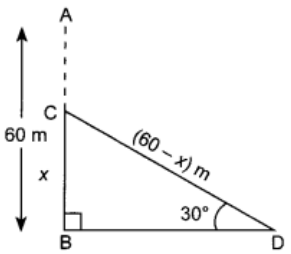
23. A portion of a 60 m long tree is broken by tornado and the top struck up the ground making an angle of 30° with the ground level. The height of the point where the tree is broken is equal to

a. 30 m b. 35 m

c. 40 m d. 20 m

Answer/Explanation:

(*d*)



Let AB is the tree which is broken at C.

$$\frac{BC}{DC} = \sin 30°$$

$$\Rightarrow \quad \frac{x}{60 - x} = \frac{1}{2}$$

$$\Rightarrow \quad 2x = 60 - x$$

$$\Rightarrow \quad x = 20 \text{ m}$$

24. The angle of elevation of the top of a 15m high tower at a point 15m away from the base of the tower is ____ .

Answer/Explanation:

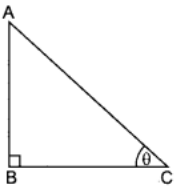
Hints:

∵ Height of tower = distance of point from the base

∴ Angle of elevation = 45°.

25. The ratio of the height of a tower and the length of its shadow on the ground is √3 : 1. What is the angle of elevation of the sun?

Answer/Explanation:



Let, AB = height of the tower

BC = length of the shadow

∠ACB = θ = Angle of elevation of the sun

In ΔABC, ∠B = 90°

$$\tan\theta = \frac{AB}{BC} = \frac{\sqrt{3}}{1}$$

$$\left(\text{Given: } AB : BC = \frac{\sqrt{3}}{1}\right)$$

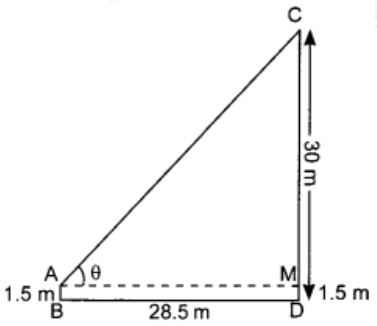
$$\Rightarrow \tan\theta = \tan 60°$$

$$\therefore \theta = 60°$$

26. An observer, 1.5 m tall, is 28.5 m away from a 30 m high tower. Determine the angle of elevation of the top of the tower from the eye of the observer.

Answer/Explanation:

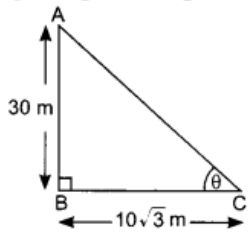
Draw AM || BD.



Here, AB = DM = 1.5 m
CM = CD – DM
= 30 – 1.5 = 28.5 m
Let 0 be the angle of elevation of the top of the tower from the eye of the observer.
∴ In ΔACM
tan θ = CMAM=28.528.5
tan θ = 1
tan θ = tan 45°
θ = 45°

27. If a tower 30 m high, casts a shadow $10\sqrt{3}$ m long on the ground, then what is the angle of elevation of the sun?
[AI 2017]
Answer/Explanation:

Let θ be the angle of elevation of the sun
∴ In right angled triangle ABC



$$\Rightarrow \quad \frac{AB}{BC} = \tan\theta$$

$$\Rightarrow \quad \frac{30}{10\sqrt{3}} = \tan\theta$$

$$\Rightarrow \quad \frac{3}{\sqrt{3}} = \tan\theta$$

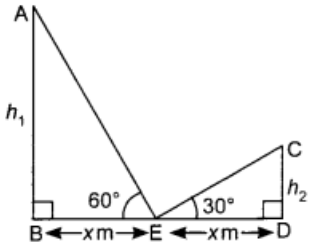
$$\Rightarrow \quad \sqrt{3} = \tan\theta$$

$$\therefore \quad \theta = 60°$$

Hence, the angle of elevation of the sun is 60°.

28. If two towers of height h_1 and h_2 subtends angles of 60° and 30° respectively at the mid points of line joining their feet, find $h_1 : h_2$
Answer/Explanation:

Let AB and CD are towers of height h_1 and h_2 respectively.



If E is the midpoint of BD then

$$BE = DE = x$$

In right ΔABE

$$\frac{h_1}{x} = \tan 60°$$

$$\Rightarrow \quad h_1 = \sqrt{3}x \qquad ...(i)$$

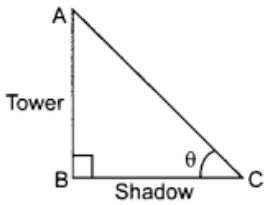
In right ΔCDE $\frac{h_2}{x} = \tan 30° \Rightarrow h_2 = \frac{x}{\sqrt{3}}$

Now $$\frac{h_1}{h_2} = \frac{\sqrt{3}x}{\frac{x}{\sqrt{3}}} = \frac{3}{1}$$

$$\Rightarrow \quad h_1 : h_2 = 3 : 1$$

29. At some time of the day the length of the shadow of a tower is equal to its height. Find the sun's altitude at that time.
Answer/Explanation:

In right ΔABC



$$\tan \theta = \frac{AB}{BC}$$

$$\Rightarrow \quad \tan \theta = 1 \qquad (\because AB = BC)$$

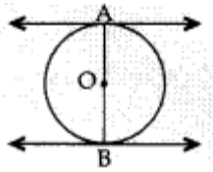
$$\Rightarrow \quad \theta = 45°$$

MCQS: CIRCLES

1. The distance between two parallel tangents of a circle of radius 4 cm is

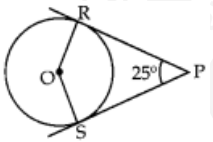
   a. 2 cm b. 4 cm c. 6 cm d. 8 cm

   Answer/ Explanation:



   Reason: Here radius, r = 4 cm
   Required distance,
   AB = OA + OB
   = r + r = 2r = 2×4 = 8 cm

2. In the given figure, if ZRPS = 25°, the value of ZROS is



   a. 135° b. 145° c. 165° d. 155°

   Answer/ Explanation

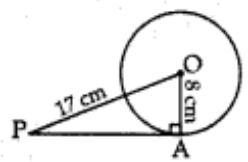
   Explanation: Reason: Since OR ⊥ PR and OS ⊥ PS
   ∴ ∠ORP = ∠OSP = 90°
   In □ ORPS, ∠ROS + ∠ORP + ∠RPS + ∠OSP = 360°
   ∠ROS + 90° + 25° + 90° = 360°
   ∠ROS = 360° – 205° = 155°

3. A tangent is drawn from a point at a distance of 17 cm of circle C(0, r) of radius 8 cm. The length of its tangent is

   a. 5 cm b. 9 cm c. 15 cm d. 23 cm

   Answer: c

   Explanation:

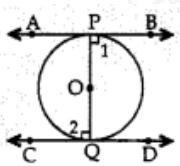


   Reason: In rt ΔOAP, $AP^2 + OA^2 = OP^2$
   ⇒ $AP^2 + (8)^2 = (17)^2$ => $AP^2 + 64 = 289$

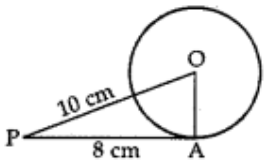
$\Rightarrow AP^2 = 289 - 64 = 225$

$\therefore AP = \sqrt{225} = 15$ cm

4. The length of tangents drawn from an external point to the circle
   a. are equal b. are not equal
   c. sometimes are equal d. are not defined
   Answer: a
   Explanation: Reason: Since the length of tangents drawn from an external point to a circle are equal.
5. Number of tangents drawn at a point of the , circle is/are
   a. one b. two c. none d. infinite
   Answer: a
   Explanation: Reason: There is only one tangent at a point of the circle.
6. The tangents drawn at the extremities of the diameter of a circle are
   a. perpendicular b. parallel c. equal d. none of these
   Answer: b
   Explanation:

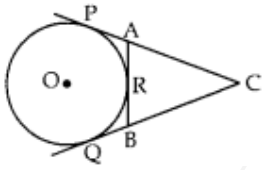


   Reason: Since OP ⊥ AB and OQ ⊥ CD
   $\therefore Z1 = 90°$ and $Z2 = 90°$
   $\Rightarrow \angle 1 = Z2$, which are alternate angles.
   $\therefore AB \parallel CD$
7. Tangents from an external point to a circle are
   a. equal b. not equal c. parallel d. perpendicular
   Explanation: Reason: Tangents from external points to a circle are equal.
8. The length of a tangent drawn from a point at a distance of 10 cm of circle is 8 cm. The radius of the circle is
   a. 4 cm b. 5 cm c. 6 cm d. 7 cm
   Answer: c
   Explanation:



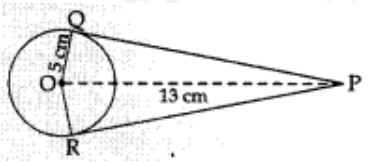
Reason: In rt. AOAP, we have
$OA^2 + AP^2 = OP^2$
$\Rightarrow OA^2 + (8)^2 = (10)2$
$\Rightarrow OA^2 + 64 = 100$
$\Rightarrow OA^2 = 100 - 64 = 36$
$\therefore OA = \sqrt{36} = 6$ cm

9. In given figure, CP and CQ are tangents to a circle with centre O. ARB is another tangent touching the circle at R. If CP = 11 cm and BC = 6 cm then the length of BR is



a. 6 cm b. 5 cm c. 4 cm d. 3 cm
Answer: b
Explanation: Reason: Since
BQ = BR …(i) [∵ Tangents drawn from external points are equal]
CQ = CP …[Using (i)]
BC + BQ = 11
$\Rightarrow$ 6 + BR = 11
$\Rightarrow$ BR = 11 – 6 = 5 cm

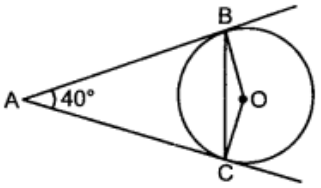
10. From a point P which is at a distance of 13 cm from the centre O of a circle of radius 5 cm, the pair of tangents PQ and PR to the circle are drawn. Then the area of the quadrilateral PQOR is
a. 60 cm² b. 65 cm² c. 30 cm² d. 32.5 cm²
Answer: a
Explanation:



Reason: $OP^2 = OQ^2 + PQ^2$
$169 = 25 + PQ^2$
$PQ^2 = 144$
PQ = 12
Area PQOR = ar (AOPQ) + ar (AOPR)
$= 12 \times 12 \times 5 + 12 \times 12 \times 5 = 60$ cm²

11. In the given figure, AB and AC are tangents to the circle with centre

O such that ∠BAC = 40°, then ∠BOC is equal to [AI2011]



a. 40° b. 50° c. 140° d. 150°

Answer: c

Explanation:

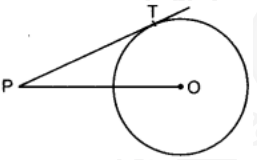
c. In quadrilateral ABOC

∠ABO + ∠BOC + ∠OCA + ∠BAC = 360°

⇒ 90° + ∠BOC + 90° + 40° = 360°

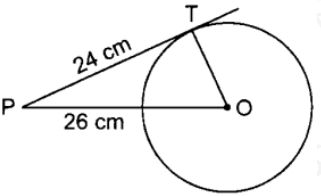
⇒ ∠BOC = 360° – 220° = 140°

12. In the given figure, point P is 26 cm away from the centre O of a circle and the length PT of the tangent drawn from P to the circle is 24 cm. Then the radius of the circle is



a. 25 cm b. 26 cm c. 24 cm d. 10 cm

Answer/ Explanation: d. v OT is radius and PT is tangent



∴ OT ⊥ PT

Now, in AOTP,

⇒ $OP^2 = PT^2 + OT^2$

⇒ $26^2 = 24^2 + OT^2$

⇒ 676 – 576 = OT^2

⇒ 100 = OT^2

⇒ 10 cm = OT

13. A line through point of contact and passing through centre of circle is known as

a. tangent b. chord c. normal d. segment

Answer: c

Explanation: c. normal

14. C (O, r_1) and C(O, r_2) are two concentric circles with $r_1 > r_2$ AB is a chord of C(O, r_1) touching C(O, $r_{,2}$) at C then

a. AB = r_1 b. AB = r_2 c. AC = BC d. AB = $r_1 + r_2$

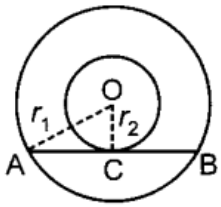
Answer: c

Explanation:

c. ∵ AB touches

C(0, r₂)

∴ OC ⊥ AB



Also, perpendicular from the centre to a chord bisects the chord.

∴ AC = BC

15. Two parallel lines touch the circle at points A and B respectively. If area of the circle is 25 n cm2, then AB is equal to

a. 5 cm b. 8 cm c. 10 cm d. 25 cm

Answer: c

Explanation:

c. Let radius of circle = R

∴ $\pi R^2 = 25\pi$

⇒ R = 5 cm

∴ Distance between two parallel tangents = diameter = 2 × 5 = 10 cm.

16. From a point P which is at a distance of 13 cm from the centre O of a circle of radius 5 cm, the pair of tangents PQ and PR to the circle are drawn. Then the area of the quadrilateral PQOR is

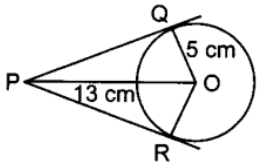
a. 60 cm^2 b. 65 cm^2

c. 30 cm^2 d. 32.5 cm^2

Answer: a

Explanation:

(*a*) Here, $PQ = \sqrt{OP^2 - OQ^2}$



$= \sqrt{13^2 - 5^2} = 12$ cm

Area of quadrilateral PQOR

= ar. of ΔPOQ + ar. of ΔPOR

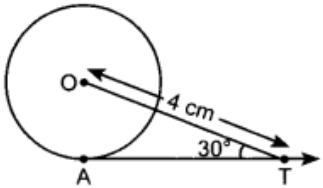
$= \frac{1}{2} \times 12 \times 5 + \frac{1}{2} \times 12 \times 5$

$= 30 + 30 = 60$ cm^2.

17. In figure AT is a tangent to the circle with centre O such that OT = 4 cm and $\angle OTA = 30°$. Then AT is equal to

a. 4 cm b. 2 cm

c. $2\sqrt{3}$ cm d. $4\sqrt{3}$ cm

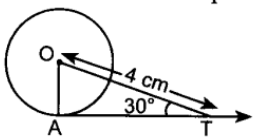


Answer: c

Explanation:

(*c*) $\angle OAT = 90°$

[$\because$ Tangent and radius are $\perp$ to each other at the point of contact]

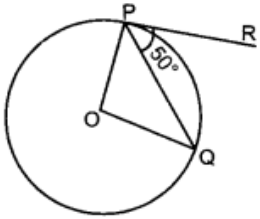


In right-angled ΔOAT,

$\frac{AT}{OT} = \cos 30°$

$\Rightarrow \frac{AT}{4} = \frac{\sqrt{3}}{2} \Rightarrow AT = 2\sqrt{3}$ cm.

18. In figure if O is centre of a circle, PQ is a chord and the tangent PR at P makes an angle of 50° with PQ, then ∠POQ is equal to



a. 100° b. 80°
c. 90° d. 75°

Answer: a

Explanation:

a. OP ⊥ PR [Y Tangent and radius are ⊥ to each other at the point of contact]
∠OPQ = 90° – 50° = 40°
OP = OQ [Radii]
∴ ∠OPQ = ∠OQP = 40°
In ΔOPQ,
⇒ ∠POQ + ∠OPQ + ∠OQP = 180°
⇒ ∠POQ + 40° + 40° = 180°
∠POQ = 180° – 80° = 100°.

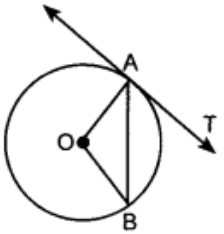
19. Match the column:

(1) The tangent at any point of a circle is …	a. known as tangent to the circle
(2) The line containing the radius through the point of contact is …	b. to the radius through the point of
(3) The lengths of tangents drawn from an external point to a circle are…	c. called the 'normal' to circle
(4) When two end points of the corresponding chord of a secant coincide, it is …	d. equal

a. 1 → A, 2 → B, 3 → C, 4 → D b. 1 → B, 2 → A, 3 → D, 4 → C
c. 1 → D, 2 → A, 3 → C, 4 → B d. 1 → B, 2 → C, 3 → D, 4 → A

Answer/ Explanation: Properties of circle.

Questions on Circles for Class 10 Question 20. In figure, O is the centre of a circle, AB is a chord and AT is the tangent at A. If ∠AOB = 100°, then ∠BAT is equal to



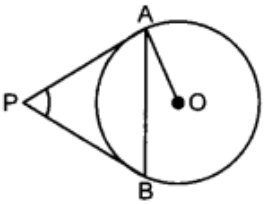
a. 100° b. 40°
c. 50° d. 90°

Answer: c

Explanation:

c. ∠AOB = 100°
∠OAB = ∠OBA (∵ OA and OB are radii)
Now, in ΔAOB,
∠AOB + ∠OAB + ∠OBA = 180°
(Angle sum property of A)
⇒ 100° + x + x = 180° [Let ∠OAB = ∠OBA = x]
⇒ 2x = 180° – 100°
⇒ 2x = 80°
⇒ x = 40°
Also, ∠OAB + ∠BAT = 90°
[∵ OA is radius and TA is tangent at A]
⇒ 40° + ZBAT = 90°
⇒ ∠BAT = 50°

21. In the figure PA and PB are tangents to the circle with centre O. If ∠APB = 60°, then ∠OAB is



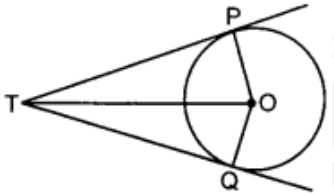
a. 30° b. 60° c. 90° d. 15°

Explanation:

a. Given ∠APB = 60°
∵ ∠APB + ∠PAB + ∠PBA = 180°
⇒ APB + x + x = 180°
[∵ PA = PB ∴ ∠PAB = ∠PBA = x (say)]

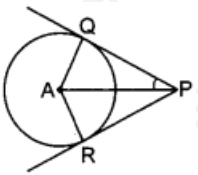
$\Rightarrow 60° + 2x = 180°$
$\Rightarrow 2x = 180° - 60°$
$\Rightarrow 2x = 120°$
$\Rightarrow x = 120°2 = 60°$
Also, $\angle OAP = 90°$
$\Rightarrow \angle OAB + \angle PAB = 90°$
$\Rightarrow \angle OAB + 60° = 90°$
$\Rightarrow \angle OAB = 30°$

22. In the given figure, TP and TQ are two tangents to a circle with centre O, such that $\angle POQ = 110°$. Then $\angle PTQ$ is equal to

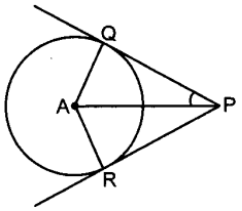


a. 55° b. 70° c. 110° d. 90°
Answer: b
Explanation: b. In quadrilateral POQT,
$\angle PTQ + \angle TPO + \angle TQO + \angle POQ = 360°$
$\Rightarrow \angle PTQ + 90° + 90° + 110° = 360°$
$\Rightarrow \angle PTQ + 290° = 360°$
$\Rightarrow \angle PTQ = 360° - 290° = 70°$

23. In figure, PQ and PR are tangents to a circle with centre A. If $\angle QPA = 27°$, then $\angle QAR$ equals to

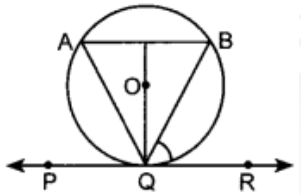


a. 63° b. 153°
c. 110° d. 90°
Answer: c
Explanation:
c. $\angle QPA = \angle RPA$
[$\because \Delta AQP \cong \Delta ARP$ (RHS congruence rule)]
$\Rightarrow \angle RPA = 27°$
$\therefore \angle QPR = \angle QPA + \angle RPA$
$= 27° + 27° = 54°$



Now,
$\angle QAR + \angle AQP + \angle ARP + \angle QPR = 360°$
$\Rightarrow \angle QAR = 90° + 90° + 54° = 360°$
$\Rightarrow \angle QAR = 360° - 234° = 126°$

24. In figure if PQR is the tangent to a circle at Q whose centre is O, AB is a chord parallel to PR and $\angle BQR = 70°$, then $\angle AQB$ is equal to

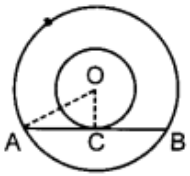


a. 20° b. 40°
c. 35° d. 45°

Answer/ Explanation: b. AB || PR
$\therefore \angle ABQ = \angle BQR$
[Alternate interior angles]
$\Rightarrow \angle ABQ = 70°$
Also, $\angle BQR = \angle BAQ$ [Angles in alternate segment]
$\Rightarrow \angle BAQ = 70°$
In ΔAQB,
$\angle BAQ + \angle ABQ + \angle AQB = 180°$
$\Rightarrow 70° + 70° + \angle AQB = 180°$
$\Rightarrow \angle AQB = 180° - 140° = 40°$.

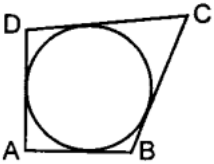
25. The common point of the tangent and the circle is called _____ .
Answer/ Explanation: point of contact

26. Two concentric circles are of radii 13 cm and 5 cm. The length of the chord of larger circle which touches the smaller circle is _____ .
Answer/ Explanation: 24 cm. Hint: ∵ AB touches the smaller circle



∴ OC ⊥ AB and hence AC = BC
In right ΔOCA,
$OA^2 = OC^2 + AC^2$
$\Rightarrow AC^2 = 13^2 - 5^2$
$\Rightarrow AC = 12$
∴ AB = 2 × 12 = 24 cm.

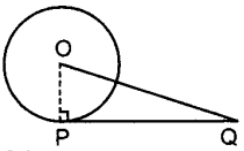
27. A quadrilateral ABCD is drawn to circumscribe a circle. If AB =12 cm, BC = 15 cm and CD = 14 cm, then AD is equal to _____ .
Answer/ Explanation: 11 cm. Hint: AB + CD = BC + AD



$\Rightarrow 12 + 14 = 15 + AD$
$\Rightarrow AD = 11$ cm.

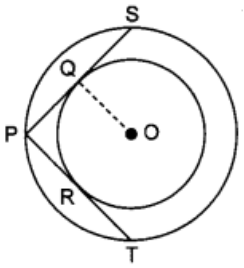
28. Number of tangents to a circle which are parallel to a secant is ____ .
Answer/ Explanation: 2

29. A tangent PQ at a point P of a circle of radius 7 cm meets a line through centre O at a point Q so that OQ = 25 cm length PQ is ____ .
Answer: 24 cm
Explanation:



24 cm.
Hint: $PQ^2 = OQ^2 - OP^2 = 252^2 - 7^2$
$\Rightarrow PQ = 24$ cm.

30. If the angle between two tangents drawn from an external point P to a circle of radius a and centre O, is 60°, then find the length of OP.
31. In the given fig., there are two concentric circles with centre O. PRT and PQS are tangents to the inner circle from a point P lying on the outer circle. If PR = 5 cm, find the length of PS.

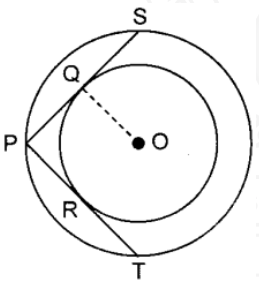


Answer/ Explanation

Circle MCQ With Answer:

Explanation:

PR and PQ are tangents to the circle from common external point P.



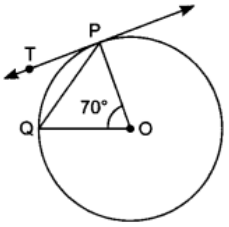
∴ PR = PQ

∴ PQ = 5 cm (∵ PR = 5 cm)

PS = 2PQ (∵ OQ ⊥ PS)

= 2 × 5 = 10 cm

32. In the given Fig., O is the centre of the circle, PQ is a chord and PT is tangent to the circle at P. If ∠POQ = 70°, find ∠TPQ.



Answer/Explanation:

Given: O is centre of the circle, PQ is chord and PT is tangent at P.

To find: ∠TPQ

Solution: In ΔOPQ

∠POQ + ∠OPQ + ∠OQP = 180°

⇒ 70° + ∠OPQ + ∠OPQ = 180°

(∵ OP = OQ, radii of the circle)

⇒ 70° + 2∠OPQ = 180°

⇒ 2∠OPQ = 110°

⇒ ∠OPQ = 55°

OP is perpendicular to the tangent at P.

∴ ∠OPT = 90°

⇒ ∠OPQ + ∠TPQ = 90°

⇒ 55° + ∠TPQ = 90°

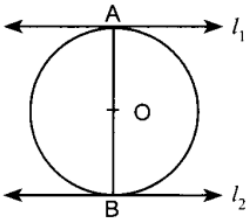
⇒ ∠TPQ = 90° – 55°

∠TPQ = 35°

33. What is the distance between two parallel tangents of a circle of radius 7 cm?

Answer/ Explanation:

Two parallel tangents of a circle can be drawn only at the end points of the diameter



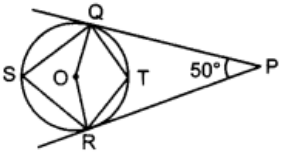
⇒ l₁ || l₂

⇒ Distance between l₁ and l₂ = AB

= Diameter of the circle

= 2 × r = 2 × 7 cm = 14 cm

34. In the given figure, find ∠QSR.

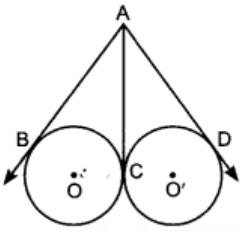


Answer/ Explanation:

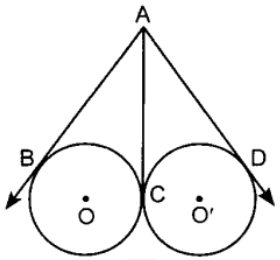
Given: PQ and PR are tangents to a circle with centre O and ∠QPR

= 50°.
To find: ∠QSR
∠QOR + ∠QPR =180°
⇒ ∠QOR +50° = 180°
⇒ ∠QOR = 130°
⇒ ∠QSR = 12 ∠QOR [Degree measure theorem]
⇒ ∠QSR =12 × 130° = 65°

35. In the given figure, AB, AC and AD are tangents. If AB = 5 cm, find AD.



Answer/ Explanation:
Given: AB, AC and AD are tangents. AB = 5 cm.



To find: AD
Sol. AB and AC are tangents from the same point to the circle with centre O.
⇒ AB = AC …(i)
(Length of the tangents from the same external point are equal).
AC and AD are tangents from the same point to the circle with centre O.
⇒ AC = AD …(ii)
(Length of the tangents from the same external point are equal)
From (i) and (ii)
∵ AB = AC = AD = 5 cm

MCQS: GEOMETRICAL CONSTRUCTIONS

1. To divide a line segment PQ in the ratio 5 : 7, first a ray PX is drawn so that ∠QPX is an acute angle and then at equal distances points are marked on the ray PX such that the minimum number of these points is
   a. 5 b. 7 c. 12 d. 10
   Answer: c
2. To divide a line segment AB in the ratio 4 : 7, a ray AX is drawn first such that ∠BAX is an acute angle and then points A_1 A_2 A_3, … are located at equal distances on the ray AX and the point B is joined to
   a. A_4 b. A_{11} c. A_{10} d. A_7
   Answer: b
3. To draw a pair of tangents to a circle which are inclined to each other at an angle of 35°, it is required to draw tangents at the end-points of those two radii of the circle, the angle between which is
   a. 145° b. 130° c. 135° d. 90°
   Answer: a
4. When a line segment is divided in the ratio 2 : 3, how many parts is it divided into?
   a. 23 b. 2 c. 3 d. 5
   Answer: d

MCQS: AREAS RELATED TO CIRCLES

1. The area of the circle is 154 cm2. The radius of the circle is
   a. 7 cm b. 14 cm
   c. 3.5 cm
   d) 17.5 cm
   Answer/ Explanation
   Answer: d
   Explanation: Reason: Area of circle = 154 cm²
   ⇒ nr² = 154 cm2
   ⇒ 227 × r² = 154
   ⇒ r² = 154 × 227
   ⇒ r² = 7 × 7 = 49
   ∴ r = √49 = 7
2. If angle of sector is 60°, radius is 3.5 cm then length of the arc is
   a. 3 cm b. 3.5 cm c. 3.66 cm d. 3.8 cm
   Answer: c
   Explanation: Reason: Here r = 3.5 cm = 3510 = 72 cm θ = 60°
   Length of arc = θ360 × 2πr = 60360 × 2 × 227 = × 72 × 16 × 22

= Undefined control sequence\3 = 3.66 cm

3. The area of a quadrant of a circle whose circumference is 22 cm, is

(a) $\frac{11}{8}$ cm² (b) $\frac{77}{2}$ cm² (c) $\frac{77}{4}$ cm² (d) $\frac{77}{8}$ cm²

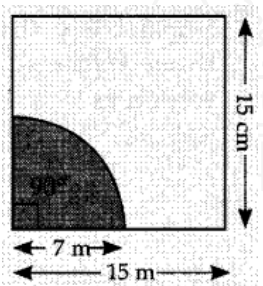
Answer/ Explanation: Reason: Here 2πr = 22 cm
2 × 227 × r = 22
⇒ r = 22 × 722 × 12 = 72 cm
∴ Area of quadrant of circle = 14πr² = 14 × 227 × 72 × 72 = 778 cm²

4. If 0 is the angle in degrees of a sector of a circle of radius V, then area of the sector is

(a) $\frac{\pi r^2\theta}{180}$ (b) $\frac{\pi r^2\theta}{360}$ (c) $\frac{2\pi r\theta}{180}$ (d) $\frac{2\pi r\theta}{360}$

Answer: b

5. A horse is tied to a peg at one corner of a square shaped grass field of side 15 m by means of a 7 m long rope. The area of that part of the field in which the horse can graze, is
a. 77 cm² b. 772 cm² c. 154 cm² d. 774 cm²
Answer: b
Explanation:



(b); ***Reason:*** Here $r = 7$ m, $\theta = 90^\circ$

$$\therefore \quad \text{Area of sector} = \frac{\theta}{360} \times \pi r^2 = \frac{90}{360} \times \frac{22}{7} \times 7 \times 7$$
$$= \frac{1}{4} \times 22 \times 7 = \frac{7}{22}\ \text{m}^2$$

6. The area of the circle whose diameter is 21 cm is
a. 346.5 cm² b. 37.68 cm² c. 18.84 cm² d. 19.84 cm²
Answer: a
Explanation: Reason: Here diameter = 21 cm
∴ Radius r = 212 cm
Area of the circle, A = πr²

∴ A=227×212×212=11×3×212=6932=346.5cm2

7. The area of the sector of a circle with radius 6 cm and of angle 60° is
   a. 9.42 cm² b. 37.68 cm² c. 18.84 cm² d. 19.84 cm²
   Answer: c
   Explanation: Reason: Here r = 6 cm, θ = 60°
   Area of the sector = θ360
   ∴ **Area =** 60360 × 3.14 × 6 × 6 = 16 × **3.14 × 6 × 6 = 3.14 × 6 = 18.84 cm²**
8. The area of a circle whose circumference is 22 cm, is
   a. 11 cm² b. 38.5 cm² c. 22 cm² d. 77 cm²
   Answer: b
   Explanation:

   (*b*); ***Reason:*** Circumference of circle = 22 cm, $2\pi r = 22$ cm

   $\Rightarrow \quad 2\left(\frac{22}{7}\right)r = 22 \qquad \Rightarrow r = \frac{22\times 7}{2\times 22} = \frac{7}{2}$ cm

   $\therefore \quad$ Area of circle $= \pi r^2 = \frac{22}{7}\times\frac{7}{2}\times\frac{7}{2} = \frac{77}{2} = 38.5$ cm

9. The area of a circle is 154 cm2. Its diameter is
   a. 7 cm b. 14 cm c. 21 cm d. 28 cm
   Answer: b
   Explanation: Reason: Here area of the circle, A = 154 cm², Radius, r = ?
   Area of the circle = 154 cm² …(Given)
   ∴ πr² = 154
   ⇒ 227 × r² = 154
   ⇒ r² = 154 × latex]\frac{7}{22}[/latex] = 7 × 7
   ⇒ r = 7 cm
   ∴ Diameter of the circle = 2 × r = 2 × 7 = 14 cm
10. The length of the minute hand of a clock is 14 cm. The area swept by the minute hand in 5 minutes is
    a. 153.9 cm² b. 102.6 cm² c. 51.3 cm² d. 205.2 cm²
    Answer: c
    Explanation: Reason: Angle swept by the minute hand in 1 minute = (360° ÷ 60) = 6°
    ∴ θ = 30°
    ∴ Angle swept by the minute hand in 5 minutes = 6° × 5 = 30°
    Length of minute hand (r) = 14 cm
    ∴ Area swept = θ360πr² = 30360 × 227 × 14 × 14 = 1543 = 51.3 cm²
11. The radii of two circles are 19 cm and 9 cm respectively. The radius of the circle which has circumference equal to the sum of the

circumference of two circles is

a. 35 cm b. 10 cm c. 21 cm d. 28 cm

Answer/ Explanation: Reason: Let the radii of two circles be r_1 and r_2 and the radius of large circle be r.

$\therefore r_1 = 19$ cm, $r_2 = 9$ cm

Circumference of two circles = $C_1 + C_2$ …(where C = circle)

$= 2\pi r_1 + 2\pi r_2 = 2\pi \times 19 + 2\pi \times 9 = 38\pi + 18\pi = 56\pi$

$\therefore$ Circumference of large circle = 56π

$\Rightarrow 2\pi r = 56\pi$

$\Rightarrow r = 28$

$\therefore$ Radius of large circle = 28 cm

12. The area of the circle that can be inscribed in a square of side 6 cm, is

a. 18π cm² b. 12π cm² c. 9π cm² d. 14π cm²

Answer: c

Explanation: Reason: Size of square = 6 cm, radius = 62 = 3 cm; Area of the circle = $\pi r^2 = \pi \times 3 \times 3 = 9\pi$ cm²

MCQS: SURFACE AREAS AND VOLUMES

1. A cylindrical pencil sharpened at one edge is the combination of

a. two cylinders b. a hemisphere and a cylinder

c. a cone and a cylinder d. frustum of a cone and a cylinder

Answer: c

2. A shuttlecock used for playing badminton has the shape of the combination of

a. a cylinder and a sphere b. a sphere and a cone

c. a cylinder and a hemisphere d. frustum of a cone and a hemisphere

Answer: d

3. The slant height of the frustum of a cone having radii of two ends as 5 cm and 2 cm respectively and height 4 cm is

a. $\sqrt{26}$ cm b. 5 cm c. $\sqrt{65}$ cm d. 25 cm

Answer: b

Explanation:

$$(b);\ \textbf{Reason: } l = \sqrt{h^2 + (R - r)^2} = \sqrt{(4)^2 + (5 - 2)^2} = \sqrt{16 + 9} = \sqrt{25} = 5$$

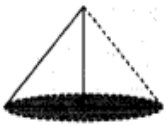
4. The total surface area of a hemispherical solid having radius 7 cm is

a. 462 cm² b. 294 cm² c. 588 cm² d. 154 cm²

Answer: a

Explanation: Reason: Total surface area of hemisphere = $3\pi r^2 = 3 \times \frac{227}{} \times 7 \times 7 = 462$ cm²

5. A solid formed on revolving a right angled triangle about its height is
   a. cylinder b. sphere c. right circular cone d. two cones
   Answer: c
   Explanation: Reason: Right circular cone is formed.



6. The surface area of a sphere is 616 cm2. Its radius is
   a. 7 cm b. 14 cm c. 21 cm d. 28 cm
   Answer: a
   Explanation:

(a); **Reason:** Surface of a sphere = 616 cm^2 $\therefore 4\pi r^2 = 616$ $\Rightarrow 4 \times \frac{22}{7} \times r^2 = 616$

$\Rightarrow r^2 = \frac{616 \times 7}{4 \times 22} = 49$ $\Rightarrow r = \sqrt{49} = 7$ cm

7. A cylinder and a cone are of same base radius and of same height. The ratio of the volume of the cylinder to that of the cone is
   a. 2 : 1 b. 3 : 1 c. 2 : 3 d. 3 : 2
   Answer: b

(b); **Reason:** $\frac{\text{Volume of cylinder}}{\text{Volume of cone}} = \frac{\pi r^2 h}{\frac{1}{3}\pi r^2 h} = 1 \times \frac{3}{1} = 3$ $\therefore$ Required ratio = 3 : 1

8. The volume of a sphere is 4851 cm^3. Its diameter is

(d); **Reason:** Volume of sphere, $4851 = \frac{4}{3}\pi r^3$ $\Rightarrow \frac{4}{3} \times \frac{22}{7} \times r^3 = 4851$

$\Rightarrow r^3 = \frac{4851 \times 3 \times 7}{4 \times 22} = \frac{441 \times 21}{4 \times 2} = \left[\frac{21}{2}\right]^3$ $\Rightarrow r = \frac{21}{2}$ $\therefore$ Diameter $= 2r = 2 \times \frac{21}{2} = 21$ cm

9. A piece of paper is in the shape of a semi¬circular region of radius 10 cm. It is rolled to form a right circular cone. The slant height is
   a. 5 cm b. 10 cm c. 15 cm d. 20 cm
   Answer: b
   Explanation: Reason: Slant height l = r
10. The base radii of two circular cones of the same height are in the ratio 3 : 5. The ratio of their volumes are
    a. 9 : 25 b. 5 : 3 c. 9 : 5 d. 3 : 25
    Answer: a
    Explanation:

(a); **Reason:** Let $r_1 = 3x$; $r_2 = 5x$ and $h_1 = h_2 = h$

$\therefore \frac{\text{Volume of 1st cylinder}}{\text{Volume of 2nd cylinder}} = \frac{\pi r_1^2 h_1}{\pi r_1^2 h_2} = \frac{9x^2 h}{25x^2 h} = \frac{9}{25}$ $\therefore$ Required ratio = 9 : 25

11. The curved surface area of glass having radii 3 cm and 4 cm respectively and slant height 10 cm is
a. 55 cm² b. 110 cm² c. 220 cm² d. 440 cm²
Answer: c
Explanation: Reason: Here r = 3 cm, R = 4 cm, l = 10 cm
∴ Curved surface area = πl(r + R) = $\frac{227}{}$ × 10(3 + 4)=$\frac{227}{}$ × 10 × 7 = 220 cm²

12. If two solid hemispheres of same base radius are joined together along their bases, then curved surface area of this new solid is
a. 3πr² b. 4πr² c. 5πr² d. 6πr²
Answer: b

13. The radii of the top and bottom of a bucket of slant height 13 cm are 9 cm and 4 cm respectively. The height of the bucket is
a. 10 cm b. 12 cm c. 15 cm d. 16 cm
Answer: b
Explanation: $l^2 = h^2 + (R-r)^2 \Rightarrow 13^2 = h^2 + (9 - 4)^2$
$\Rightarrow 169 = h^2 + 25$
$\Rightarrow h^2 = 169 - 25$
$\Rightarrow h^2 = 144$
$\Rightarrow h = 12$

14. A surahi is the combination of
a. a sphere and a cylinder b. a hemisphere and a cylinder
c. two hemispheres d. a cylinder and a cone
Answer: a
Explanation: a. A sphere and a cylinder.

15. Match the column :

(1) Surface area of cuboid	(A) $\pi r^2 h$
(2) Surface area of closed right cylinder	(B) $2\pi r(h + r)$
(3) Total surface area of right cone	(C) $\pi rl + \pi r^2$
(4) Total surface area of hemisphere	(D) $3\pi r^3$ (E) $3\pi r^2$ (F) $2[lb + bh + lh]$

a. 1 → A, 2 → C, 3 → D, 4 → E b. 1 → F, 2 → B, 3 → C, 4 → E
c. 1 → B, 2 → C, 3 → D, 4 → E d. 1 → F, 2 → E, 3 → C, 4 → A
Answer: b
Explanation: b. Formulae.

16. A cube whose edge is 20 cm long, has circles on each of its faces painted black. What is the total area of the unpainted surface of the cube if the circles are of the largest possible areas?
a. 90.72 cm² b. 256.72 cm² c. 330.3 cm² d. 514.28 cm²
Answer: d
Explanation: d. Diameter of largest circle = 20 cm.
∴ Area of circle = 100π cm²
∴ Area of 6 circles = 6 × 100π = 600π cm² (∵ there are six faces in a cube)
Also, Area of cube = 6 × (20)² = 2400 cm²
Area of unpainted surface = 2400 – 600π
= 2400 – 600 × $\frac{227}{}$
= 514.28 cm².

17. If two solid hemispheres of the same base radius r are joined together along their bases, then curved surface area of this new solid is
a. 4πr² b. 6πr² c. 3πr² d. 8πr²
Answer: a
Explanation: a. 4πr²

18. The radius (in cm) of the largest right circular cone that can be cut out from a cube of edge 4.2 cm is [AI2011]
a. 4.2 b. 2.1 c. 8.1 d. 1.05
Answer: b
Explanation: b. Edge of the cube = 4.2 cm
Diameter of base of largest possible cone = 4.2 cm 4 2
∴ Radius = $\frac{4.22}{}$ = 2.1 cm

19. How many bags of grain can be stored in a cuboid granary 12 m × 6 m × 5 m. If each bag occupies a space of 0.48 m³?
a. 750 b. 75 c. 1500 d. 375
Answer: a
Explanation:

$$(a)\ \text{No. of bags} = \frac{\text{volume of granary}}{\text{volume of one bag}}$$

$$= \frac{12 \times 6 \times 5}{0.48} = 750.$$

20. In a swimming pool measuring 90 m × 40 m, 150 men take a dip. If the average displacement of water by a man is 8 m3, then rise in water level is
a. 27.33 cm b. 30 cm c. 31.33 cm d. 33.33 cm
Answer/ Explanation: d. Volume of water displaced
= 150 × 8 = 1200 m³

$\Rightarrow 90 \times 40 \times h = 1200$

$\Rightarrow h = \frac{120090}{40} \times m = 33.33$ cm

21. Match the column:

(1) Volume of right cylinder	(A) $2lbh$
(2) Volume of cuboid	(B) $l \times b \times h$
(3) Volume of right cone	(C) $\pi r^2 h$
(4) Volume of sphere	(D) $\frac{1}{3}\pi r^2 h$
	(E) $2\pi r^2 h$
	(F) $\frac{4}{3}\pi r^3$

a. 1 → C, 2 → A, 3 → D, 4 → F b. 1 → C, 2 → A, 3 → D, 4 → E
c. 1 → C, 2 → B, 3 → D, 4 → F d. 1 → C, 2 → A, 3 → F, 4 → D

Answer: c

Explanation: c. Formulae.

22. Given that 1 cu. cm of marble weighs 25 g, the weight of a marble block of 28 cm in width and 5 cm thick, is 112 kg. The length of the block is

a. 36 cm b. 37.5 cm c. 32 cm d. 26.5 cm

Answer: c

Explanation:

(*c*) 32 cm because

$$\begin{aligned} 1 \text{cu. cm} &= 25 \text{ g} \\ \text{Total weight} &= 112 \text{ kg} \\ \therefore \quad \text{volume} &= \frac{112 \times 1000}{25} \\ &= 4480 \text{ cm}^3 \end{aligned}$$

$$\begin{aligned} \text{Now,} \quad \text{volume} &= l \times b \times h \\ \Rightarrow \quad 4480 &= l \times 28 \times 5 \\ \Rightarrow \quad l &= 32 \text{ cm.} \end{aligned}$$

23. A sphere and a cube have equal surface areas. The ratio of the volume of the sphere to that of cube is

(*a*) $\sqrt{\pi} : \sqrt{6}$ (*b*) $\sqrt{6} : \sqrt{\pi}$
(*c*) $\sqrt{\pi} : \sqrt{3}$ (*d*) $\sqrt{3} : \sqrt{\pi}$

Answer: b

Explanation:

(*b*) Let radius of sphere $= r$
and side of cube $= x$
$\because$ S.A. of sphere = S.A. of cube

$$\Rightarrow \quad 4\pi r^2 = 6 \times x^2$$

$$\Rightarrow \quad x = \sqrt{\frac{2\pi}{3}} \cdot r$$

Volume of sphere $= \frac{4}{3}\pi r^3$

Volume of cube $= \left(\sqrt{\frac{2\pi}{3}} r\right)^3$

$$\therefore \text{Required ratio} = \frac{4}{3}\pi r^3 \div \left(\sqrt{\frac{2\pi}{3}} r\right)^3$$

$$= \sqrt{6} : \sqrt{\pi}$$

24. A sphere of diameter 18 cm is dropped into a cylindrical vessel of diameter 36 cm, partly filled with water. If the sphere is completely submerged, then the water level rises (in cm) by
a. 3 b. 4 c. 5 d. 6
Answer: a
Explanation:

(*a*) Volume of sphere = Volume of water in cylindrical vessel

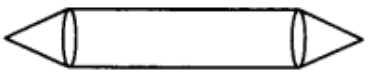
$$\frac{4}{3}\pi r^3 = \pi r^2 h$$

$$\Rightarrow \frac{4}{3} \times 9 \times 9 \times 9 = 18 \times 18 \times h \qquad \left[\because r = \frac{d}{2}\right]$$

$$\Rightarrow \frac{4 \times 9 \times 9 \times 9}{3 \times 18 \times 18} = h \Rightarrow h = 3 \text{ cm}$$

$\therefore$ Water level rises by 3 cm

25. The shape of a gilli, in the gilli-danda game (see Fig.), is a combination of



a. two cylinders b. a cone and a cylinder
c. two cones and a cylinder d. two cylinders and a cone
Answer: c
Explanation: c. Two cones and a cylinder.

26. A right circular cylinder of radius r cm and height h cm (h > 2r) just

encloses a sphere of diameter
a. r cm b. 2r cm c. h cm d. 2h cm
Answer: b
Explanation: b. 2r cm.

27. During conversion of a solid from one shape to another, the volume of the new shape will
a. increase b. decrease
c. remain unaltered d. be doubled
Answer: c
Explanation: c. Remain unaltered.

28. A rectangular block 6 cm × 12 cm × 15 cm is cut into exact number of equal cubes. The least possible number of cubes will be
a. 6 b. 11 c. 33 d. 40
Answer/ Explanation: d. Volume of rectangular block = 6 × 12 × 15 = 1080 cm^3
Side of largest cube = HCF of 6, 12, 15 = 3
∴ Volume of 1 cube = 33 = 27 cm^3
Number of cubes = $\frac{6 \times 12 \times 15}{27} = 40$

29. Ariver 1.5 m deep and 36 m wide is flowing at the rate of 3.5 km per hour. The amount of water that runs into the sea per minute (in cubic metres) is
a. 31500 b. 3150 c. 3150000 d. 6300
Answer/ Explanation:
(*b*) ∴ Length of water per minute

$$= \frac{35 \times 1000}{60 \times 10} \text{ m}$$

Amount (volume) of water that runs into the sea per minute

$$= \frac{15 \times 36 \times 35 \times 100}{60 \times 10} = 3150 \text{ m}^3.$$

30. The number of coins, 1.5 cm in diameter and 0.2 cm thick to be melted to form a right circular cylinder of height 10 cm and diameter 4.5 cm is
a. 350 b. 400 c. 450 d. 500
Answer: c
Explanation:

(*c*) Volume of one coin

$$= \pi \times \frac{1.5}{2} \times \frac{1.5}{2} \times 0.2 \text{ cm}^3$$

Volume of cylinder

$$= \pi \times \frac{4.5}{2} \times \frac{4.5}{2} \times 10 \text{ cm}^3$$

∴ Number of coins

$$= \frac{\pi \times \frac{4.5}{2} \times \frac{4.5}{2} \times 10}{\pi \times \frac{1.5}{2} \times \frac{1.5}{2} \times 0.2} = 450$$

31. The shape of a glass (tumbler) (see Fig.) is usually in the form of

a. A cone b. frustum of a cone c. a cylinder d. a sphere

Answer: b

Explanation: b. Frustum of a cone.

32. A shuttle cock used for playing badminton has the shape of the combination of

a. a cylinder and a sphere b. a cylinder and a hemisphere

c. a sphere and a cone d. frustum of a cone and a hemisphere

Answer/ Explanation: d. Frustum of a cone and a hemisphere.

33. A cone is cut through a plane parallel to its base and then the cone that is formed on one side of that plane is removed. The new part that is left over on the other side of the plane is called

a. a frustum of a cone b. cone

c. cylinder d. sphere

Answer: a

Explanation: a. Frustum of a cone.

Multiple Choice Questions on Surface Area and Volume Question 34. In a right circular cone, the cross-section made by a plane parallel to the base is a

a. circle b. frustum of a cone

c. sphere d. hemisphere

Answer: a

Explanation: a. Circle.

35. A solid is hemispherical at the bottom and conical (of same radius) above it. If the surface areas of the two parts are equal, then the ratio of its radius and the slant height of the conical part is ____ .

Answer/ Explanation:

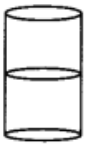
C.S.A of conical part = C.S.A. of spherical part

$\pi rl = 2\pi r^2$

$l = 2r \quad \Rightarrow \frac{12}{} = rl \quad \Rightarrow r : l = 1 : 2$

36. Two cubes each with 6 cm edge are joined end to end. The surface area of the resulting cuboid is ____ .
Answer/ Explanation: [360 cm²]
Hint: Length of resulting cuboid = 12 cm.
Width = 6 cm, height = 6 cm.
∴ Surface area
= 2(12 × 6 +12 × 6 + 6 × 6)
= 2(180) = 360 cm².

37. A solid cylinder of radius r and height h is placed over other cylinders of same height and radius. The total surface area of the shape so formed is 4nrh + 4rcr2. [True/False]
Answer/ Explanation:
False.
Total surface area of the figure
$= \underbrace{2\pi rh + \pi r^2}_{\text{Upper Cylinder}} + \underbrace{\pi r^2 + 2\pi rh}_{\text{Lower Cylinder}}$
$= 4\pi rh + 2\pi r^2.$



38. A cube of side 4 cm is cut into cubes of side 1 cm, then total surface area of all the small cubes is _____ .
Answer/ Explanation:
384 cm²
Volume of bigger cube = 4 × 4 × 4 = 64 cm³
Volume of one smaller cube = 1 × 1 × 1 = 1 cm³
Number of smaller cubes = $\frac{641}{}$ = 64
Surface area of one smaller cube = 6 × 1²
= 6 cm²
∴ Total surface area = 6 × 64 = 384 cm²

39. The ratio of the volume of a cube to that of a sphere which will fit inside the cube is ____ .
Answer/ Explanation:
[6 : π] Hint:
Let side of cube = x
Volume of cube = x^3
Diameter of sphere = x
$\Rightarrow$ radius = $\frac{x}{2}$
Volume of sphere = $\frac{4}{3}\pi\left(\frac{x}{2}\right)^3$
∴ Required ratio
$x^3 : \frac{4}{3}\pi\left(\frac{x}{2}\right)^3 = 6 : \pi.$

40. A cube of side 6 cm is cut into a number of cubes, each of side 2 cm.

The number of cubes will be _____ .

Answer/ Explanation: 27

41. Two cubes have their volumes in the ratio 1 : 27. Find the ratio of their surface areas.

Answer/ Explanation:

Let r_1 and r_2 be the edges of the two cubes respectively.

$$\text{Ratio of their volumes} = \frac{r_1^3}{r_2^3} = \frac{1}{27}$$

$$\Rightarrow \quad \left(\frac{r_1}{r_2}\right)^3 = \frac{1}{27} = \left(\frac{1}{3}\right)^3$$

$$\Rightarrow \quad \frac{r_1}{r_2} = \frac{1}{3}$$

Ratio of their surface areas

$$= \frac{6r_1^2}{6r_2^2} = \left(\frac{r_1}{r_2}\right)^2 = \left(\frac{1}{3}\right)^2 = \frac{1}{9}$$

42. A conical military tent having diameter of the base 24 m and slant height of the tent is 13 m, find the curved surface area of the cone. [$\pi = \underline{227}$]

Answer/ Explanation:

Diameter of tent = 24 m $\therefore$ radius = 12 m

Slant height = 13 m

$$\text{Curved surface area} = \pi rl = \frac{22}{7} \times 12 \times 13$$

$$= \frac{3432}{7}\, m^2$$

43. Volume and surface area of a solid hemisphere are numerically equal. What is the diameter of hemisphere?

Answer/ Explanation:

Let radius of cylinder and cone be r and height of cylinder and cone be h

then volume of cylinder = $\pi r^2 h$ and

$$\text{volume of cone} = \frac{1}{3}\pi r^2 h$$

$$\frac{\text{volume of cylinder}}{\text{volume of cone}} = \frac{\pi r^2 h}{\frac{1}{3}\pi r^2 h} = \frac{3}{1}$$

44. A joker's cap is in the form of a right circular cone of base radius 7 cm and the slant height is 25 cm. Find the area of the cap. [$\pi = \underline{227}$]

Answer/ Explanation:

Base radius of Joker's cap = 7 cm;
slant height = 25 cm
Curved surface area = $\pi rl = \frac{22}{7} \times 7 \times 25$
$= 550 \text{ cm}^2$

45. A cylinder and a cone are of same base radius and of same height. Find the ratio of the volume of cylinder to that of the cone.

Answer/ Explanation:

Let the base area of first cylinder is πr^2.

$\therefore$ Base area of second cylinder is also πr^2.

$h_1 = 15$ cm, $h_2 = 20$ cm

$$\text{Ratio of volumes} = \frac{\pi r^2 h_1}{\pi r^2 h_2}$$
$$= \frac{15}{20} = \frac{3}{4}$$

46. Two cylindrical cans have equal base areas. If one of the can is 15 cm high and other is 20 cm high, find the ratio of their volumes.

Answer/ Explanation:

Let the base area of first cylinder is πr^2.

$\therefore$ Base area of second cylinder is also πr^2.

$h_1 = 15$ cm, $h_2 = 20$ cm

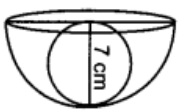
$$\text{Ratio of volumes} = \frac{\pi r^2 h_1}{\pi r^2 h_2}$$
$$= \frac{15}{20} = \frac{3}{4}$$

volume of first cylinder : volume of second cylinder = 3 : 4

47. A sphere of maximum volume is cut out from a solid hemisphere of radius 7 cm. What is the ratio of the volume of the hemisphere to that of the cut out sphere?

Answer/ Explanation:

Radius of the sphere cut = $\frac{1}{2}$ radius of the hemisphere = $\frac{7}{2}$ cm



Volume of hemisphere : volume of sphere

$$= \frac{2}{3}\pi(7)^3 : \frac{4}{3} \times \pi \times \left(\frac{7}{2}\right)^3$$

$$= 1 : 2 \times \frac{1}{8} = 1 : \frac{1}{4} = 4 : 1$$

48. Three cubes of iron whose edges are 6 cm, 8 cm and 10 cm respectively are melted and formed into a single cube. The edge of the new cube formed is ____ .
Answer/ Explanation:
12 cm
Hint: $6^3 + 8^3 + 10^3 = l^3$
$\Rightarrow 216 + 512 + 1000 = l^3$
$\Rightarrow 1728 = l^3$
$\Rightarrow l = 12$ cm.

49. A metal sheet 27 cm long, 8 cm broad and 1 cm thick is melted into a cube. The difference between surface areas of two solids is ____ .
Answer/ Explanation:
[286 cm^2]
Hint: Surface area of the metal sheet
$= 2 [27 \times 8 + 8 \times 1 + 27 \times 1]$
$= 2[216 + 35] = 502\ cm^2$
Since this sheet is melted to form a cube, therefore,
Volume of cube = Volume of cuboid metal sheet
$\Rightarrow side^3 = 27 \times 8 \times 1\ cm^3$
$\therefore$ side = $\underline{27} \times \underline{8} \times \underline{1}$ ———— $\sqrt{\underline{3}} = 6$ cm
$\therefore$ Surface area = $6 \times 6^2 = 216\ cm^2$
Difference = $502 - 216 = 286\ cm^2$.

50. A copper sphere of radius 3 cm is beaten and drawn into a wire of diameter 0.2 cm. The length of the wire is ___ .
Answer/ Explanation: 36 m

51. The dimensions of a metallic cuboid are 100 cm x 80 cm * 64 cm. It is melted and recast into a cube. Find the surface area of the cube.
Answer/ Explanation:
Dimensions of the metallic cuboid are
100 cm × 80 cm × 64 cm
100 × 80 × 64 = a3 (where a = side of cube)
$\Rightarrow 10 \times 2 \times 4 = a$
$\Rightarrow a = 80$cm
Surface area of the cube = $6a^2 = 6(80)^2$
$= 6 \times 80 \times 80 = 38400\ cm^2$

52. The slant height of the frustum of a cone is 5 cm. If the difference between the radii of its two circular ends is 4 cm, write the height of

the frustum.

Answer/ Explanation:

Slant height of the frustum of a cone = 5 cm

$$r_1 - r_2 = 4 \text{ cm}$$

$$l = \sqrt{h^2 + (r_1 - r_2)^2}$$

$$\Rightarrow \quad l^2 = h^2 + (r_1 - r_2)^2 \Rightarrow 5^2 = h^2 + 4^2$$

$$\Rightarrow \quad 25 = h^2 + 16 \Rightarrow 25 - 16 = h^2$$

$$\Rightarrow \quad 9 = h^2 \Rightarrow h = 3 \text{ cm}$$

53. A farmer wants to dig a well either in the form of a cuboid of dimension 1 m × 1 m and depth 7 m or in the form of a cylinder of diameter 1 m and depth 7 m. The rate of digging the well is ₹ 500/ m^3. Find the cost to dig both the wells [$\pi = \frac{227}{}$]

Answer/ Explanation:

Dimensions of cuboidal well

$l = 1$ m, $b = 1$ m, $h = 7$ m

$$\therefore \quad \text{Volume} = lbh$$

$$= 1 \times 1 \times 7 = 7 \text{ m}^3$$

$$\text{Cost of digging} = ₹ 500 \times 7$$

$$= ₹ 3500$$

Radius of cylindrical well $= \frac{1}{2}$ m,

$$\text{Depth} = h = 7\text{m}$$

$$\therefore \quad \text{Volume} = \pi r^2 h$$

$$= \frac{22}{7} \times \frac{1}{2} \times \frac{1}{2} \times 7$$

$$= 5.5 \text{ m}^3$$

$$\text{Cost of digging} = ₹ 500 \times 5.5$$

$$= ₹ 2750.0$$

MCQS: STATISTICS

1. One of the methods for determining mode is
   a. Mode = 2 Median -3 Mean b. Mode = 3 Median – 2 Mean
   c. Mode = 2 Mean – 3 Median d. Mode = 3 Mean – 2 Median
   Answer: b

2. Mode is the
   a. middle most frequent value b. least frequent value
   c. maximum frequent value d. none of these
   Answer: c
3. The algebraic sum of the deviations of a frequency distribution from its mean is always,
   a. greater than zero b. less than zero
   c. zero d. a non-zero number
   Answer: c
4. While computing mean of grouped data, we assume that the frequencies are
   a. centred at the upper limits of the classes b. centred at the lower limits of the classes
   c. centred at the classmarks of the classes d. evenly distributed over all the classes
   5. Construction of a cumulative frequency table is useful in determining the
   a. mean b. median c. mode d. none of these
   Answer: c
6. Which of the following can not be determined graphically?
   a. Mean b. Median c. Mode d. None of these
   Answer: a

Statistics MCQ Class 10 Question 7. The absccissa of the point of intersection of the less than type and of the more than type cumulative frequency curves of a grouped data gives its
   a. Mean b. Median c. Mode d. None of these
   Answer: b

8. For the following distribution

C.I.	0-10	10-20	20-30	30-40	40-50
f	20	30	24	40	18

   the sum of lower limits of the modal class and the median class is
   a. 20 b. 30 c. 40 d. 50
   Answer: d
9. For the following distribution

C.I.	0-5	6-11	12-17	18-23	24-29
f	26	20	30	16	22

   the upper limit of the median class is
   a. 18.5 b. 18 c. 17.5 d. 17
   Answer: c
10. For the following distribution

Marks	No. of students
Less than 20	4

Less than 40	12
Less than 60	25
Less than 80	56
Less than 100	74
Less than 120	80

the modal class is

a. 20 – 40 b. 40 – 60 c. 60 – 80 d. 80 -100

Answer: c

11. For the following distribution

Monthly Expenditure (?)	No. of families
Expenditure les than ? 10,000	15
Expenditure les than ? 13,000	31
Expenditure les than ? 16,000	50
Expenditure les than ? 19,000	67
Expenditure les than ?22,000	85
Expenditure les than ?25,000	100

The number of families having expenditure range (in ?) 16,000 – 19,000 is

a. 15 b. 16 c. 17 d. 19

Answer: c

12. In the given data:

C.I.	f
65-85	4
85 – 105	5
105 – 125	13
125 – 145	20
145 – 165	14
165 – 185	7
185 – 205	4

the difference of the upper limit of the median class and the lower limit of the modal class is

a. 38 b. 20 c. 19 d. 0

Answer: b

13. For the following distribution

Cl	0-5	5-10	10-15	15-20	20-25
f	10	15	12	20	9

the difference of the upper limit of the median class and the lower limit of the modal class is

a. 0 b. 5 c. 10 d. -5

Answer: a

14. For the following distribution

Marks	0-10	10-20	20-30	30-40	40-50
No. of students	3	9	13	10	5

the number of students who got marks less than 30 is

a. 13 b. 25 c. 10 d. 12

Answer: b

15. For the following distribution

Marks obtained	No. of students
More than or equal to 0	63
More than or equal to 10	58
More than or equal to 20	55
More than or equal to 30	51
More than or equal to 40	48
More than or equal to 50	42

the frequency of the class 20-30 is

a. 35 b. 4 c. 48 d. 51

Answer: b

16. The times, in seconds, taken by 150 atheletes to run a 100 m hurdle race are tabulated below:

C.I.	f
13.8-14	3
14 – 14.2	4
14.2 – 14.4	6
14.4 – 14.6	69
14.6 – 14.8	48
14.8-15	20

The number of atheletes who completed the race in less than 14.6 seconds is

a. 13 b. 69 c. 82 d. 130

Answer: c

17. d_i is the deviation of x_i from assumed mean a. If mean = $x+\sum fidi\sum fi$, then x is

a. class size ‘ b. number of observations

c. assumed mean d. none of these

Answer: c

Explanation:

c. ∵ Mean = assumed mean + $\sum fidi\sum fi$

∴ x = assumed mean.

18. Mean of 100 items is 49. It was discovered that three items which should have been 60, 70, 80 were wrongly read as 40, 20, 50 respectively. The correct mean is

a. 48 b. 49 c. 50 d. 60

Answer/Explanation
c. Sum of 100 observations
$= 100 \times 49 = 4900$
Correct sum
$= 4900 - [40 + 20 + 50] + [60 + 70 + 80] = 5000$
$\therefore$ Correct mean $= \frac{5000}{100} = 50$.

19. Choose the correct answer from the given four options : In the formula

$$\bar{x} = a + \frac{\sum f_i d_i}{\sum f_i}$$

for finding the mean of grouped data d_1 s are deviation from a of
a. lower limits of the classes b. upper limits of the classes
c. mid points of the classes d. frequencies of the class marks
Answer: c
Explanation: c. mid-points of the classes.

20. While computing mean of grouped data, we assume that the frequencies are
a. evenly distributed over all the classes b. centred at the classmarks of the classes
c. centred at the upper limits of the classes d. centred at the lower limits of the classes

Answer/Explanation: b. centred at the classmarks of the classes.

21. A car travels from city A to city B, 120 km apart at an average speed of 50 km/h. It then makes a return trip at an average speed of 60 km/h. It covers another 120 km distance at an average speed of 40 km/h. The average speed over the entire 360 km will be

(a) $\frac{50 + 60 + 40}{3}$ km/h

(b) $\left(\frac{3}{\frac{1}{50} + \frac{1}{60} + \frac{1}{40}}\right)$ km/h

(c) $\frac{300}{50 + 60 + 40}$ km/h

(d) none of these

Answer: b
Explanation:

$$(b)\ T_1 = \frac{120}{50}\text{hrs}, T_2 = \frac{120}{60} \text{ and } T_3 = \frac{120}{40}$$

$$\text{Total time} = \left(\frac{120}{50} + \frac{120}{60} + \frac{120}{40}\right) \text{hrs}$$

$$\text{Total distance} = 3 \times 120 \text{ km}$$

$$\text{Average speed} = \frac{3 \times 120}{\frac{120}{50} + \frac{120}{60} + \frac{120}{40}}$$

$$= \left(\frac{3}{\frac{1}{50} + \frac{1}{60} + \frac{1}{40}}\right) \text{km/h}$$

22. Mean of n numbers $x_1, x_2, \ldots x_n$ is m. If x_n is replaced by x, then new mean is

$(a)\ m - x_n + x$ $(b)\ \frac{nm - x_n + x}{n}$

$(c)\ \frac{(n-1)m + x}{n}$ $(d)\ \frac{m - x_n + x}{n}$

Answer: b
Explanation:

$$(b)\ \text{Mean} = \frac{x_1 + x_2 + x_3 + \ldots + x_n}{n} = m$$

$$\Rightarrow x_1 + x_2 + \ldots + x_n = nm$$

$$\Rightarrow x_1 + x_2 + \ldots x_{n-1} + x_n = nm$$

$$\Rightarrow x_1 + x_2 + \ldots + x_{n-1} = nm - x_n$$

$$\text{New sum} = x_1 + x_2 + \ldots + x_{n-1} + x$$

$$\text{New mean} = \frac{x_1 + x_2 + x_3 + \ldots + x_n}{n}$$

$$= \frac{nm - x_n + x}{n}$$

23. In the formula $\bar{x} = a + h(\sum fiui \sum fi)$ finding the mean of grouped frequency distribution, u_i =

(a) $\frac{x_i + a}{h}$ (b) $h(x_i - a)$

(c) $\frac{x_i - a}{h}$ (d) $\frac{a - x_i}{h}$

Answer: c

Explanation: xi−ah

24. The abscissa of the point of intersection of the less than type and of the more than type cumulative frequency curves of a grouped data gives its

a. mean b. median

c. mode d. all the three above

25. For the following distribution:

Marks	Number of Students
Below 10	3
Below 20	12
Below 30	27
Below 40	57
Below 50	75
Below 60	80

the modal class is

a. 10 – 20 b. 20 – 30 c. 30 – 40 d. 50 – 60

Answer: c

26. The times, in seconds, taken by 150 atheletes to run a 110 m hurdle race are tabulated below:

Class	Frequency
13.8 – 14.0	2
14.0 – 14.2	4
14.2 – 14.4	5
14.4 – 14.6	71
14.6 – 14.8	48
14.8 – 15.0	20

The number of atheletes who completed the race in less then 14.6 seconds is:

a. 11 b. 71 c. 82 d. 130

Answer: c

Explanation: c. 82

27. Mode is the value of the variable which has:

a. maximum frequency b. minimum frequency

c. mean frequency d. middle most frequency

Answer: a

Explanation: a. maximum frequency.

28. Mode and mean of a data are 12k and 15A. Median of the data is
a. 12k b. 14k c. 15k d. 16k
Answer: b
Explanation: b. ∵ Mode = 3 median – 2 mean
⇒ 12k = 3 median – 2 × 15k
⇒ 42k = 3 median
⇒ Median = 14k.

29. If mean = (3 median – mode) . k, then the value of k is
a. 1 b. 2 c. $\underline{12}$ d. $\underline{32}$
Answer: c
Explanation:
c. ∵ Mode = 3 median – 2 mean
⇒ 2 mean = 3 median – mode
⇒ mean = $\underline{12}$ (3 median – mode)
⇒ k= $\underline{12}$

30. The median of set of 9 distinct observations is 20.5. If each of the largest 4 observations of the set is increased by 2, then the median of the new set
a. is increased by 2
b. is decreased by 2
c. is two times of the original number
d. Remains the same as that of the original set.
Answer: d
Explanation: d. No. of observations = 9
∴ median = 5th observation
∵ The largest four observations are increased
∴ 5th observation remains unchanged.

31. The median from the table is

Value	Frequency
7	2
8	1
9	4
10	5
11	6
12	1
13	3

a. 11 b. 10
c. 12 d. 11.5
Answer/Explanation:

(*b*)

Value	7	8	9	10	11	12	13
f	2	1	4	5	6	1	3
c.f.	2	3	7	12	18	19	22

$n = 22$

$\Rightarrow \quad \frac{n}{2} = 11$, so, median is 10

Median = mean of 11th and 12th observations

= 10.

32. The relationship between mean, median and mode for a moderately skewed distribution is
a. mode = median – 2 mean b. mode = 3 median – 2 mean
c. mode = 2 median – 3 mean d. mode = median – mean
Answer: b
Explanation: b. Mode = 3 median – 2 mean
33. The abscissa of the point of intersection of both types (less than & more than) of cumulative frequency curves help in finding
a. mean b. median c. mode d. None of these
Answer: b
34. Cumulative frequency curve is also called
a. histogram b. ogive c. bar graph d. median
Answer: b
35. The A.M. of a set of 50 numbers is 38. If two numbers of the set namely 55 and 45 are discarded, the A.M. of the remaining set of numbers is _____ .
Answer: 37.5
36. If x is the mean of a distribution, then $\Sigma f_i(x_i - x)$ is eclual t0 _____ .
Answer: (zero)
37. Find the class marks of classes 10 – 25 and 35 – 55.
Answer/Explanation:

$$\text{Class marks of class } 10 - 25 = \frac{10 + 25}{2}$$
$$= 17.5$$

$$\text{Class marks of class } 35 - 55 = \frac{35 + 55}{2}$$
$$= 45$$

38. If $\Sigma f_i = 11$, $\Sigma f_i x_i = 2p + 52$ and the mean of any distribution is 6, find the value of p.
Answer/Explanation:

$$\bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i}$$

$$\Rightarrow \quad 6 = \frac{2p + 52}{11}$$

$$\Rightarrow \quad 2p = 66 - 52 \Rightarrow 2p = 14$$

$$\Rightarrow \quad p = 7$$

39. A set of numbers consists of four 5's, six 7's, ten 9's, eleven 12's, three 13's, two 14's. The mode of this set of numbers is ____ .
Explanation: 12
40. The mode of the numbers 2, 3, 4, 4. 3, 5, 3, 6 is _____ .
Explanation: 3
41. Find the value of x, if the mode of the following data is 25.
15, 20, 25, 18, 14, 15, 25, 15, 18, 16, 20. 25, 20, x, 18
Answer/Explanation
42. If the mode of a data is 18 and the mean is 24. then median is ____ .
Explanation: Median = $\underline{663}$ = 22.
43. Construction of cumulative frequency table is useful in determining the
Explanation: Median
44. In an arranged series of an even number of 2n terms the median is _____.
Explanation: mean of n^{th} term and (n + 1)th term
45.

x	f	c.f.
1	8	8
2	10	18
3	11	29
4	16	45
5	20	65
6	25	90
7	15	105
8	9	114
9	6	120

Find the median distribution.
Answer/Explanation:
n = 120
⇒ $n\underline{2}$ = 60
∴ Median is average of 60th and 61st observation
⇒ Median =$\underline{5}+\underline{52}$ = 5
46.

Marks	Number of students
0 and above	80
10 and above	77
20 and above	72
30 and above	65
40 and above	55
50 and above	43
60 and above	28
70 and above	16
80 and above	10
90 and above	8
100 and above	0

Write the proper data (marks) and frequency (Number of students).

47. Find the median class of the following data:

Marks obtained	Frequency
0-10	8
10-20	10
20-30	12
30-40	22
40-50	30
50-60	18

Answer/Explanation:

Marks obtained	***f***	***c.f.***	
0 – 10	8	8	
10 – 20	10	18	
20 – 30	12	30	
30 – 40	22	52	←Median class
40 – 50	30	82	
50 – 60	18	100	

$n = 100 \Rightarrow \frac{n}{2} = 50,$

$\therefore$ Median class is 30 – 40

48. There are ____ types of cumulative frequency curve.
Answer/Explanation
Answer:
Explanation: two

49. Which measure of central tendency is given by the x-coordinate of the point of intersection of the "more than ogive" and "less than ogive"?
Answer/Explanation
Answer:
Explanation: Median

50. In drawing ogive, cumulative frequencies are marked on _____ axis.
Answer/Explanation
Answer:
Explanation: y

51. Which measure of central tendency is given by the x-coordinate of the point of intersection of "more than ogive".and "less than ogive"?
Answer/Explanation
Answer:
Explanation: Median

MCQS: PROBABILITY

1. The probability of getting exactly one head in tossing a pair of coins is
a. 0 b. 1 c. 1/3 d. 1/2
Answer/ Explanation: Reason: S = [HH, HT, TH, TT] = 4
∴ P(exactly 1 head) =24=12

2. The probability of getting a spade card from a well shuffled deck of 52 cards is

(a) $\frac{1}{13}$ (b) $\frac{1}{4}$ (c) $\frac{12}{13}$ (d) $\frac{3}{4}$

Answer: b
Explanation: Reason: Total cards = 52,
Spade cards = 13
∴ P(a spade card) =1352=14

3. The probability of getting less than 3 in a single throw of a die is

(a) $\frac{1}{3}$ (b) $\frac{1}{2}$ (c) $\frac{1}{4}$ (d) $\frac{2}{3}$

Answer: a
Explanation: Reason: Here S = [1, 2, 3, 4, 5, 6]
∴ n(S) = 6
E = (Less than 3) = [1, 2
∴ P(Less than 3) =26=13

4. The total number of events of throwing 10 coins simultaneously is
a. 1024 b. 512 c. 100 d. 10

Answer: a
Explanation: Reason: Total events $2^{10} = 1024$

5. Which of the following can be the probability of an event?
   a. – 0.4 b. 1.004 c. $\frac{1823}{}$ d. $\frac{107}{}$
   Answer: c
   Explanation: Reason: The probability of an event can neither be a negative value, nor it can exceed unity.
6. Three coins are tossed simultaneously. The probability of getting all heads is

   (a) 1 (b) $\frac{1}{2}$ (c) $\frac{1}{4}$ (d) $\frac{1}{8}$

   Answer/ Explanation: Reason: Here S = [HHH, HHT, HTH, THH, HTT, THT, TTH, TTT] = 8
   ∴ P(all heads) = $\frac{1}{8}$
7. One card is drawn from a well shuffled deck of 52 cards. The probability of getting a king of red colour is

   (a) $\frac{1}{26}$ (b) $\frac{1}{13}$ (c) $\frac{1}{4}$ (d) $\frac{1}{2}$

   Answer: a
   Explanation: Reason: Total cards = 52
   Total events «(S) = 52
   a king of red colour = 2
   P(a king of red colour) =$\frac{2}{52}$=$\frac{1}{26}$
8. One card is drawn from a well shuffled deck of 52 playing cards. The probability of getting a non-face card is

   (a) $\frac{3}{13}$ (b) $\frac{10}{13}$ (c) $\frac{7}{13}$ (d) $\frac{4}{13}$

   Answer: b
   Explanation: Reason; Total cards = 52,
   Total face cards = 12
   ∴ Non-face cards = 52 – 12 = 40
   ∴ P(a non-face card) =$\frac{40}{52}$=$\frac{10}{13}$
9. The chance of throwing 5 with an ordinary die is

   (a) $\frac{1}{6}$ (b) $\frac{5}{6}$ (c) $\frac{1}{3}$ (d) $\frac{1}{2}$

   Answer: a

Explanation: Reason: Here S = [1, 2, 3,4, 5, 6]
∴ n(S) = 6
∴ P(throwings) = 16

10. The letters of the word SOCIETY are placed at random in a row. The probability of getting a vowel is

(a) $\frac{1}{7}$ (b) $\frac{2}{7}$ (c) $\frac{3}{7}$ (d) $\frac{4}{7}$

Answer: c
Explanation: Reason: Totle letters = 7
No. of vowel = 3 [∵ Vowel are O, I, E]
∴ P(a vowel) = 37

11. Cards bearing numbers 3 to 20 are placed in a bag and mixed thoroughly. A card is taken out from the bag at random. The probability that the number on the card taken out is an even number, is

(a) $\frac{1}{20}$ (b) $\frac{1}{4}$ (c) $\frac{1}{3}$ (d) $\frac{1}{2}$

Answer/ Explanation: Reason: Total cards = 18
Cards with even numbers are 4, 6, 8, 10, 12, 14, 16, 18, 20 = 9
∴ P(even number) =918=12

12. The total events to throw three dice simultaneously is
a. 6 b. 18 c. 81 d. 216
Answer/ Explanation: Reason: Total cards = $(6)^3$= 216

10 Class Maths MCQ With Answers Question 13. The probability of getting a consonant from the word MAHIR is

(a) $\frac{2}{5}$ (b) $\frac{3}{5}$
(c) $\frac{4}{5}$ (d) 1

Answer: b
Explanation: Reason: Total characters in MAHIR = 5,
Consonants are M, H, R i.e., 3
∴ P(getting a consonant) = 35

14. A girl calculates that the probability of her winning the first prize in a lottery is 8100. If 6,000 tickets are sold, how many tickets has she bought?
a. 400 b. 750 c. 480 d. 240
Answer: c

Explanation: Reason: No. of tickets sold = 8100 × 6000 = 8 ×60 = 480

15. A card is drawn from a well shuffled deck of 52 cards. The probability of a seven of spade is

(a) $\frac{1}{26}$ (b) $\frac{1}{52}$ (c) $\frac{3}{52}$ (d) $\frac{1}{13}$

Answer: b
Explanation: Reason: Total cards = 52, A seven of spade = 1
∴ P(a seven of spade) = 152

16. A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag. The probability that a red ball drawn is

(a) $\frac{3}{8}$ (b) $\frac{1}{2}$ (c) $\frac{5}{8}$ (d) $\frac{3}{4}$

Answer: a
Explanation: Reason: Total balls = 3 + 5 = 8
∴ Total events = 8
P(a red ball) = 38

17. A child has a die whose six faces show the letters as given below:

A B C D E F

The die is thrown once. The probability of getting a 'D' is

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{1}{4}$ (d) $\frac{1}{6}$

Answer/ Explanation: Reason: Sample space S = [A, B, C, D, E, F] = 6
∴ n(S) = 6
∴ P(getting D) = 16

18. One card is drawn from a well-shuffled deck of 52 cards. The probability that the card will not be an ace is

(a) $\frac{1}{13}$ (b) $\frac{4}{13}$
(c) $\frac{12}{13}$ (d) $\frac{3}{13}$

Answer: c
Explanation: Reason: Total cards = 52
∴ Total events = 52
No. of ace cards = 4
Non-ace cards = 52 – 4 = 48
∴ P(not an ace) =4852=1213

19. A lot consists of 144 ball pens of which 20 ae defective and the others are good. Tanu will buy a pen if it is good but will not buy if it is defective. The shopkeeper draws one pen at random and gives it to her. The probability that she will buy that pen is

(a) $\frac{5}{36}$ (b) $\frac{20}{36}$ (c) $\frac{31}{36}$ (d) $\frac{31}{144}$

Answer: c
Explanation: Reason: Total ball pens = 144
Defective ball pens = 20
Good ball pens = 144 – 20 = 124
∴ P(she will buy a pen) = P(good ball pen) =$\underline{124144}$=$\underline{3136}$

20. A ticket is drawn at random from a bag containing tickets numbered from 1 to 40. The probability that the selected ticket has a number which is a multiple of 5 is

(a) $\frac{3}{5}$ (b) $\frac{1}{5}$ (c) $\frac{1}{3}$ (d) $\frac{4}{5}$

Answer: b
Explanation: Reason: Total number = 40
∴ n(S) = 40
Number of favourable events are 5,10,15, 20, 25, 30, 35, 40 = 8
∴ Probability (multiple of 5) =$\underline{840}$=$\underline{15}$

21. Which of the following cannot be the probability of an event?
a. 1.5 b. $\underline{35}$ c. 25% d. 0.3
Answer: a
Explanation:
a. ∵ Probability of any event cannot be more than 1.
∴ 1.5 can not be the probability of any event.
∴ a. is the answer.

22. A coin is tossed twice. The probability of getting both heads is

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$
(c) $\frac{1}{4}$ (d) 1

Answer: c
Explanation:
c. Sample space = {HH, HT, TH, TT}
Number of total possible outcomes =4
Number of favourable outcome (both heads) = 1
∴ Probability of getting both heads = $\underline{14}$

23. A fair dice is rolled. Probability of getting a number x such that $1 \leq x \leq 6$, is
    a. 0 b. > 1 c. between 0 and 1 d. 1
    Answer/ Explanation: d. 1, ∵ It is a sure event.
24. The sum of the probabilities of all elementary events of an experiment is p, then
    a. $0 < p < 1$ b. $0 \leq p < 1$ c. $p = 1$ d. $p = 0$
    Answer: c
    Explanation: c. $p = 1$
25. If an event cannot occur, then its probability is
    a. 1 b. $\frac{3}{4}$ c. $\frac{1}{2}$ d. 0
    Answer/ Explanation: d. 0. ∵ event cannot occur.
26. An event is very unlikely to happen. Its probability is closest to
    a. 0.0001 b. 0.001 c. 0.01 d. 0.1
    Answer: a
    Explanation: a. 0.0001
27. Match the columns:

(1) Probability of sure event	(A) $\frac{1}{2}$
(2) Probability of impossible event	(B) 0
(3) A and B are complementary events	(C) 1
	(D) P(B) = 1 – P(A)
	(E) P(A) = P(B)

    a. (1) → (A), (2) → (B), (3) → (C)
    b. (1) → (B), (2) → (A), (3) → (C)
    c. (1) → (C), (2) → (B), (3) → (E)
    d. (1) → (C), (2) → (B), (3) → (D)
    Answer/ Explanation: d. Probability facts
28. A card is drawn from a well-shuffled deck of 52 playing cards. The probability that the card will not be an ace is

    (a) $\frac{1}{13}$ (b) $\frac{1}{4}$
    (c) $\frac{12}{13}$ (d) $\frac{3}{4}$

    Answer: c

Explanation:
c. Total number of cards = 52
Number of ace = 4
P(not be an ace) = $\frac{48}{52}=\frac{12}{13}$

29. An experiment whose outcomes has to be among a set of events that are completely known but whose exact outcomes is unknown is a
a. sample space b. elementary event
c. random experiment d. none of these
Answer: c
Explanation: c. Random experiment

30. The experiments which when repeated under identical conditions produce the same results or outcomes are known as
a. random experiments b. probabilistic experiment
c. elementary experiment d. deterministic experiment
Answer/ Explanation: d. Deterministic experiment

31. For an event E, P(E) + P(E→) = q, then
a. $0 \leq q < 1$ b. $0 < q \leq 1$
c. $0 < q < 1$ d. none of these
Answer/ Explanation: d. ∵ P(E) + P(E→) = 1
∴ q = 1

32. A man is known to speak truth 3 out of 4 times. He throws a die and a number other than six comes up. Find the probability that he reports it is a six.

(a) $\frac{3}{4}$ (b) $\frac{1}{4}$
(c) $\frac{1}{2}$ (d) 1

Answer: b
Explanation: b. When a number other than six appears and man reports it is a six, it means man is telling a lie.
∴ Probability = $1 - \frac{1}{4}=\frac{1}{4}$

33. One ticket is selected at random from 100 tickets numbered 0.0, 01, 02, ……, 99. Suppose x is the sum of digits and y is the product of digits, then probability that x = 9 and y = 0 is

(a) $\frac{2}{17}$ (b) $\frac{3}{27}$
(c) $\frac{1}{50}$ (d) $\frac{1}{25}$

Answer: c

Explanation:

c. Sum of digits = 9 and product = 0

∴ Number is either 09 or 90.

∴ Required probability = $\frac{2}{100} = \frac{1}{50}$

34. A bag contains 5 black balls, 4 white balls and 3 red balls. If a ball is selected randomwise, the probability that it is a black or red ball is _____ .

Answer/ Explanation:

Number of black or red balls = 5 + 3

= 8

∴ Required probability = $\frac{8}{12} = \frac{2}{3}$

35. The probability of a non-leap year having 53 Mondays is _____.

Answer/ Explanation:

No. of days in a non-leap year = 365

No. of complete weeks = 52($52 \times 7 = 364$)

No. of days left = 1

∴ Probability of this day being a Monday = Probability of 53 Mondays = $\frac{1}{7}$

36. If a random experiment is performed, then each of its outcomes is known as _____ .

Answer/ Explanation: elementary event

37. The probability of selecting a rotten apple randomly from a heap of 900 apples is 0.18. What is the number of rotten apples in the heap? [AI2017]

Answer/ Explanation:

Total apples in the heap = 900

∴ Total number of elementary events = 900

One rotten apple is randomly selected from this heap

$$P(\text{a rotten apple}) = \frac{\text{Favourable events}}{\text{Total elementary events}}$$

$$0.18 = \frac{\text{Favourable events}}{900}$$

$$\Rightarrow \text{Favourable events} = 0.18 \times 900 = 162$$

Hence, there are 162 rotten apples in the heap.

38. From a well shuffled pack of cards, a card is drawn at random. Find the probability of getting a black queen.

Answer/ Explanation:

Total number of ways to draw a card = 52

Number of ways to draw a black queen = 2

∴ Probability of getting a black queen $\frac{2}{52} = \frac{1}{26}$

39. If three different coins are tossed together, then find the probability of getting two heads. [AI 2017 (C)]
Answer/ Explanation:
Three coins are tossed together.
Possible outcomes
{HHH, HHT, HTH, THH, TTT, TTH, THT, HTT}
Number of 2 heads together = 3 Probability of getting two heads = 38
40. A die is thrown once. Find the probability of getting a number less than 3.
Answer/ Explanation:
Total number of ways = 6
Number of ways to get a number less than 3 = 2
∴ Required probability = 26=13
41. Cards bearing numbers 3 to 20 are placed in a bag and mixed thoroughly. A card is taken out from the bag at random. What is the probability that the number on the card taken out is an even number?
Answer/ Explanation:
Total number of cards =18
Even numbers from 3 to 20 are 4, 6, 8, 10, 12, 14, 16, 18, 20 = 9 numbers
Probability that the number on the card taken out is an even number

$$= \frac{\text{Number of favourable outcomes}}{\text{Total number of outcomes}}$$
$$= \frac{9}{18} = \frac{1}{2}$$

42. Two coins are tossed simultaneously. Find the probability of getting exactly one head.
Answer/ Explanation:
When two coins are tossed simultaneously
Total number of outcomes = {HH, HT, TH, TT}
Total number of outcomes = 4
Favourable outcomes = {HT, TH} = 2
Probability of getting exactly one head = 24=12
43. An unbiased die is thrown, what is the probability of getting an even number.
Answer/ Explanation:
Total outcomes = {1, 2, 3, 4, 5, 6}
Favourable outcomes = {2, 4, 6}
∴ Probability of getting an even number = 36=12
44. If the probability of winning a game is 0.3, what is the probability of losing it?

Answer/ Explanation:
Probability of winning a game = 0.3
∴ Probability of losing the game
= 1 – Probability of winning the game
= 1 – 0.3 = 0.7

45. A man is known to speak truth 5 out of 7 times. He throws a die and a number other than 6 comes up. Find the probability that he reports it is a six.

Answer/ Explanation:
P(man will speak the truth) = 57
∴ P(man will not speak the truth) = 1 – 57=27
when a number other than 6 comes up the probability of man's reporting it is a six the probability of man not speaking the truth 57

1. The maximum and minimum values of $\sin^4x + \cos^4x$ are:
   a) 2, 1 b) 3, $\frac{1}{2}$ c) 4, 3 d) 1, $\frac{1}{2}$
2. If $\sin^2A + 3\cos A - 2 = 0$ then $\cos^3A + \sec^3A =$
   a) 6 b) 8 c) 18 d) 16
3. If A is a set of even natural numbers less than 8 and B is the set of prime numbers less than 7, then the number of relations from A to B is
   a) 2^9 b) 9^2 c) $2^9 - 1$ d) $9^2 - 1$
4. In a rule method the null set is represented by:
   a) { } b) ϕ c) $\{x : x \neq x\}$ d) $\{x : x = x\}$
5. The range of the function $f(x) = \frac{x}{|x|}$ is
   a) R – {0} b) R – {–1, 1) c) { – 1, 1} d) {0, 1}
6. If $A = \begin{pmatrix} 1 & x+3 \\ 2x+1 & x-1 \end{pmatrix}$ is a symmetric matrix then x =
   a) 5 b) 2 c) 3 d) 7
7. If the fourth term of a G.P. is 2, then the product of 1st seventh term is :
   a) 2^5 b) 2^6 c) 2^7 d) 2^4
8. The sum of 1st n natural number is $\frac{1}{5}$ times the sum of their squares.
   Then

a) $n = 5$ b) $n = 6$ c) $n = 7$ d) $n = 8$

9. The sum of all 2 digit numbers is
   a) 4059 b) 4095 c) 4509 d) 4905
10. If $S_n = n^3 - 100$, then $t_{10} =$
    a) $10^3 - 9^3$ b) 200 c) $9^3 - 8^3$ d) 1000
11. If A_1, A_2 are two A.M's and G_1, G_2 are two G.M's between a and b then $\frac{A_1 + A_2}{G_1 G_2}$ is equal to:

    a) $\frac{a+b}{2b}$ b) $\frac{b-a}{b}$ c) $\frac{a+b}{b}$ d) $\frac{a+b}{\sqrt{b}}$

12. If α and β are the roots of the equation $2x^2 - 9x + 15 = 0$ then $\frac{1}{\alpha} + \frac{1}{\beta} =$

    a) $\frac{2}{9}$ b) $\frac{15}{9}$ c) $\frac{9}{15}$ d) $\frac{2}{15}$

13. The minimum value of $x^2 + 8x + 17$ is
    a) 1 b) – 1 c) 0 d) 17
14. If $\vec{a}$, $\vec{b}$ and $\vec{c}$ are unit vectors such that $\vec{a} + \vec{b} + \vec{c} = 0$ then $\vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a} =$

    a) $-\frac{3}{2}$ b) $-\frac{1}{2}$ c) 0 d) $\frac{5}{2}$

15. The point of intersection of two lines $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ is

    a) $\left(\frac{b_2c_1 - b_1c_2}{a_1b_2 - a_2b_1}, \frac{c_1a_1 - c_2a_1}{a_1b_2 - a_2b_1}\right)$ b) $\left(\frac{b_2c_1 + b_1c_2}{a_1b_2 - a_2b_1}, \frac{c_1a_2 + c_2a_1}{a_1b_2 - a_2b_1}\right)$

    c) $\left(\frac{b_1c_2 - b_2c_1}{a_1b_2 - a_2b_1}, \frac{c_1a_2 - c_2a_1}{a_1b_2 - a_2b_1}\right)$ d) $\left(\frac{b_1c_2 - b_2c_1}{a_1b_2 + a_2b_1}, \frac{c_1a_2 - c_2a_1}{a_1b_2 + a_2b_1}\right)$

16. If the lines $3x + 4y + 1 = 0$, $kx + 2y - 3 = 0$ and $2x - y - 3 = 0$ are concurrent then $k =$

a) 3 b) – 2 c) 5 d) – 5

17. If (3, 3) lies on the line joining (h, 0) and (0, k) then =

a) h + k = 9 b) $\frac{1}{h}+\frac{1}{k}=\frac{1}{3}$ c) hk = 3 d) h – k = 9

18. The circum-centre of a right angled triangle with vertices (1, 0), (0, 1) and (0, 0) is

a) $\left(\frac{1}{2},\frac{1}{2}\right)$ b) $\left(\frac{1}{2},-\frac{1}{2}\right)$ c) $\left(-\frac{1}{2},\frac{1}{2}\right)$ d) $\left(-\frac{1}{2},-\frac{1}{2}\right)$

19. The radius of the circle which touches x-axis at point (3, 0) and passes through (1, 2) is

a) 4 b) (1, 2) c) (3, – 1) d) (1, 0)

20. If f(x – 1) = x + 2 then f(x^2) =

a) $x^3 + 3$ b) $x^2 + x + 1$ c) $x^2 + 2$ d) $x^2 - 5$

21. If $a^x = b$, $b^y = c$ and $c^z = a$, then the value of xyz is

a) 1 b) 0 c) abc d) 2

22. If $a^2 = b + c$, $b^2 = c + a$ and $c^2 = a + b$, then the value of $\frac{1}{a+1}+\frac{1}{b+1}+\frac{1}{c+1}$ is

a) a + b + c b) 1 c) 0 d) 3

23. If a sphere is divided into two hemi-spheres, then its total surface area is increased by

a) 100% b) 200% c) 150% d) 50%

24. If A $\cap$ B = ϕ then $A \cup \overline{B}$ =

a) B b) A c) $\overline{B}$ d) $\overline{A}$

25. A = { $x : x \neq x$ } represents

a) {x} b) {1} c) { } d) { 0 }

26. If f(x) = $\frac{x-1}{x+1}$, the value of $\frac{f(x)-f(y)}{1+f(x)f(y)}$ is

a) $\frac{x+y}{1-xy}$ b) $\frac{x-y}{1+xy}$ c) $\frac{x-y}{x+y}$ d) $\frac{x-y}{xy}$

27. If x = $\sqrt{7+4\sqrt{3}}$ then $x+\frac{1}{x}$ =

a) 4 b) 6 c) 3 d) 2

28. Roots of the quadratic equation $bx^2 + ax + c = 0$ for $b \neq 0$ are given by
a) $\frac{-b \pm \sqrt{b^2 - 4a}}{2a}$ b) $\frac{-c \pm \sqrt{a^2 - 4a}}{2b}$
c) $\frac{-a \pm \sqrt{a^2 - 4b}}{2b}$ d) $\frac{-a \pm \sqrt{b^2 - 4a}}{2a}$

29. In a G.P, $(m + n)^{th}$ term is 9 and $(m - n)^{th}$ term is 4, then m^{th} term is
a) 16 b) 1/6 c) 6 d) none of these

30. If $3 \sin\alpha = 5 \sin\beta$ then $\frac{\tan\left(\frac{\alpha+\beta}{2}\right)}{\tan\left(\frac{\alpha-\beta}{2}\right)} =$
a) 4 b) 1 c) 2 d) 3

31. If $\sin A + \text{cosec} A = 2$, then $\sin^2 A + \text{cosec}^2 A$ is equal to
a) 4 b) 1 c) 2 d) none of these

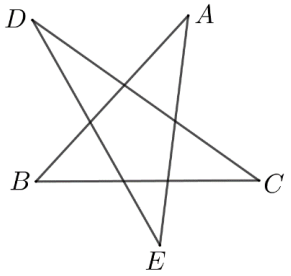
32. The value of $\cos^2 A + \cos^2\left(\frac{2\pi}{3} - A\right) + \cos^2\left(\frac{2\pi}{3} + A\right)$ is
a) 3/2 b) 2/3 c) 4/3 d) 1

33. In what ratio is the line joining the points A(4,5) and B(1,2) divided by x-axis?
a) externally at 5:2 b) internally at 5:2 c) externally at 2:5 d) internally at 2:5

34. The angle between the pair of lines given by $x^2 - 2xy \cot\theta - y^2 = 0$ is
a) 0^0 b) 90^0 c) 180^0 d) 45^0

35. Ram's income is 10% more than that of Shyam's income. By how much percentage is Shyam's income is less than that of Ram's income?
a) 0% b) $9\frac{1}{9}\%$ c) $1\ \frac{1}{9}\%$ d) $9\frac{1}{1}\%$

36. The angular measurement of $\angle A + \angle B + \angle C + \angle D + \angle E$ is



a) 90^0 b) 360^0 c) 180^0 d) none

37. What is the probability of getting 5 Saturdays in the month of April. (April has 30 days)

a) 2/7 b) 1/6 c) 1/7 d) 5/7

38. If the 4th term of a G.P. is 54 and the 6th term is 24, then which term is $7\frac{1}{9}$?

a) 7 b)8 c)9 d) 10

39. If $\vec{a}$ and $\vec{b}$ are the position vectors of the points A and B respectively then the position vector of D on $\overrightarrow{AB}$ such that $\overrightarrow{BD} = 2\overrightarrow{BA}$ is

a) $\vec{a} - \vec{b}$ b) $\vec{a} - 2\vec{b}$ c) $2\vec{c} - \vec{b}$ d) $2\vec{a} - \vec{b}$

40. 16 men can finish 1 work in 30 days. When should 8 men leave the work so that it may be finished in 40 days?

a) 20 days b) 10 days c) 30 days d) 5 days

41. The area of the triangle whose sides are along the lines x = 0, y = 0 and 4x + 5y = 20 is

a) 20 b) 10 c) 1/10 d) 1/20

42. If $A = \begin{pmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 2 \end{pmatrix}$ then A^5 equals to

a) 5A b) 10 A c) 16 A d) 32 A

43. If Ram's average for seven month exam is 89%, what percent must he score on the next exam to raise his average to 90%

a) 91% b) 97% c) 98% d) 99%

44. If 2p is the length of perpendicular dropped from origin on the line $\frac{x}{a} + \frac{y}{b} = 1$, then a^2, $8p^2$, b^2 are in

a) AP b) GP c) HP d) none

45. The circum centre of the triangle whose vertices are (2, -1), (1, 2) and (-2, 1) is
a) (0,1) b) (1, 0) c) (0, 0) d) (1, 1)

46. The value of $\sqrt{2+\sqrt{2+\sqrt{2+2\cos 4x}}}$ equals
a) cosx b) $2\cos\frac{x}{2}$ c) $\sin\frac{x}{2}$ d) 2 cos 2x

47. The value of $\cos 22\frac{1}{2}^0$ is
a) $2-\sqrt{2}$ b) $\sqrt{\frac{2-\sqrt{2}}{2}}$ c) $\sqrt{\frac{2+\sqrt{2}}{2}}$ d) $\sqrt{\frac{3-2\sqrt{2}}{2}}$

48. If tanA + sinA = m and tanA – sinA = n then $(m^2 - n^2)^2$ equals
a) mn b) 4mn c) 16 mn d) $4\sqrt{m}$

49. A printer can print 1 page in 5 second and shut down for three minutes to cool of after every hours of operation. How many minutes will a printer take to print 3600 pages?
a) 300 b) 312 c) 1800 d) 188

50. If $2 < x < 4$ and $3 < y < 7$, what is the largest integer value of x + y ?
a) 9 b) 11 c) 12 d) 10

51. If one end of the diameter of the circle $x^2 + y^2 + x - 15 = 0$ is (2, - 3), then the coordinates of the other end is
a) (3, 4) b) (2, -1) c) (1, 2) d) (-3, 3)

52. If α and β are the roots of the equation $x^2 - 5x + 6 = 0$, then which of the following is the equation with roots α^2 and β^2
a) $x^2 + 13x + 36 = 0$ b) $x^2 - 13x - 36 = 0$
c) $x^2 - 13x + 36 = 0$ d) $x^2 + 13x - 36 = 0$

53. If the height of a cylinder is 4 times its circumference, what is the volume of the cylinder in terms of its circumference?
a) $\frac{c^3}{\pi}$ b) $\frac{2c^3}{\pi}$ c) $\frac{c^3}{2\pi}$ d) $\frac{2c^3}{3\pi}$

54. A square of area 2 cm is inscribed in a circle, what is the area of the circle?
a) π cm^2 b) $\frac{\pi}{2}$ cm^2 c) 2π cm^2 d) $\pi\sqrt{2}$ cm^2

55. In a race of 1 km, A beats B by 100 m, B beats C by 50 m, C beats D by 40 m, how many meters will A beats D?

a) 192 m b) 100 m c) 820 m d) 179.2 m

56. What fraction of a week is 98 hours?

a. $\frac{7}{24}$ b) $\frac{24}{98}$ c) $\frac{1}{2}$ d) $\frac{7}{21}$

57. What part of a circle will be 24^0 sector?

a) 12% b) 13.33% c) $6\frac{2}{3}\%$ d) 24%

58. The angle between the vectors $\overrightarrow{a}$ and $\overrightarrow{b}$ when $\left|\overrightarrow{a}+\overrightarrow{b}\right| = \left|\overrightarrow{a}-\overrightarrow{b}\right|$

a) $\frac{\pi}{3}$ b) $\frac{\pi}{4}$ c) $\frac{\pi}{2}$ d) $\frac{3\pi}{4}$

59. When the rate of income tax is increased from 10% to 15%, I have to pay Rs 835 more, find my income.

a) Rs 16700 b) Rs 16600 c) Rs 10000 d) Rs 83500

60. The next term of the sequence 1, 2, 4, 7, 11, ……. is

a) 17 b) 16 c) 15 d) none of these

61. An article is sold for RS 800 allowing 20% discount. The marked price of the article is

a) Rs 960 b) Rs 1000 c) Rs 906 d) Rs 1200

62. A camera bought for Japanese yen 17540 in Japan is sold for Rs 25000 in Nepal. If 10 Nepalese rupees = Japanese yen 8.77. The profit in Nepalese rupees is

a) Rs 3200 b) Rs 4000 c) Rs 5000 d) Rs 4500

63. The amount compounded annually on Rs 40000 for 2 years if the rates of interest for 2 years are 10% and 15% is

b) Rs 5060 b) Rs 5600 c) Rs 5006 d) Rs 6050

64. The present population of a village is RS 10816. If the annual growth rate is 4%, the population of the village before 2 years was

a) 10000 b) 9980 c) 9000 d) 8200

65. If the perimeter of a triangle is 18 cm, then the area of the triangle is

a) $6\sqrt{3}$ cm^2 b) $7\sqrt{3}$ cm^2 c) $8\sqrt{3}$ cm^2 d) $9\sqrt{3}$ cm^2

66. The area of a great circle of a hemisphere is y cm^2. The total surface area of hemisphere is

a) $\frac{4}{3}$ y cm^2 b) $\frac{3}{4}$ ycm^2 c) $\frac{4}{3}$ y^2 cm^2 d) $\frac{3}{4}$ y^2 cm^2

67. The sum of the radius and height of a cylinder is 15 cm. If its circumference of base is 44 cm, the volume of the cylinder is

a) 2312 cu. cm b) 1223 cu.cm c) 1322 cu.cm d) 1232 cu. cm

68. The volume of a squared base pyramid of height 6 cm is 32 m^3. The length of side of its base is
a) 3 cm b) 3.5 cm c) 3.8 cm d) 4 cm

69. $\sqrt[3]{4}$ =
a) $\sqrt[12]{256}$ b) $\sqrt[6]{64}$ c) $\sqrt[12]{64}$ d) $\sqrt[6]{256}$

70. If $a^{m-n} \times a^{2n} = a^x$, then
a) m + n + x = 0 b) m + n – x = 0 c) m – n – x = 0 d) m – n + x = 0

71. If $x = 10^a$, $y = 10^b$ and $x^b y^a = 100$ then
a) a + b = 1 b) a – b = 0 c) ab = – 1 d) ab = 1

72. A geometry box is Rs 150 cheaper than a calculator. If the total cost of the geometry box and the calculator is RS 850, the cost of calculator is
a) Rs 350 b) Rs 450 c) Rs 480 d) Rs 500

73. Three more than twice the number is equal to 8 less than the number. The number is
a) 11 b) – 11 c) 15 d) –15

74. The perimeter of a rhombus is 100 cm and one of its diagonal is 40 cm. The length of the other diagonal is
a) 30 cm b) 15 cm c) 20 cm d) 35 cm

75. The diagonal of a square is 10 cm. The area is
a) 75 sq. cm b) 25 sq. cm c) 100 sq. cm d) 50 sq. cm

76. In a continuous series, the average weight of some students is 75 and the sum of their weight is 6000 kg. The number of students is
a) 60 b) 80 c) 75 d) 85

77. The probability of getting a number divisible by 3 or a square number when a fair dice is thrown is
a) $\frac{1}{4}$ b) $\frac{1}{2}$ c) $\frac{2}{3}$ d) $\frac{1}{3}$

78. How much more is the value after allowing 10% discount on Rs 4000 than Rs 3050?
a) RS 450 b) Rs 500 c) Rs 550 d) Rs 600

79. The marked price of an article is 20% above the cost price. The cost price is less than the marked price by
a) 10% b) 25% c) 15% d) 20%

80. In how many years will Rs 7500 amount to RS 9408 at 12% per annum interest compounded annually?
a) 1 year b) 1.5 years c) 3 years d) 2 years

81. If $a^x = b$, $b^y = c$ and $c^z = a$, then the value of xyz is
a) 1 b) 0 c) abc d) 2

82. If $a^2 = b + c$, $b^2 = c + a$ and $c^2 = a + b$, then the value of $\frac{1}{a+1} + \frac{1}{b+1} + \frac{1}{c+1}$ is

a) a + b + c b) 1 c) 0 d) 3

83. If a sphere is divided into two hemi-spheres, then its total surface area is increased by

a) 100% b) 200% c) 150% d) 50%

84. If $A \cap B = \phi$ then $A \cup \overline{B}$ =

a) B b) A c) $\overline{B}$ d) $\overline{A}$

85. A = { $x : x \neq x$ } represents

a) {x} b) {1} c) { } d) { 0 }

86. If na. = 6 and nb. = 9, minimum value of n(A ∪ B) is

a) 15 b) 9 c) 0 d) 6

87. If x = $\sqrt{7+4\sqrt{3}}$ then $x + \frac{1}{x} =$

a) 4 b) 6 c) 3 d) 2

88. Roots of the quadratic equation $bx^2 + ax + c = 0$ for $b \neq 0$ are given by

a) $\frac{-b \pm \sqrt{b^2 - 4a}}{2a}$ b) $\frac{-c \pm \sqrt{a^2 - 4a}}{2b}$

c) $\frac{-a \pm \sqrt{a^2 - 4b}}{2b}$ d) $\frac{-a \pm \sqrt{b^2 - 4a}}{2a}$

89. If the CP of 15 lemons equals to the SP of 12 lemons, find the gain percent.

a) 10% b) 20% c) 25% d) 15%

90. The MP of a T.V. is Rs 20, 000. If 13% VAT was levied after allowing 10% discount, find the final price.

a) Rs 25000 b) Rs 21000 c) Rs 23000 d) Rs 20340

91. The vertical height of a right circular cone is 3 times its diameter and its volume is 54 π cm^3. Find its height.

a) 15 cm b) 18 cm c) 20 cm d) 28 cm

92. H.C.F of $2x^3 - x^2 - x$, $4x^3 - x$ and $8x^4 + x$ is

a) 2x – 1 b) $x^2(2x + 1)$ c) x(2x – 1) d) x(2x + 1)

93. If $a = b^{2x}$, $b = c^{2y}$ and $c = a^{2z}$, then the value of xyz is

a) 1/5 b) 1/6 c) 1/7 d) 1/8

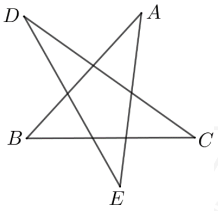
94. Value of $\frac{\sqrt{45a^2} - \sqrt{80a^2} + 6a\sqrt{5}}{5\sqrt{5a^2}}$ is

a) 1 b) 0 c) 3 d)5

95. Ram's income is 10% more than that of Shyam's income. By how much percentage is Shyam's income is less than that of Ram's income?

a) 0% b) $9\frac{1}{9}\%$ c) $1\ \frac{1}{9}\%$ d) $9\frac{1}{1}\%$

96. The angular measurement of ∠ A + ∠ B + ∠ C + ∠ D + ∠ E is



a. 90^0 b) 360^0 c) 180^0 d) none

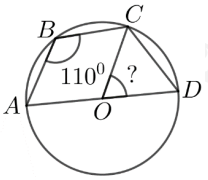
97. What is the probability of getting 5 Saturdays in the month of April. (April has 30 days)

a) 2/7 b) 1/6 c) 1/7 d) 5/7

98. Age of father was 3 times the age of his son in 2032 B.S. Father will be $1\frac{2}{3}$ times older than his son in 2060 B.S. What is the year of birth of son?

a) 2015 B.S. b) 2018 B.S c) 2020 B.S. d) 2030 B.S.

99. In the figure, value of ∠ COD is



a) 30^0 b) 60^0 c) 70^0 d) 40^0

100. 16 men can finish 1 work in 30 days. When should 8 men leave the work so that it may be finished in 40 days?

a) 20 days b) 10 days c) 30 days d) 5 days

101. How many proper subsets do you find the set {2, 3, 4}

a) 6 b) 8 c) 7 d) 2

102. In a survey of 60 students, 30 drink Milk, 25 drink Curd and 10 drink both these. Find the number of students who drinks only one

drink.
a) 20 b) 35 c) 15 d) 5

103. In how many years will a sum of Rs 8000 amounts to Rs 9261 at 5% p.a. CI?
a) 2 years b) 3 years c) 4 years d) 5 years

104. In how many years will a sum of money double itself at 10% per annum simple interest?
a) 20 years b) 10.5 years c) 12 years d) 10 years

105. To what value will a machine costing Rs 50, 006 be reduced in 5 years at 10% compound depreciation?
a) Rs 3200 b) Rs 29528.04 c) Rs 30000 d) Rs 25000

106. A box contains 50 items of which 10 items are defective. One item is selected randomly. Find the probability of non-defective.
a) 80% b) 20% c) 30% d) 60%

107. A bird was sold for Rs 240 at a loss of 5.5%. For what should it have been sold to gain 26%
a) Rs 400 b) Rs 340 c) Rs 320 d) Rs 300

108. Find the gain % when 20 pens are sold for the cost of 25 pens.
a) 30% b) 15% c) 20% d) 25%

109. In an army camp, there is a ration for 600 army for 50 days. After 15 days, 180 army left the camp. For how many days will the remaining ration will longer?
a) 45 days b) 50 days c) 60 days d) 45 days

110. A year hence a father will be 5 times as old as his son, two years ago the father was 3 times as old as his son will be 4 years hence. Find their present age.
a) 30 and 11 b) 36 and 11 c) 30 and 5 d) 29 and 5

111. The HCF of $2x^3 - 16$, $x^2 - 4x + 4$ and $x^2 - 3x + 2$ is
a) $x + 2$ b) $x - 2$ c) $x - 1$ d) $x + 1$

112. Two successive discount of 20% and 75% is equivalent to a single discount of
a) 18% b) 24% c) 32% d) 80%

113. 4 men working together can plough the field in 12 hour. How long will it take 6 men to plough the field of the same size, if all of them work at the same rate?
a) 6 hours b) 8 hours c) 10 hours d) 12 hours

114. What is the probability that the leap year will contain 53 Saturdays?
a) 5/7 b) 2/7 c) 14/81 d) 5/81

115. If $a + b = 5$ and $ab = 6$, a is greater than b. What is the value of $a^2 - b^2$?
a)5 b) 6 c) 10 d) 12

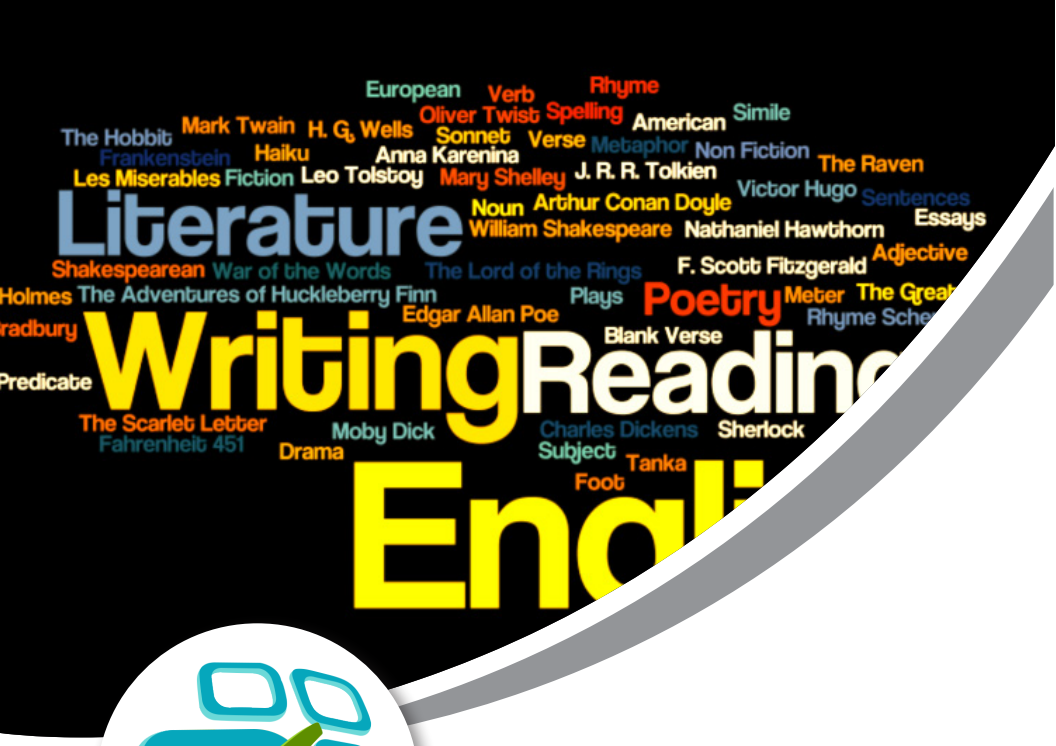
116. What is the least number a solid metallic sphere each of 6 cm diameter that should be melted and reset to form a solid metal cylinder whose height is 45 cm and diameter is 4 cm?
a) 5 b) 10 c) 15 d) 20

117. If the heights of two cones are in the ratio 1: 4 and the radii of their bases are in the ratio 4 : 1, then the ratio of their volumes is
a) 1 : 2 b) 2 : 3 c) 3 : 4 d) 4 : 1

118. If the mean of five observations x, x + 2, x + 4, x + 6, x + 8 is 11, then the mean of first three observations is
a) 9 b) 11 c) 13 d) none of these

119. The figure formed by joining the mid points of the adjacent sides of a quadrilateral is a
a) parallelogram b) rhombus c) rectangle d) square.

120. One angle is equal to three times its supplement. The measure of the angle is
a) 130^0 b) 135^o c) 90^0 d) 120^0



MCQs

Multiple Choice Question Collection

Subject:

ENGLISH

MCQS: ENGLISH

1 '__ have you ever been to Australia, Ginny?' 'Yes, two years ago."
a. Did you ever go b) Do you ever go
c) Have you ever been d) Are you ever going
2. Tokyo is the biggest city I've ever lived in.
a. the most big b) the bigger
c) the biggest d) the more big
3. A vegetarian is someone who doesn't eat meat.
a. who b) what c) which d) whose
4. I never buy a newspaper these days.
a. I never a newspaper buy b) I never buy a newspaper
c) I buy never a newspaper d) Never I buy a newspaper
5. I am going to watch TV tonight.
a. am b) go to c) going to d) am going to
6. I wish I had more money!
a. have b) had c) would have d) was having
7. Would you like to be famous one day?
a. Would you like b) Would you like to
c) Do you like d) Do you like to
8. It's my birthday on Friday.
a. on b) in c) at d) by
9. I am eighteen years old.
a. am b) have c) have got d) -
10. I have a headache.
a. am b) do c) have d) got
11. Do you wear a uniform at your school?
a. carry b) wear c) use d) hold
12. 'What time is it?' 'I have no idea.'
a. idea b) opinion c) answer d) time
13. The meal was very expensive. Look at the bill!
a. ticket b) receipt c) invoice d) bill
14. How many pairs of trousers have you got?
a. items b) pairs c) sets d) times
15. Joel came back from his holiday in Brazil looking really tanned.
a. tanned b) sunned c) coloured d) darkened
16. What was Lord Kelvin suggesting?
a. It is difficult to make accurate predictions.
b) It would be possible for people to fly.
c) It would be impossible for people to fly.
d) There would only be a few computers.
17. According to the text, which of the following statements is TRUE?
a. Lord Kelvin and Thomas Watson were good friends.

b) The world does not have unlimited natural resources.
c) Our children will not make predictions about the future.
d) It is easy to predict what the world will be like 20 years from now.

18. Shape (line 6) is closest in meaning to:
a. do b) create c) look at d) move

19. The article suggests we should live in a _____ way.
a. selfish b) sustainable c) predictable d) scientific

20. Choose the best title for the article.
a. Predictions and more predictions!
b) Politicians and scientists
c) A sustainable future for our children
d) New inventions

21. Her thinking leans ____ democracy.
a. with b. towards c. for d. None of these
Answer: B

22. He got too tired _____ over work.
a. because of b. because off c. on d. for
Answer: A

23. _____ his principles, he has to be very careful.
a. with regard of b. with regard on
c. with regard to d. None of these
Answer: C

24. Building has been built _____ the new plan.
a. accordance to b. in accordance with
c. for d. about
Answer: B

25. He crossed the broken bridge ____ warning.
a. in spite of b. in spite off c. on d. about
Answer: A

26. The train ____ as fast as the bus.
a. went b. running c. moves d. going
Answer: C

27. He was seen _____ to the school.
a. went b. going c. gone d. go
Answer: B

28. She ____ in the sun for 1 hour.
a. sitting b. has been sitting c. has been sit d. has sit
Answer: B

29. ____ it help you in your studies ?
a. will b. was c. is d. are
Answer:

30. I ____ never seen such a picture before.
    a. did b. was c. have d. has
    Answer: C
31. Words of same sound is ?
    a. Soundnyms b. Antonyms c. Homonyms d. None of these
32. Sounding the same but spelt differently ?
    a. Symphonious b. Homophonous
    c. Synonyms d. Saminymous
    Answer: B
33. Choose the correct answer ?
    a. My friend has got a new job. b. My friend has got a new work.
    c. My friend is got a new job. d. My friend did got a new job.
    Answer: A
34. Choose the correct sentence.
    a. Do you like a glass of water ?
    b. Would you like a glass of water ?
    c. Would you like the glass of water ?
    d. Do you like the glass of water ?
    Answer: B
35. Antonym of Ad-lib ?
    a. Improvise b. Extemporized c. Deliberate d. Spontaneous
    Answer: C
36. Antonym of Imperil ?
    a. Safeguard b. Endanger c. Hazard d. Jeopardise
    Answer: A
37. Antonym of Inscrutable ?
    a. Baffling b. Obvious c. Confuse d. Reduce
    Answer: B
38. Antonym of Licentious ?
    a. Continent b. Confused talk c. Clear d. Close
    Answer: A
39. Antonym of Rabid ?
    a. Frantic b. Sober c. Chaos d. Vulgar
    Answer: B
40. Antonym of Ravenous ?
    a. Greedy b. Very Hungry c. Assuaged d. None of these
    Answer: C
41. Antonym of Supernal ?
    a. Earthy b. Divine c. Celestial d. None of these
    Answer: A
42. Antonym of Torpor ?
    a. Lack of Energy b. Inactive

c. Dullness d. None of these
Answer: C

43. Choose the correctly spelt word ?
a. Monotonuous b. Monotonous c. Monotonauos d. Monatonous
Answer: B

44. Choose the correctly splet word ?
a. Scissors b. Scisors c. Scissars d. Secissors
Answer: A

45. Choose the correctly spelt word ?
a. Ofense b. Affence c. Offience d. Offence
Answer: D

46. Choose the correctly spelt word
a. Humarous b. Humorous c. Humurous d. Humerous
Answer: B

47. Choose the correctly spelt word ?
a. Crocadile b. Crocadele c. Crocodile d. Crocadeli
Answer: C

48. Choose the correctly spelt word ?
a. Ramification b. Ramnification c. Ramefication d. Ramaification
Answer: A

49. Choose the correctly splet word ?
a. Coption b. Copetion c. Cooption d. None of these
Answer: C

50. Choose the correctly spelt word ?
a. Walet b. Wallet c. Walleat d. Wellet
Answer: B

51. Choose the correctly spelt word.
a. Horizontal b. Horezontal c. Horizontel d. Horezontel
Answer: A

52. Choose the correctly splet word.
a. Huricanne b. Huricane c. Hurricane d. Huricene
Answer: C

53. Choose the correctly splet word.
a. Quotation b. Quotetion c. Quottation d. Quotateion
Answer: A

54. Choose the correctly spelt word.
a. Violence b. Violance c. Violense d. None of these
Answer: A

55. Choose the correctly spelt word.
a. Alebi b. Alibi c. Allibi d. Alibe
Answer: B

56. Choose the correctly splet word.

a. Charecter b. Charactar c. Chartter d. Character
Answer: D

57. Choose the correctly spelt word.
a. Actioneble b. Actionable c. Auctioneble d. None of these
Answer: B

58. Choose the correctly splet word.
a. Maleciously b. Maliciously c. Meleciously d. Maliceously
Answer: B

59. Choose the correctly spelt word.
a. Counterfeiter b. Counterfeiiter c. Counterffeiter d. None of these

60. Choose the correctly spelt word.
a. Vaccum b. Vacum c. Vacuum d. Vaccuum
Answer: C

61. Choose the correctly spelt word.
a. Response b. Respanse c. Respoonse d. None of these
Answer: A

62. Choose the correctly spelt word.
a. Evantual b. Evental c. Eventual d. Eventaul
Answer: C

63. Choose the correctly spelt word.
a. Obduarute b. Obdurate c. Obdarute d. None of these
Answer: B

64. Choose the correctly spelt word.
a. Cocensus b. Consensus c. Consencus d. Consansus
Answer: B

65. Choose the correctly spelt word.
a. Reluctance b. Reluctence c. Reluctanse d. Relactance
Answer: A

66. Choose the correctly spelt word.
a. Worisome b. Worrisome c. Worrisom d. Worresome
Answer: B

67. Choose the correctly spelt word.
a. Harasment b. Harrasmant c. Harassment d. Harresment
Answer: C

68. Choose the correctly spelt word.
a. Involment b. Involvemant c. Involmant d. Involvement
Answer: D

69. Choose the correctly spelt word.
a. Bureaucracy b. Bureaucrecy c. Bureaucrasy d. None of these
Answer: A

70. Choose the correctly spelt word.
a. Clifhanger b. Cliffhanger c. Fliffhenger d. Cliffhangar

Answer: B

71. Synonym of Atypical ?
a. Normal b. Fast c. Not normal d. Typewriter
Answer: C

72. Synonym of Begrudge ?
a. Slow b. To envy another's possession
c. Sorrow d. Recover
Answer: B

73. Synonym of Biennial ?
a. Every two years b. Twice in a year
c. Quickly d. Slow
Answer: A

74. Synonym of Circumvent ?
a. Straight b. Outwit c. Benefit d. Lawfully
Answer: B

75. Synonym of Raucous ?
a. Mild-sounding b. Confusion
c. Harsh-Souding d. Clean
Answer: C

76. Choose the correct sentence.
a. Although it was raining, but we had the picnic.
b. Although it was raining, we had the picnc.
c. Although it was raining, since we had the picnic.
d. Although it was raining, though we had the picnic.
Answer: B

77. Extrasensory perception ?
a. Antipathy b. Telepathy c. Apathy d. None of these
Answer: B

78. Choose the correctly sentence.
a. You are very nice, as your mother.
b. You are very nice, alike your mother.
c. You are very nice, like your mother.
d. You are very nice, same your mother.
Answer: C

79. Choose the correctly spelt word.
a. Catalog b. Catelog c. Cataleg d. Cateleg
Answer: A

80. Choose the correctly spelt word.
a. Deperture b. Departere c. Depertare d. Departure
Answer: D

MCQS: PREPOSITION

1. This pen is .... the other.
   a. different to b. different for c. different from d. different by
2. They differ .... one another on many points.
   a. to b. at c. for d. from
3. There are many differences ...the two brothers.
   a. among b. above c. across d. between
4. The beggar was .... food for three days.
   a)devoured of b. devoured from c. devoured of d. devoured at
5. She was disqualified ... entering the beauty pageant.
   a. to b. for c. from d. in
6. The businessman deals ... foreign goods.
   a. with b. in c. at d. by
7. The car .... the lamp post on the highway. Fortunately no one was injured.
   a. dashed up to b. dashed at c. dashed across d. dashed against
8. The blind person can't distinguish light ... darkness.
   a. from b. for c. against d. to
9. The poor are ... education.
   a. deprived to b. deprived at c. deprived with d. deprived of
10. The lion is distinctive ... its physical features.
    a. from b. of c. to d. at

Answers:

1.c	2.d	3.d	4.a
5.c	6. b	7. d	8. a
9. d	10. b		

1: CHOOSE THE CORRECT FORM OF VERB.

1. The sun_____in the west.
   a. set b. sets c. setting d. will set
2. If he offers me a job, I_____it.
   a. accept b. will accept
   c. would accept d. would have accepted
3. How long have you been_____here?
   a. wait b. waited c. waits d. waiting
4. They always___back home late.
   a. came b. comes c. have come d. come
5. They_____tea every morning.
   a. drink b. drank c. is drinking d. have drunk
6. I have already__three cups of coffee.
   a. take b. took c. taken d. had taken
7. She_____in this office for seven years.

a. has been working b. work
c. has worked d. working

8. He_____twenty minutes ago.
a. has been left b. left c. leave d. leaving
9. Good students always_____hard.
a. worked b. work c. have worked d. is working
10. She_____since morning.
a. has been sleeping b. sleep c. slept d. has slept
11. I_____her in the plane.
a. meets b. has met c. met d. meeting
12. The baby_____for milk now.
a. crying b. cry c. is crying d. are crying
13. It_____since last night.
a. had been raining b. rain c. rained d. was raining
14. They_____their work by tomorrow.
a. completes b. will have completed
c. has completed d. complete
15. They_____to sleep at ten.
a. shall go b. go c. goes d. going
16. It _____ in winter.
a. rained b. is raining c. rains d. has rained
17. She _____ her cat very much.
a. loves b. loved c. is loving d. will love
18. She _____ to school an hour ago.
a. goes b. went c. gone d. has gone
19. The book _____ on the table for weeks.
a. lie b. lay c. has been lying d. will lie
20. She _____ English quite well.
a. speak b. were speaking c. speaks d. will spoke
21. It _____ at present.
a. is raining b. was raining c. rain d. rained
22. The _____ for London tomorrow.
a. will leave b. leaves c. left d. has left
23. I _____ him next Monday.
a. will see b. is seeing c. shall see d. see
24. Why do you _____ a noise?
a. making b. make c. makes d. made
25. He _____ a story the last day.
a. tells b. told c. telling d. tell
26. My father has _____ for Karachi.
a. leave b. leaving c. left d. leaves
27. He _____ this book one month ago.

a. writes b. writing c. write d. wrote

28. She _____ before the party began.
a. reaches b. reached c. reach d. had reached
29. Hadia always _____ the truth.
a. have spoke b. speaking c. speak d. speaks
30. The baby _____ for milk last night.
a. cries b. crying c. cried d. had cried
31. The bus _____ before we stepped out.
a. stop b. stops c. had stopped d. have stopped
32. I _____ this motor bike only a month ago.
a. bought b. buys c. has bought d. will buy
33. It _____ to rain an hour ago.
a. begin b. begun c. began d. will begin
34. Have you _____ this book?
a. red b. reading c. reads d. read
35. She did not say anything before he _____.
a. leave b. leaves c. left d. had left
36. She _____ her work before the guests arrive.
a. finish b. finishes c. will have finished d. finished
37. I was going to airport when I _____ her.
a. see b. seen c. saw d. had seen
38. The Quaid-e-Azam _____ very hard.
a. work b. works c. will work d. worked
39. The earth _____ around the sun.
a. revolve b. revolves c. revolved d. revolving
40. She _____ French at present.
a. learn b. learns c. learned d. is learning
41. After you _____ I went to sleep.
a. had left b. left c. leave d. have left
42. I _____ this exercise in an hour's time.
a. was finished b. shall finish c. finishing d. am finished
43. She has _____ him back.
a. sent b. send c. sends d. sending
44. The girls are _____ net ball.
a. play b. plays c. playing d. played
45. d. o you _____ to school every day.
a. went b. go c. goes d. gone
46. He _____ to school an hour ago.
a. go b. had gone c. gone d. went
47. I _____ the house before it started raining.
a. left b. had left c. was leaving d. leaving

48. We did not _____ a sound.
a. hear b. hears c. heard d. hearing
49. How long _____ you been working in the garden.
a. will b. has c. had d. have
50. Had Asghar _____ a century before 4 o'clock?
a. make b. makes c. made d. making
51. He will _____ the enemy.
a. defeats b. defeat c. defeating d. defeated
52. The players will be _____ in the field.
a. play b. plays c. playing d. played
53. The fisherman will have been _____ fish for three days.
a. catch b. catching c. catches d. caught
54. Shahida _____ a sad song today.
a. will sing b. had sung c. will have sung d. is singing
55. They will _____ Pakistan before the end of the year.
a. has left b. have left c. left d. leaving
56. He _____ in the sun for an hour.
a. was standing b. is standing c. stood d. has been standing
57. I _____ a book when the door bell rang.
a. am reading b. shall read c. was reading d. read
58. She _____ her homework before the guests arrive.
a. will have finished b. finished c. finishes d. had finished
59. Are they _____ idle?
a. sat b. sit c. sitting d. sits
60. The farmer was ploughing the field when it _____ raining.
a. started b. is starting c. has started d. will start
61. She _____ anything before he left.
a. not said b. had not said c. will not say d. was not saying
62. She _____ the piano since 2 O'clock.
a. played b. has been playing c. will play d. plays
63. I asked her what places she _____ in Europe.
a. visit b. visits c. had visited d. will visit
64. The _____ tea every morning.
a. takes b. take c. taking d. took
65. These mangoes _____ the market by April.
a. had reached b. reached c. reaches d. will have reached
66. They took their breakfast after they _____ their hands.
a. washed b. had washed c. will wash d. washes

67. They _____ hard all day.
a. working b. work c. had work d. will worked
68. Aslam _____ for three hours.
a. swim b. has been swimming c. was swimming d. swam
69. They _____ cards for six hours.
a. were playing b. are playing c. had been playing d. has been playing
70. You _____ it.
a. will not understand b. will not be understand c. does not undertsand d. be understand
71. They already _____ their home task.
a. do b. did c. have done d. are doing
72. They _____ their work regularly.
a. not do b. does not do c. not did d. do not do
73. How long ago you _____ here?
a. come b. came c. coming d. are coming
74. He _____ to my letter.
a. is not replying b. not replied c. do not reply d. does not replied
75. We had not _____ him before.
a. see b. seen c. saw d. seeing
76. Why were they _____ on foot?
a. walking b. walk c. walks d. walked
77. Last summer, we _____ many places.
a. visited b. visit c. visits d. will visit
78. People were _____ kites.
a. fly b. flew c. flies d. flying
79. They _____ rice every day.
a. eaten b. eat c. will ate d. eats
80. The bus moved while I _____ it.
a. am boarding b. boarded c. was boarding d. board
81. My mother _____ to me for ten years.
a. was not writing b. has not been writing c. not write d. do not write
82. The meeting _____ by the time we gather.
a. ended b. had ended c. will ended d. will have ended
83. I _____ tea when the door bell rang.
a. made b. making c. was making d. make
84. Sorry, I _____ go to the library. I've been planning to study all day.
a. am b. was c. will d. have
85. They would have been late if they _____ a taxi.

a. take b. had taken c. had not taken d. took

86. He _____ a bike when he met an accident.
a. rides b. is riding c. was riding d. rode

87. I _____ put up some pictures.
a. am going to b. going to c. shall be d. am

88. I was sitting in the café when you _____ me.
a. call b. called c. will call d. calling

89. They _____ their meals before the guests arrived.
a. taken b. had taken c. has taken d. takes

90. She _____ any noise.
a. was not hearing b. did not hear c. is not heard
d. has been hearing

91. This watch _____ very much.
a. will not costing b. will not cost
c. had not cost d. has not been hearing

2: CHOOSE THE WORD WITH CORRECT SPELLING.

Sr#	A	B	C	D
1	Prodaction	Production	Prodoction	Pruduction
2	Exchange	Exchenge	Excheng	Ekschange
3	Might	Mieght	Meight	Maight
4	Prasoner	Prisoner	Presoner	Prisonor
5	Separate	Saparat	Seiparate	Separate
6	Adress	Addres	Address	Addruss
7	Cirtain	Cartain	Certain	Certein
8	Excellent	Excellant	Excelent	Excillent
9	Noies	Naise	Noise	Noice
10	Perfection	Parfection	Perfaction	Pirfection
11	Loath	Lothe	Laothe	Loathe
12	Danamic	Dynamic	Dynemic	Dynamec
13	Aeble	Eble	Able	Ablea
14	Peple	Paple	Pople	People
15	Decline	Declane	Dicline	Declene
16	Diner	Dinner	Denner	Denir
17	Acadimy	Academy	Acidamy	Accademy

18	Available	Avialable	Avaleable	Aviolable
19	Energy	Inergy	Enargy	Enirgy
20	Enimy	Enamy	Enemy	Enumy
21	Custom	Custum	Custam	Custoom
22	Sermun	Serman	Sermon	Sermaan
23	Relevent	Relevunt	Relevant	Revleantt
24	Minar	Minur	Miner	Minor
25	Contest	Contast	Conteast	Cantest
26	Proirity	Priority	Poroity	Preority
27	Exsel	Excele	Excel	Exsele
28	Motevation	Motivotion	Motevotion	Motivation
29	Succes	Seccess	Success	Sccass
30	Comming	Comeing	Cuming	Coming
31	Privilege	Previlege	Privelege	Preilage
32	Leboratory	Laboratory	Laboretory	Leboretory
33	Defy	Defi	Dafy	Dufy
34	Envelope	Envilop	Envalop	Envulop
35	Acheve	Achieve	Achive	Acheive
36	Modern	Modrin	Madren	Modron
37	Attempt	Attemmpt	Atempt	Attmipt
38	Revilation	Revelation	Rivelation	Ravelation
39	Language	Languege	Lenguage	Linguage
40	Interst	Intirest	Interest	Inturst
41	Revange	Revinge	Revenge	Revonge
42	Carrir	Carier	Carrer	Career
43	Surty	Surty	Shurty	Surety
44	Fossil	Fosil	Fossel	Fosseil
45	Luxery	Luxury	Luxary	Luxry
46	Acadamic	Acadmic	Academic	Acedmic
47	Demise	Demize	Demyse	Dimise
48	Asociation	Association	Asoslation	Ascoclation

49	Entertainment	Intertainment	Antertanment	Entertianment
50	Intersede	Intercede	Entercede	Interside
51	Education	Aiducation	Eiducation	Aeducation
52	Actualy	Actuely	Actuelly	Actually
53	Property	Proparty	Praperty	Propirty
54	Infection	Enfection	Anfection	Infaction
55	Eptitude	Aptitude	Aptetude	Aptitud
56	Transcends	Trancends	Transends	Transendz
57	Techiqe	Techniq	Technique	Techneque
58	Leisur	Leisure	Leasure	Liesure
59	Mentel	Mantal	Mintal	Mental
60	Colunm	Column	Calumn	Calunm
61	Elastic	Elastac	Alastic	Elestic
62	Diceded	Decided	Desided	Disided
63	Adhasive	Adhesive	Adhsive	Adhasiv
64	Fascinating	Facinating	Fasinating	Fascenating
65	Magazines	Magzines	Magezines	Magazenes
66	Sentury	Century	Cantary	Cintury
67	Effective	Effcetive	Effactive	Affective
68	Iquitable	Equitabal	Eqiutable	Equitable
69	Dispute	Despute	Dispuet	Disput
70	Destitud	Distitute	Destitute	Destitude
71	Aktivity	Activity	Ectivety	Activety
72	Ancestor	Encestor	Ancistor	Ancester
73	Specifac	Spacific	Specific	Spicefic
74	Patience	Petience	Patiance	Pateince
75	Anteboitic	Antibiotic	Entibiotic	Antibotic
76	Contineus	Continuous	Cantineous	Contenuous
77	Conveniant	Canvenient	Convenient	Conveneint
78	Auditary	Auditery	Audetory	Auditory
79	Responsibal	Responseble	Respansible	Responsible

80	Competishun	Cumpetition	Compitetion	Competition
81	Innovetive	Innovative	Innovatiev	Innovetave
82	Signifikance	Segnificance	Significance	Signeficance
83	Oppertunity	Opportunity	Oportunity	Opportunety
84	Decade	Decede	Dekade	Dacede
85	Privale	Privail	Prevail	Prevale
86	Consentration	Concentration	Concantration	Concentrashun
87	Integrity	Entegrity	Intagrity	Integrety
88	Adequete	Edequate	Adequate	Adequete
89	Auqifers	Aiqufers	Aquifers	Aquifers
90	Execushion	Axecution	Execution	Ekzecution
91	Applauze	Aplause	Applause	Appleuse
92	Uncanscious	Unconshious	Unconscious	Unconcious
93	Repatation	Raputation	Reputashion	Reputation
94	Frastration	Frustrashion	Frustration	Frastretion
95	Erable	Erabel	Arable	Arabel
96	Ascalat	Escalate	Escalat	Ascalate
97	Fertiel	Fartile	Fertial	Fertile
98	Tewzeer	Twezer	Tweezar	Tweezer
99	Prasperity	Prosparity	Prosperity	Prosperety
100	Debris	Dabris	Debres	Deberis
101	Leterature	Literacher	Litirature	Literature
102	Camprehend	Comprehend	Comprihend	Comprehand
103	Costumary	Customary	Customery	Custmary
104	Magnitued	Magnetude	Magnitude	Magintude
105	Irrigation	Irregation	Errigation	Irrijation
106	Endividual	Individual	Indivigual	Indevidual
107	Substetute	Sebstitute	Subctitute	Substitute
108	Recepient	Recipient	Reicepient	Racipent
109	Pressure	Prassure	Pressure	Preesur
110	Pasitive	Positive	Possitive	Positiv

111	Broadcost	Bradcast	Broadcast	Brodcast
112	Fantesis	Fantusies	Fantasise	Fentasies
113	Meduim	Mudiem	Medeum	Medium
114	Aditorials	Editorials	Editoryals	Oditorials
115	Disgrace	Desgrace	Disgrase	Decgrace
116	Calender	Celendar	Calendar	Calandar
117	Immidiate	Immedaite	Imediate	Immediate
118	Gentl	Gental	Gentle	Gentale
119	Newspaper	Newspapir	Newspapar	Newspapere
120	Circamstances	Circumstances	Circumstancas	Cercumstances
121	Innovative	Ennovative	Annovative	Invative
122	Omet	Omit	Oamit	Omiet
123	Primerily	Premirly	Prumarily	Primarily
124	Competetion	Compatation	Cumpatition	Cemputation
125	Incissant	Incessant	Encissent	Encessunt
126	Prificent	Profcient	Proficint	Proficient
127	Fixe	Fix	Fex	Fux
128	Rense	Runse	Rins	Rinse
129	Chivlary	Chivalry	Chevelaray	Chvilary
130	Oentment	Onitment	Ointment	Aintment
131	Celebration	Selebration	Celebraion	Seelebration
132	Judjment	Jugment	Jujment	Judgement
133	Jentleman	Gentlman	Gentleman	Gentalman
134	Sequance	Saquence	Seequence	Sequence
135	Bandeges	Bendedes	Bandages	Bandagess
136	Guidence	Guidance	Gudence	Gidence
137	Victams	Victims	Vactims	Vactums
138	Ingineer	Angineer	Engineer	Engaere
139	Disciplines	Desciplines	Dusceplines	Disceplines
140	Primerily	Premirly	Prumarily	Primarily
141	Participent	Partcipant	Particpant	Participant

142	Decad	Decade	Dacade	Deacade
143	Beneath	Beneeth	Benaeth	Benieth
144	Konects	Conects	Cannects	Connects
145	Erodud	Eroded	Ereded	Oroded

* * * * *

3: CHOOSE THE CORRECT OPTION.

1. The antonym of "fail" is _____.
   a. unsuccessful b. succeed c. flourish d. develop
2. The synonym of "current" is _____.
   a. dated b. old c. new d. up-to-date
3. He was accused _____ theft.
   a. to b. with c. for d. of
4. They are faithful _____ her.
   a. to b. with c. on d. of
5. The antonym of "suffering" is _____.
   a. distress b. pleasure c. anguish d. sorrow
6. She started delving into this part.
   a. remembering b. imaging c. discovering d. probing
7. The word debris means:
   a. rubble b. mud c. soil d. send
8. The synonym of "conquer" is _____.
   a. win b. shame c. tough d. heed
9. Hanging up signs and posters on doors and windows means _____.
   a. luck and happiness b. love and sincerity c. care and affection d. sad and gloomy
10. c. hange the dressing at least _____.
    a. weekly b. twice a day c. daily d. monthly
11. The word "critical" means:
    a. reduced b. serious c. improve d. idle
12. The antonym of "mighty" is:
    a. weak b. week c. grand d. strong
13. The synonym of "persevere" is _____.
    a. persist b. give up c. surrender d. fine
14. "Might" means:
    a. meek b. minor c. strength d. mild
15. I got to ball practice late so I forgot to set my alarm.
    a. Complex sentence b. Compound sentence
    c. Imperative sentence d. Optative sentence

16. The antonym of "consume" is:
    a. utilize b. save c. use d. collect
17. Is this <u>your</u> book? The underlined word is a pronoun.
    a. reflexive b. possessive c. demonstrative d. personal
18. The antonym of abandon is:
    a. support b. brilliant c. discard d. desert
19. Thorough cleaning reduces the risk of:
    a. Rash b. Infection and Tetanus c. Allergy d. Antibiotic
20. The synonym of solace is:
    a. aggravation b. comfort c. frustration d. uncomfortable
21. He decided every case brought to him by friend or <u>foe</u> with justice. The underlined word means:
    a. partner b. enemy c. relative d. dear
22. The synonym of "reward" is:
    a. fine b. penalty c. prize d. dear
23. The comfort of books <u>defy</u> time and break borders. The underlined word means:
    a. Consider as same b. Be problem for somebody
    c. Openly resist something d. Favour
24. She was grieved _____ my loss.
    a. at b. on c. for d. about
25. They did not <u>mention</u> of my achievements. The underlined word means:
    a. speak of b. praise c. dislike d. like
26. I am prepared to <u>excel</u> in the years to come. The underlined word means:
    a. support b. report c. to do well d. stop
27. Some of the monkeys made _____ faces. Which connotation is more positive?
    a. amusing b. hilarious c. fool hardy d. brave
28. Which word means "to identify the nature of problem, especially an illness"?
    a. diagnose b. infection c. symptom d. old
29. The "father" is _____ noun.
    a. collective b. abstract c. concrete d. countable
30. He is ashamed _____ his action.
    a. of b. on c. at d. over
31. There is no need to shout. I can hear you. The underlined word is ___ pronoun.
    a. relative b. reflexive c. personal d. possessive
32. Firm means:

a. fast b. famous c. definite d. foolish

33. _____ I have no money, I cannot go for shopping.
a. Since b. Before c. As d. So
34. You may go home as soon as your work is done.
a. Imperative sentence b. Optative sentence c. Interrogative sentence d. Complex sentence
35. "Motivation" means:
a. movement b. inspiration c. invention d. affection
36. She is kind _____ her youngers.
a. to b. on c. at d. for
37. "Maintaining a sound and productive environment all over is essential"? The underlined word means:
a. unnecessary b. crucial c. needless d. symptom
38. Another popular custom is to hang up signs and posters on doors and windows. The underlined word means:
a. practice b. rule c. law d. dress
39. Ali was impressed _____ Sarmad's grades.
a. with b. of c. by d. from
40. "The last couple of years have been a long bumpy ride for me." The underlined phrase means:
a. easy time b. free time c. period d. hard and challenging time
41. The word "convenient" means _____.
a. easy b. good c. bad d. difficult
42. The synonym of "appear" is _____.
a. vanished b. disappear c. deem d. seem
43. He lost his job _____ he was often late.
a. while b. because c. or d. when
44. The word "Myself" is a/an _____ pronoun.
a. interrogative b. possessive c. relative d. reflexive
45. He advised the most equitable plan for the setting of the Black Stone. The underlined word means:
a. reasonable b. privileged c. famous d. favourite
46. If a _____ appears, stop using the ointment.
a. infection b. rash c. allergy d. wound
47. The synonym of firm is.
a. expensive b. powerful c. persistent d. base
48. He is the recipient of many awards.
a. winner b. buyer c. receiver d. giver
49. The synonym of dressing is:
a. bandage b. garments c. clothes d. bed sheet
50. The word "proclaimed" means:

a. confused b. described c. announced publicly d. suggested

51. In China the lunar calendar is still used to determine traditional holidays like Chinese New Year.
a. Relating to the sun b. Relating to the moon c. Relating to the planets d. Relating to the stars
52. Handling minor accidents develops a sense of crisis management. The underlined word means:
a. major b. large c. small d. medium
53. Though both of these medium cover the news effectively, there are distinct differences in the way they do it. The underlined word means:
a. perplexing b. minor c. clear d. dim
54. And when the sun comes out after this rain shall stop. The underlined word means:
a. passes b. spreads c. appears d. hears
55. My first priority has always been to get good grades in school. The underlined word means:
a. sincerity b. activity c. job d. most important thing
56. "The scope of any field in terms of market demand should also be considered very seriously." The underlined word means:
a. shortcoming b. range of activities c. strong feelings d. length
57. c. areer counselors can play a key role in guiding the youth towards a rewarding profession.
a. difficult b. profitable c. easy d. unusual
58. The word smashing means:
a. flying b. making c. hitting and breaking d. moving
59. The word decade means:
a. A period of five years b. A period of ten years c. A period of twenty years d. A period of hundred years
60. It is always said that the latest technology signals the demise of the book. The underlined word means:
a. reduction b. vastness c. end d. popularity
61. The word escape means:
a. arrest b. seek c. tolerate d. run away
62. The word orphan means:
a. A child who is sick b. A child who is agile c. A child whose parents are dead d. A child who is paralytic
63. The word attempt means:

a. Try to do something b. scold c. jump d. comment

64. "The most vulnerable will be population in developing countries." The underlined word means:
a. secure b. flourishing c. in danger d. valuable
65. The word depleted means:
a. improved b. controlled c. reduced d. aggravated
66. The word "arable" means:
a. commercial land b. sociable c. barren land d. land used for growing crops
67. Two young men, holding a strong and sturdy countryman, appeared before him. The underlined word means:
a. powerful b. weak c. thin d. bulky
68. This gentleman will stand as my surety. The underlined word means:
a. friend b. substitute c. guarantor d. colleague
69. As you have confessed to your crime, there is no need of witnesses. The underlined word means:
a. described b. admitted c. approved d. denied
70. c. elebrations can actually last up to a month. The underlined word means:
a. obviously b. in fact c. apparently d. almost
71. The word beneath means:
a. up b. near c. under d. beside
72. Everything in visual and auditory. The underlined word means:
a. that can be seen b. that can be heard c. that can be avoided d. that can be noticed
73. The word "monster" means:
a. evil-spirit b. symbol c. giant d. high mountain
74. The word "merely" means:
a. only b. lonely c. secondly d. happily
75. The alarming and incessant growth of population is causing serious economic problems in almost all countries. The underlined word means:
a. unending b. adequate c. continuous d. seldom
76. The word "reinvigorate" means:
a. replicate b. tolerate c. strengthen d. climate
77. The word "heed" means:
a. attention b. disturbance c. safeguard d. refund
78. Agricultural systems depends on maintaining the integrity of biodiversity. The underlined word means:
a. clarity b. soundness c. purity d. strategy
79. The synonym of innovative is:

a. new b. old c. out dated d. obsalete

80. The man had been sent with other convicts to Australia. The underlined word means:
a. prisoners b. soldiers c. delegation d. troupe

81. b. ut all of that is not its core. The underlined word means:
a. strong b. centre c. high d. temporary

82. If a _____ appears, stop using ointment.
a. infection b. allergy c. rash d. wound

83. Have you got anything _____ these poor women could take for their children.
a. which b. that c. whom d. what

84. The word "luxury" means:
a. trouble b. delight c. reading d. help

85. This book belongs _____ her.
a. of b. by c. from d. to

86. He asked me _____ very hard question. Choose the correct article.
a. a b. an c. the d. None

87. In Chinese language, the word 'eight' means:
a. Love b. Ugly c. Prosperity d. Friend

88. The meaning of 'dislocate' is:
a. To put out of place b. To doubt c. To reject
d. To approve

89. The word 'dynamic' means:
a. Scope b. Resulting c. Active and changing d. Developed

90. 'Sincerely' is an example of:
a. Inside address b. Signature c. Writer's name d. Complimentary closing

91. The word "Enhance" means:
a. Reduce b. Improve c. Dull d. Obey

92. The word "defy" means:
a. Apply b. Difficult c. Object d. Disobey

93. The word "commandment" means:
a. Proclamation b. Order c. Mercy d. Blessing

94. She was angry _____ my behavior.
a. with b. to c. from d. at

95. The meaning of "excel" is:
a. Contest b. Series c. Event d. Be better than others

96. "Rinse" means:
a. Remove b. Wash c. Cut d. Address

97. "Strict" means:
    a. Harsh b. Difficult c. Kind d. Skilled
98. "Halted" means:
    a. Started b. Began c. Feared d. Stopped
99. The antonym of "Soothe" is:
    a. Change b. Clear c. Decrease d. Aggravate
100. The synonym of "glorious" is:
    a. Lustrous b. Splendid c. Fabulous d. None
101. "Destitute" means:
    a. Very intelligent b. Very poor c. Very rich
    d. Very able
102. "Depleted" means:
    a. Reduced b. Increased c. Huge d. Trick
103. The antonym of "Ample" is:
    a. Great b. Negative c. Insufficient d. Holy
104. The synonym of "Notion" is:
    a. Story b. Idea c. Reference d. Play
105. "Magnitude" means:
    a. Enemy b. Ugly c. Importance d. Fair
106. The word "applauded" means:
    a. Forgave b. Astonished c. Paid d. Showed praise
107. "Massive" means:
    a. Some b. Many c. Low d. Huge

* * * * *

4: CHOOSE THE CORRECT OPTION ACCORDING TO THE GRAMMAR.

1. Our job is to keep the audience happy. The underlined word is a/an _ noun.
   a. collective b. concrete c. abstract d. proper
2. Someone ate my cookies. The underlined word is a/an:
   a. Personal pronoun c. Relative pronoun
   c. Definite pronoun d. Indefinite pronoun
3. I am afraid I cannot afford to spend too much money. The underlined part of the sentence is a/an:
   a. gerund b. participle
   c. infinitive d. None of these
4. The room was full, so I had no place to sit. It is a_sentence.
   a. simple b. compound
   c. complex d. None of these
5. How long_____you been working in the garden?
   a. has b. have c. will d. shall
6. Identify the indefinite pronoun in these words:
   a. somebody b. those c. his d. either
7. They invited us to their home yesterday. What tense is it?
   a. Present indefinite b. Past indefinite
   c. Past perfect d. Future indefinite
8. Do not tell a lie. What kind of sentence is it?
   a. assertive b. optative c. exclamatory d. imperative
9. I went to see what had happened. The underlined word is a/an____.
   a. Noun clause b. Objective clause
   c. Adverb clause d. Main clause
10. "The watchman blew his whistle. The underlined word is a/an:
    a. Transitive verb b. Intransitive verb
    c. Regular verb d. None
11. He had all the money in the world,_____he was sad.
    a. why b. but c. if d. because
12. The man_____you were talking to at the meeting is my cousin. Choose the correct relative pronoun.
    a. that b. what c. whom d. which
13. Maria fell over the cat. The underlined phrase is:
    a. infinitive b. gerund
    c. prepositional d. None of these
14. Behave elders politely. The underlined word is:
    a. Adverb of place b. Adverb of time
    c. Adverb of frequency d. Adverb of manner
15. Mother is the real face of God. The underlined word is:
    a. Abstract noun b. Collective noun c. Uncountable

noun d. Concrete noun

16. _____books are these?
    a. Who b. That c. Whom d. Whose
17. I do not like <u>costly</u> dress. The underlined word is:
    a. Adverb b. Adjective c. Noun d. Pronoun
18. She will have been crying since midnight.
    a. Present continuous b. Future perfect c. Past indefinite
    d. Future perfect continuous
19. Last summer, we_____many places.
    a. visited b. had visited c. have visited d. does visit
20. If he offers me a job I_____it.
    a. Would have accepted b. Will accept c. Would accept
    d. Is accepting
21. He lost his job__he was often late.
    a. while b. or c. because d. as
22. We_____our bottles so we could use it again.
    a. cleaning b. clean c. cleaned d. cleans
23. "The watchman <u>blew</u> his whistle." The underlined word is a/an:
    a. Intransitive verb b. Transitive verb c. Regular verb
    d. Helping verb
24. We have to take the bus_____tomorrow morning.
    a. early b. earlier c. earliest d. more early
25. All students____for prizes.
    a. competes b. competing c. compete d. none
26. "Worst" is:
    a. adverb b. verb c. adjective d. conjunction
27. What did you bring for me? The tense used is:
    a. Future indefinite b. Past indefinite c. Past perfect
    d. Present perfect
28. Learn <u>to love</u> poor mankind. The underlined word is:
    a. infinitive b. gerund c. Present participle d. Past participle
29. I like those <u>who</u> win the first prize. The underlined word is___ pronoun.
    a. interrogative b. relative c. personal d. reflexive
30. "Family" is____noun.
    a. abstract b. material c. collective d. proper
31. "Who helps the poor?" the correct voice is:
    a. By whom are the poor helped? b. By whom the poor help c. Whom the poor helped d. By whom the poor are helped
32. _____book do you like?
    a. Whom b. Which c. That d. Who

33. Try again is an inspiring poem. The understand word is:
a. gerund b. infinitive c. Past participle d. Present participle
34. "It will be raining." Tense used:
a. Future indefinite b. Past continuous c. Future continuous d. Past indefinite
35. I have lost the pen_____I bought this morning.
a. which b. whose c. whom d. what
36. Mehak is intending "to go". The underlined part of the sentence is a/an:
a. gerund b. participle c. verb d. infinitive
37. If he_____more carefully he would not cause an accident.
a. drive b. driven c. drove d. droving
38. Yesterday at 5 O'clock I_____apples.
a. was eating b. had eaten c. eats d. ate
39. "My friend gave me the book." Choose the correct passive voice.
a. I have been given the book by my friend. b. I am given the book by my friend. c. I was given the book by my friend. d. I had not been given the book by my friend.
40. Ali was impressed_____Sarmad's grades.
a. with b. from c. to d. by
41. Sarmad ate a lot of sweets. The underlined word is__verb.
a. regular b. intransitive c. transitive d. auxiliary
42. As a young trader, he earned good reputation. The underlined part is:
a. Noun phrase b. Prepositional phrase c. Adjective phrase d. Infinitive
43. Our practice usually starts at Six O' Clock. The underlined word is an adverb of:
a. degree b. manner c. frequency d. place
44. "He is poor but he has ego." The underlined sentence is a/an:
a. imperative b. optative c. compound d. complex
45. What were you thinking? Tense used:
a. Past indefinite b. Past continuous c. Past perfect d. Past perfect continuous
46. A clever trick was played successfully by the cat. The underlined word is adverb of_____.
a. frequency b. place c. manner d. time
47. If he invites me, I'll go there. This sentence is____.
a. simple b. 1st conditional c. 2nd conditional d. 3rd conditional
48. Everybody enjoys a good movie. The underlined word is a/an_____ pronoun.

a. definite b. reflexive c. indefinite d. personal

49. Didn't you see the sign? You____drive at more than 30 miles an hour.
a. must not b. should not c. may not d. are not
50. Do not tell a lie. What kind of sentence is it?
a. assertive b. imperative c. optative d. exclamatory
51. Identify the indefinite pronoun in these words.
a. those b. his c. either d. somebody
52. The dog was barking_____night.
a. in b. to c. at d. of
53. I am not_____him the secret.
a. tells b. tell c. told d. telling
54. Her mother has_chance of recovery.
a. little b. the little c. a little d. littles
55. He had all the money in the world_____he was sad.
a. but b. yet c. still d. so
56. Flying above the lake at this time of night seems a little dangerous. The underlined phrase is:
a. Infinitive Phrase b. Gerund Phrase c. Prepositional Phrase d. Adverbal Phrase
57. Hazrat Muhammad's life is a perfect model. The underlined word is an/an:
a. Noun b. Adjective c. Verb d. Preposition
58. He does not care_____me.
a. to b. on c. from d. for
59. They rested at sun-set. The underlined phrase is:
a. Noun Phrase b. Adjective Phrase c. Gerund Phrase d. Adverb Phrase
60. Hearing this, the Sahaba became anxious. The underlined word is a/an:
a. Gerund b. Infinitive c. Adverb d. Adjective
61. "I like apples but I like pears more". This is a:
a. Simple Sentence b. Compound Sentence
c. Complex Sentences d. Compound Complex Sentence
62. He decided their case with equity and justice. The underlined words are:
a. Concrete Nouns b. Abstract Nouns
c. Noun Clause d. Adjective Clause
63. "The umbrella with a broken handle is mine". The underline part of the sentences is a/an:
a. Noun Phrase b. Adjective Phrase
c. Noun Clause d. Adjective Clause

64. "He was a lion in the battle". This sentence is an example of:
a. Metaphor b. Simile c. Negative Sentence d. None
65. After learning the parts of speech, the class began studying punctuation. Identify the phrase.
a. Infinitive Phrase b. Gerund Phrase
c. Prepositional Phrase d. Simple Phrase
66. The man complained that there was no bread. The underlined part of sentence is a/an:
a. Dependent Clause b. Independent Clause
c. Relative Clause d. Irrelative Clause
67. _____it was hot, he was wearing a coat. Choose the correct conjunctions.
a. When b. Although c. Then d. And
68. If you come, we shall dine together. It is a_____sentence.
a. First Conditional b. Second Conditional c. Third Conditional d. Compound Sentence
69. Since when have they been serving aged parents? The tense used in this sentence is:
a. Future Continuous b. Future Perfect
c. Present Perfect Continuous d. Present Continuous
70. He_____smoking in 2016.
a. give up b. gives up c. gave up d. has give up
71. I have a surprising news. The underlined word is:
a. Gerund b. Infinitive
c. Present Participle d. Past Participle
72. She is not ignorant_____her short comings.
a. with b. of c. on d. in
73. Pakistan is very dear_____us.
a. to b. for c. by d. with
74. Keep the balls in that basket. The underlined words are_____nouns.
a. Concrete b. Abstract c. Reflexive d. Proper
75. Will someone be here soon to open the door. The underlined phrase is:
a. Noun Phrase b. Infinitive Phrase
c. Gerund Phrase d. Prepositional Phrase
76. She takes pride _____ her work.
a. on b. from c. with d. in
77. I go to ball practice late so I forgot to set my alarm. What sentence is this:
a. Complex b. Optative c. Simple d. Compound
78. Have you seen the man_____bought a book from the shop just now.

a. that b. what c. who d. which

79. This is an old fashioned hat. The underlined part of sentence is a/an:
a. Noun Phrase b. Verb Phrase c. Compound Noun d. Adjective Phrase

80. They_____before he arrived.
a. have eaten b. have been eating c. had eaten d. eaten

81. Does the captain want us to lower the sails before we enter the harbor? The underlined phrase is:
a. Infinitive Phrase b. Gerund Phrase c. Prepositional Phrase d. Adverb Phrase

82. Have you got anything _____these poor women could take for the kids.
a. who b. whom c. what d. which

83. 'He did not take care of his pet'. The underlined word is a/an_____ noun.
a. Concrete b. Abstract c. Proper d. Relative

84. 'None of the cheques were cashed; They finally expired.' The underlined word is a/an_____.
a. Personal Pronoun b. Adverb Phrase c. Relative Pronoun d. Proper Noun

85. 'Their progress was slow because they were tired. It is a/an _____ sentence.
a. Conditional b. Negative c. Compound d. Complex

86. I shall invite you_____my birthday.
a. to b. on c. at d. for

87. I am sad but you smile. This is the sentence:
a. Complex b. Optative c. Assertive d. Compound

88. He did much work in his youth. Tense used in this sentence is:
a. Past Indefinite b. Present Indefinite c. Future Indefinite d. Past Continuous

89. 'They recommended him for his justice. The underlined word is a/an _ noun.
a. Proper b. Common c. Concrete d. Abstract

90. 'The black umbrella is mine.' The underlined word is a/an:
a. Adverb b. Adjective c. Preposition d. Verb

91. 'He could not go home,_____he had no place to go.' Choose the appropriate conjunction:
a. but b. for c. though d. if

92. I have always disliked smoking. The underlined word is a/an:
a. Gerund b. Infinitive c. Adjective d. Adverb

93. He will not be__up by his uncle.
a. bring b. brought c. help d. brings

94. I saw myself in the mirror. The underlined word is a/an_____ pronoun.
a. Possessive b. Relative c. Indefinite d. Reflexive
95. The students gathered signatures for increasing the hours of the library. The underlined part of the sentence is a/an:
a. Infinitive Phrase b. Gerund Phrase
c. Second conditional sentence d. First conditional sentence
96. This treatment is really great. It makes me feel so relaxed. The underlined part of the sentence is:
a. Present Participle b. Past Participle
c. Concrete Noun d. Collective Noun
97. If you had not been late, we would have not missed the bus. This sentence is:
a. Third conditional b. Second conditional
c. First conditional d. Simple
98. 'He bore a banner with a strange device.' The underlined part of the sentence is a/an:
a. Adverb Phrase b. Noun Phrase
c. Principal Clause d. Adjective Phrase
99. I did not go to the meeting because I was sick. It is a/an_____ sentence.
a. Complex b. Simple c. Compound d. Optative
100. He will not part_his wealth.
a. to b. with c. from d. on
101. Fareed said_____he needed the most was a long and quiet holiday.
a. that b. which c. what d. who
102. "What would you do, if there were no more books?" This sentence is:
a. First Conditional b. Second Conditional c. Third Conditional d. None of these
103. "He worked hard day and night because he did not wish to fail." This sentence is:
a. simple b. compound c. complex d. compound complex
104. My mother will be watching my ways. Tense used in this sentence is future:
a. Continuous b. Indefinite c. Perfect d. Perfect continuous
105. I like your driving. The underlined word is:
a. Present Participle b. Infinitive c. Past Participle d. Gerund
106. Hardwork is key_____success. Fill in the blank with proper preposition.

a. of b. to c. for d. with

107. Would that I were C.S.P officer. The sentence is:
a. Assertive b. Compound c. Complex d. Optative

108. "I love the poor and you hate them." The sentence is:
a. Compound b. Complex c. Optative d. Imperative

109. I trust_____God. The correct preposition is:
a. on b. in c. of d. at

110. He was absent__the class.
a. to b. from c. of d. for

111. I would have been glad if he____me in the hospital.
a. visit b. visited c. will visit d. had visited

112. I feel_____the poor.
a. on b. for c. in d. from

113. Smoking is injurious_____health.
a. on b. to c. of d. for

114. Hand me that hammer. The underlined word is a/an_pronoun.
a. Interrogative b. Reflexive c. Demonstrative d. Reflective

115. He is the young man_____saved my life.
a. whom b. whose c. who d. that

116. They showed___patience.
a. much b. more c. many d. few

117. He is fond_____tea.
a. for b. to c. of d. from

118. I am related____her.
a. for b. from c. of d. to

119. _____Indus is the largest river in Pakistan.
a. An b. A c. The d. Of

120. I am poor but I have ego. The sentence is:
a. Imperative b. Optative c. Assertive d. Compound

121. The class has just had a physics lesson. The underlined word is a/an:
a. Collective Noun b. Material Noun c. Abstract Noun d. Concrete Noun

122. Abide_____traffic rules. Correct preposition is:
a. of b. by c. on d. with

123. A rolling stone gathers no mass. The underlined part of sentence is a/an:
a. Noun Phrase b. Adjective Phrase c. Adverb Phrase d. Adjective Clause

124. The examination ended and the students went home. This sentence is:
a. Complex Sentence b. Simple Sentence c. Compound Sentence d. Compound Complex

125.If you get back late, I shall be angry. This sentence is:
a. Second Conditional b. Third Conditional
c. First Conditional d. Simple

126.I have been studying for three hours. The "tense" of this sentence is:
a. Present continuous b. Past continuous
c. Present perfect d. Present perfect continuous

ANSWERS

Question 01: Choose the correct form of verb.

1. b: sets 2. b: will accept 3. d: waiting
4. d: come 5. a: drink 6. c: taken
7. a: has been working 8. b: left 9. b: work
10. a: has been sleeping 11. c: met 12. c: is crying
13. a: had been raining 14. b: will have 15. b: go
16. c: rains 17. a: loves 18. b: went
19. c: has been lying 20. c: speaks 21. a: is raining
22. a: will leave 23. c: shall see 24. b: make
25. b: told 26. c: left 27. d: wrote
28. d: had reached 29. d: speaks 30. c: cried
31. c: had stopped 32. a: bought 33. c: began
34. d: read 35. d: had left 36. c: will have finished
37. c: saw 38. d: worked 39. b: revolves
40. d: is learning 41. a: had left 42. b: shall finish
43. a: sent 44. c: playing 45. b: go
46. d: went 47. b: had left 48. a: hear
49. d: have 50. c: made 51. b: defeat
52. c: playing 53. b: catching 54. d: is singing
55. b: have left 56. d: has been standing 57. c: was reading
58. a: will have finished 59. c: sitting 60. a: started
61. b: had not said 62. b: has been playing 63. c: had visited
64. b: take 65. d: will have reached 66. b: had washed
67. b: work 68. b: has been swimming
69. c: had been playing 70. a: will not understand
71. c: have done 72. d: do not do 73. b: came
74. a: is not replying 75. b: seen 76. a: walking
77. a: visited 78. d: flying 79. b: eat
80. c: was boarding 81. b: has not been writing
82. d: will have ended 83. c: was making 84. c: will
85. c: had not taken 86. c: was riding 87. a: am going to
88. b: called 89. b: had taken 90. b: did not hear
91. b: will not cost

*****

2. Choose the word with correct spellings.

1. b: Production
2. a: Exchange
3. a: Might
4. b: Prisoner
5. a: Separate
6. c: Address
7. c: Certain
8. a: Excellent
9. c: Noise
10. a: Perfection
11. a: Loath
12. b: Dynamic
13. c: Able
14. d: People
15. a: Decline
16. b: Dinner
17. b: Academy
18. a: Available
19. a: Energy
20. c: Enemy
21. a: Custom
22. c: Sermon
23. c: Relevant
24. d: Minor
25. a: Contest
26. b: Priority
27. c: Excel
28. d: Motivation
29. c: Success
30. d: Coming
31. a: Privilege
32. b: Laboratory
33. a: Defy
34. a: Envelope
35. b: Achieve
36. a: Modern
37. a: Attempt
38. b: Revelation
39. a: Language
40. c: Interest
41. c: Revenge
42. d: Career
43. d: Surety
44. a: Fossil
45. b: Luxury
46. c: Academic
47. a: Demise
48. b: Association
49. a: Entertainment
50. b: Intercede
51. a: Education
52. d: Actually
53. a: Property
54. a: Infection
55. b: Aptitude
56. a: Transcends
57. c: Technique
58. b: Leisure
59. d: Mental
60. b: Column
61. a: Elastic
62. b: Decided
63. b: Adhesive
64. a: Fascinating
65. a: Magazines
66. b: Century
67. a: Effective
68. d: Equitable
69. a: Dispute
70. c: Destitute
71. b: Activity
72. a: Ancestor
73. c: Specific
74. a: Patience
75. b: Antibiotic
76. b: Continuous
77. c: Convenient
78. d: Auditory
79. d: Responsible
80. d: Competition
81. b: Innovative
82. c: Significance
83. b: Opportunity
84. a: Decade
85. c: Prevail
86. b: Concentration
87. a: Integrity
88. c: Adequate
89. c: Aquifers
90. c: Execution
91. c: Applause
92. c: Unconscious
93. d: Reputation
94. c: Frustration
95. c: Arable
96. b: Escalate
97. d: Fertile
89. d: Tweezer
99. c: Prosperity
10. a: Debris
101. d: Literature
102. b: Comprehend
103. b: Customary
104. c: Magnitude
105. a: Irrigation
106. b: Individual
107. d: Substitute
108. b: Recipient
109. a: Pressure
110. b: Positive
111. c: Broadcast
112. c: Fantasise
113. d: Medium
114. b: Editorials
115. a: Disgrace
116. c: Calendar
117. d: Immediate
118. c: Gentle
119. a: Newspaper
120. b: Circumstances
121. a: Innovative
122. b: Omit
123. d: Primarily

124. a: Competition 125. b: Incessant 126. d: Proficient
127. b: Fix 128. d: Rinse 129. b: Chivalry
130. c: Ointment 131. a: Celebration 132. d: Judgement
133. c: Gentleman 134. d: Sequence 135. c: Bandages
136. b: Guidance 137. b: Victims 138. c: Engineer
139. a: Disciplines 140. d: Primarily 141. d: Participant
142. b: Decade 143. a: Beneath 144. d: Connects
145. b: Eroded

Question 03: Choose the correct option.

1. b: succeed 2. d: up-to-date 3. d: of 4. a: to
5. b: pleasure 6. d: discovering 7. a: rubble
8. a: win 9. a: luck and happiness 10. c: daily
11. b: serious 12. a: weak 13. a: persist
14. c: strength 15. b: compound sentence 16. b: save
17. c: demonstrative 18. a: support
19. b: infection and tetanus 20. b: comfort
21. b: enemy 22. c: prize 23. c: openly resist
something 24. a: at 25. a: speak of
26. c: to do well 27. a: amusing 28. a: diagnose
29. c: concrete 30. a: of 31. c: personal
32. c: definite 33. a: Since 34. d: complex sentence
35. b: inspiration 36. a: to 37. b: crucial
38. a: practice 39. c: by 40. d: hard and
challenging time 41. a: easy 42. d: seem
43. b: because 44. d: reflexive 45. a: reasonable
46. b: rash 47. c: persistent 48. c: receiver
49. a: bandage 50. c: announced publicly
51. b: relating to the moon 52. c: small
53. c: clear 54. c: appears
55. d: most important thing 56. b: range of activities
57. b: profitable 58. c: hitting and breaking
59. b: a period of ten years 60. c: end
61. d: run away 62. c: a child whose parents are dead
63. a: try to do something 64. c: in danger
65. c: reduced 66. d: had used for growing crops
67. a: powerful 68. c: guarantor 69. b: admitted
70. b: in fact 71. c: under 72. b: that can be heard
73. c: giant 74. a: only 75. c: continuous
76. c: strengthen 77. a: attention 78. b: soundness
79. a: new 80. a: prisoners 81. b: centre
82. c: rash 83. a: which 84. b: delight
85. d: to 86. a: a 87. c: prosperity

88. a: to put out of place 89. c: active and changing 90. d: complementary closing
91. b: improve 92. d: disobey 93. b: order
94. d: at 95. d: be better than others
96. b: wash 97. a: harsh 98. d: stopped
99. d: aggravate 10. b: splendid 101. b: very poor
102. a: reduced 103. c: insufficient 104. b: idea
105. c: importance 106. d: showed praise 107. d: huge

*****

4. Choose the correct option according to the grammar.

1. a: collective 2. d: indefinite pronoun 3. c: infinitive
4. b: compound 5. b: have 6. a: somebody
7. b: past indefinite 8. d: imperative 9. a: noun clause
10. a: transitive verb 11. b: but 12. c: whom
13. c: prepositional 14. d: adverb of manner 15. d: concrete noun
16. d: whose 17. b: adjective
18. d: future perfect continuous 19. a: visited
20. b: will accept 21. c: because 22. c: cleaned
23. b: transitive verb 24. a: early 25. c: compete
26. c: adjective 27. b: past indefinite 28. a: infinitive
29. b: relative 30. c: collective 31. a: by whom are the poor helped? 32. b: which 33. d: present participle
34. c: future continuous 35. a: which
36. d: infinitive 37. c: drove 38. d: ate
39. c: I was given the book by my friend. 40. d: by
41. b: intransitive 42. a: noun phrase 43. c: frequency
44. c: compound 45. b: past continuous 46. c: manner
47. b: 1st conditional 48. c: indefinite 49. a: must not
50. b: imperative 51. d: somebody 52. c: at
53. d: telling 54. c: a little 55. c: still
56. b: gerund phrase 57. b: adjective 58. d: for
59. d: adverb phrase 60. a: gerund 61. b: compound sentence 62. b: abstract nouns 63. b: adjective phrase
64. a: metaphor 65. b: gerund phrase
66. b: independent clause 67. b: although c. ontinuous
68. a: first conditional 69. c: present perfect 70. c: gave up 71. c: present participle 72. b: of
73. a: to 74. a: concrete 75. b: infinitive phrase
76. d: in 77. d: compound 78. c: who
79. d: adjective phrase 80. c: had eaten 81. a: infinitive phrase
82. d: which 83. b: abstract 84. a: personal pronoun
85. d: complex 86. b: on 87. d: compound

88. a: past indefinite 89. d: abstract 90. b: adjective
91. b: for 92. a: gerund 93. b: brought
94. d: reflexive 95. b: gerund phrase 96. b: past participle
97. a: third conditional 98. d: adjective phrase 99. a: complex
100. c: from 101. c: what
102. b: second conditional 103. c: complex
104. a: continuous 105. d: gerund 106. b: to
107. d: optative 108. a: compound 109. b: in
110. b: from 111. d: had visited 112. b: for
113. b: to 114. c: demonstrative 115. c: who
116. a: much 117. c: of 118. d: to
119. c: the 120. d: compound 121. a: collective noun
122. b: by 123. d: adjective phrase
124. c: compound sentence 125. c: first conditional
126. d: present perfect continuous

*****

REVIEW – 1.

1. b: reasonable 2. c: enemy 3. b: forefathers
4. a: preceding 5. b: practice 6. c: suffer
7. a: persist 8. b: prize 9. a: weak
10. b: succeed 11. c: abstract 12. a: collective
13. a: early 14. c: cleaned 15. b: by
16. a: visited 17. b: compete 18. a: must not
19. c: might 20. b: intercede

*****

REVIEW – 2

1. a: easy 2. c: clear 3. b: to do extremely well
4. b: hard and challenging time 5. b: smile
6. b: beautiful 7. b: offender 8. a: support
9. a: dark 10. c: indefinite pronoun 11. b: transitive verb
12. c: infinitive 13. b: interrogative pronoun 14. a: manner
15. c: frequency 16. a: will accept 17. b: ate
18. a: had started 19. b: gerund phrase 20. a: past indefinite
21. b: they bought a new computer

*****

REVIEW – 3.

1. b: range of activities 2. a: prisoners
3. c: in danger 4. c: openly resist something 5. b: diagnose
6. c: up-to-date 7. c: comfort 8. b: pleasure
9. b: save 10. b: have 11. a: drove

12. c: had visited 13. b: yet 14. b: independent clause
15. b: compound 16. b: crucial 17. a: dependent clause

Choose the correct form of verb.

1. They _____ hockey at that time.
   a. has played b. shall be playing
   c. are playing d. was playing
2. She _____ English now.
   a. speaks b. speak c. is speaking d. was speaking
3. I _____ the letter.
   a. has already posted b. had already postc. have already posted d. will already posted
4. She _____ to school an hour ago.
   a. go b. gone c. went d. going
5. He _____ newspaper for living.
   a. sell b. will sold c. sold d. has been selling

Choose the word with correct spellings.

6. Fartile Firtile Fertile Furtile
7. Servey Sarvey Survay Survey
8. Believe Believe Bieleve Beleve
9. Verious Various Virious Vireous

Choose the correct option.

10. The synonym of "firm" is:
    a. Expensive b. Powerful c. Persistent d. Base
11. 'But the point here is that it is not the convenient.' The underlined word means:
    a. Good b. Easy c. difficult d. Hard
12. The comforts of books defy time, and break borders. The underlined word means:
    a. Consider as same b. Be problem for somebody
    c. Openly resist something d. rucial
13. The synonym of "foe" is:
    a. Relative b. Enemy c. Friend d. Partner
14. The antonym of "abandon" is:
    a. Support b. Discard c. Desert d. Honest

Choose the correct option of the words according to the grammar.

15. "The watchman blew his whistle." The underlined word is a/an:
    a. Transitive Verb b. Regular Verb c. Irregular Verb
    d. Intransitive Verb
16. Ali was impressed _____ Sarmad's grades.
    a. with b. by c. from d. of
17. She takes pride_____ her work.

a. on b. from c. with d. in

18. Didn't you see the sign? You _____ drive at more than 30 miles an hour.
a. must not b. should not c. may not d. cannot
19. Last summer, we _ many places.
a. visited b. had visited c. visit d. have visited

Choose the correct form of verb.

1. The boys are _____ stones at the frogs.
a. throwing b. throw c. thrown d. throws
2. She does not always _____ the truth.
a. Speaks b. spoke c. speaking d. speak
3. Why _____ you sad?
a. Is b. was c. am d. are
4. Children _____ be shown round the zoo.
a. will b. was c. have been d. do not
5. When shall I _____ be a gun license?
a. grants b. granting c. granted d. grant

Choose the word with correct spellings.

6. Priority Praerity Prieity Prayrity
7. Akademic Acadmic Academic Academik
8. Leiseure Leizare Lezure Leisure
9. Ekslence Excellence Ekslanse Excellanse

Choose the correct option.

10. Keep soap out of the actual _____.
a. Wound b. injury c. cut d. prayrity
11. "Myself" is:
a. Possessive Noun b. Interrogative c. Relative Pronoun d. Reflexive Pronoun
12. The antonym of "Perfect" is:
a. Deficient b. Imperfect c. Complete d. Incomplete
13. In China, celebration can actually last up to a _____ .
a. Week b. month c. fortnight d. year
14. Have you got anything _____ these poor women could take for their children?
a. That b. whom c. Which d. who

Choose the correct option of the words according to the grammar.

15. Television brings laziness _____ us.
a. at b. with c. On d. in
16. Does she always speak the truth? It is a / an _____ sentence.
a. negative b. simple c. Interrogative d. complex
17. Maria fell over the cat. The _____ underlined is:

a. Infinitive Phrase b. Prepositional Phrase
c. Gerund Phrase d. All of these

18. "Who is the man at the poor?" the under lined is:
a. Indefinite Pronoun b. Relative Pronoun
c. Interrogative Pronoun d. Definite Pronoun

19. "The watchman blew his whistle." The underlined word is a/an:
a. Transitive Verb b. Regular Verb
c. Irregular Verb d. Intransitive Verb

Choose the correct form of verb.

1. He to _____ school every day.
a. go b. is going c. goes d. gone
2. The sun _____ in the west.
a. sets b. set c. setting d. be set
3. You have been since morning.
a. rested b. rests c. rest d. resting
4. I am being _____ pistol license.
a. granted b. granting c. grants d. grant
5. She will _____ the lesson daily.
a. tells b. tell c. told d. telling

Choose the word with correct spellings.

6. Prasent Present Presant Prasant
7. Idials Ideals Idaels Edails
8. Leothe Loethe Laothe Loathe
9. Ecademy Ecedamy Academy Acedemy

Choose the correct option.

10. Thorough cleaning reduces the risk of _____ .
a. rash b. allergy c. antibiotic d. infection and tetanus
11. First aid is temporary and immediate help. The underlined word means:
a. rapid b. slow c. delayed d. easy
12. The antonym of 'win' is:
a. get b. lose c. give d. victory
13. He advised the most equitable plan for setting of the black stone. The underlined word means:
a. law b. reasonable c. favourite d. privileged
14. The antonym of 'fail' is:
a. unsuccessful b. strong c. flourish d. succeed

Choose the correct option of the words according to the grammar.

15. The accident was due to his ruthlessness. The underlined word is a/an noun:
a. Collective b. Concrete c. Abstract d. Material
16. I saw myself in the mirror. The underlined word is a/an pronoun:

a. Reflexive b. Interrogative c. Personal d. Indefinite

17. "They invited us to their home yesterday." What tense is it?
    a. Past Perfect b. Past Indefinite c. Future Present
    d. Indefinite
18. Have you seen the man _____ bought a book from the shop? Choose the correct relative pronoun.
    a. that b. which c. who d. what
19. Select a personal pronoun that agrees with subject of the sentence. The band starts tour tomorrow night.
    a. their b. her c. his d. Its

Choose the correct form of verb.

1. She _____ the piano since 2O' c. lock.
    a. play b. have played c. has been playing d. plays
2. The sun _____ in the east.
    a. rise b. rising c. rises d. are rising
3. He _____ in the sun for an hour.
    a. stand b. has been standing c. stood d. is standing
4. I _____ him next Monday.
    a. seeing b. shall see c. saw d. Seen
5. It_____ to train an hour ago.
    a. began b. begin c. beginning d. will begin

Choose the word with correct spellings.

Sr.#	A	B	C	D
6	Ciontost	Contesta	Contest	Cointast
7	Meroly	Moreily	Meraloy	Merely
8	Revenge	Reoveng	Raevang	Roivenge
9	Omiet	Omit	Oemit	Omiatt

Choose the correct option.

10. This developing positive outlook has given the author the motivation he needs to become.
    a. famous b. wealthy c. successful d. friendly
11. Have you seen the man _____ bought a book from the shop just now?
    a. whom b. what c. which d. who
12. The antonym of "bright" is:
    a. Dark b. Brilliant c. Honest d. Happy
13. Chinese New Year falls somewhere _____
    a. on January 21st
    b. on February 20th
    c. between January 21st and February 20th
    d. on December 1st

14. Band aids or sticky plasters are good for dressing small _____.
    a. wounds b. burns c. fractures d. allergy

Choose the correct option of the words according to the grammar.

15. The accident was due to his ruthlessness. The underlined word is a/an noun:
    a. collective b. concrete c. Proper d. Abstract
16. "They invited us to their home yesterday." What tense is it?
    a. Past Indefinite b. Past Perfect
    c. Present Indefinite d. Present continuous
17. He works carefully. The underlined word is a/an:
    a. Noun b. Verb c. Adverb d. Pronoun
18. We _____ our bottle, so we could use it again.
    a. cleaning b. clean c. cleaned d. have cleaned
19. Surely, you recognize somebody. The underlined word is a/an:
    a. Possessive pronoun b. Indefinite pronoun
    c. Reflexive pronoun d. Relative pronoun

Choose the correct form of verb.

1. The Quaid-e-Azam _____ very hard.
    a. work b. working c. worked d. have worked
2. She has _____ him back.
    a. sent b. sending c. send d. Sends
3. He does not _____ exercise regularly.
    a. takes b. taking c. took d. Take
4. They _____ us a gift.
    a. gives b. gave c. giving d. has given
5. He _____ in the sun for an hour.
    a. standing b. shall stood c. stand d. has been standing

Choose the word with correct spellings.

6.	Ligiht	Lighit	Lighte	Light
7.	Dynamic	Dyinemic	Diyanamic	Deanimec
8.	Peractise	Poractece	Practice	Paractise
9.	Strive	Siterive	Ctreve	Citriev

Choose the correct option.

10. The meanings of "dislocate" is.
    a. to put out of place b. to doubt c. to reject d. to approve
11. The word 'dynamic' means.
    a. scope b. resulting c. active and changing d. developed
12. The word 'enhance' means.
    a. reduce b. improve c. dull d. obey
13. I am prepared to excel in the years to come. The underlined word means:

a. support b. report c. stop d. to do well

14. The last couple of years have been a long bumpy ride for me. The underlined phrase means:
a. easy time b. leisure time c. hard and challenging time
d. good time

Choose the correct option of the words according to the grammar.

15. A clever trick was played successfully by the cat. The underlined word is a/an adverb of:
a. Manner b. Place c. Time d. None
16. I have lost the pen _____ I bought this morning.
a. who b. which c. what d. whose
17. None of the cheques were cashed; _____ finally expired.
a. they b. its c. it d. them
18. So try to keep it out of the actual wound. The underlined part of sentence is a/an:
a. Gerund b. Infinitive c. Adverb d. Past Participle
19. Everybody enjoys a good movie. The underlined word is a/an _____ pronoun.
a. Interrogative b. Reflexive c. Relative d. Indefinite

Choose the correct form of verb from the columns A, B, C and D and fill up the bubbles:

1. Are they _____ idle?
a. sit b. sat c. sitting d. sits
2. She _____ English quite well.
a. speak b. speaks c. was speak d. will spoke
3. The packet _____ there since morning.
a. has been lyingb. lay c. lie d. lies
4. I _____ this motor bike only a month ago.
a. will buy b. bought c. buy d. buys
5. They _____ for London tomorrow.
a. will leave b. left c. leaves d. leave

Choose the word with correct spellings from the columns A, B, C and D and fill up the bubbles:

S.#	A	B	C	D
6	Believe	Bilieve	Beleve	Beliave
7	Oentment	Ointment	Aintment	Ountment
8	Stringth	Strangth	Strength	Sterngth
9	Aspiration	Asperation	Aspuration	Aspyration

Choose the correct option from the columns A, B, C and D and fill up the bubbles:

10. Defy means:

a. Depute b. Disobey c. Offer d. Accept

11. The synonym of current is:
    a. Dated b. Old c. Up to date d. Expired
12. Custom means:
    a. Law b. Rule c. Practice d. Cunning
13. Distinct means:
    a. Perplexing b. Minor c. Clear d. Dutiful
14. The antonym of bright is:
    a. Bold b. Dark c. Brilliant d. Clear

Choose the correct option according to the grammar from the columns A, B, C and D and fill up the bubbles:

15. Ruthlessness is a noun:
    a. Collective b. Concrete c. Abstract d. Proper
16. They invited us to home yesterday. Tense used in the sentence is:
    a. Past Indefinite b. Past Continuous
    c. Future Perfect d. Present Indefinite
17. "To spend" is:
    a. Gerund b. Infinitive
    c. Present Participle d. Past Participle
18. "I love the poor and you hate them." The sentence is:
    a. Compound b. Complex c. Optative d. Imperative
19. I trust _____ God. The correct preposition is:
    a. on b. in c. of d. at

Choose the correct form of verb from the columns A, B, C and D and fill up the bubbles:

1. He _____ to my letter.
   a. did not reply b. has not been replying c. will have not been replying d. had not been replying
2. She _____ French for over two years.
   a. has learnt b. is learning c. has been learning d. had learnt
3. She_____ English now.
   a. speak b. is speaking c. has been speaking d. had been speaking
4. I _____ him next Monday.
   a. shall see b. will have been seeing
   c. had been seeing d. have been seeing
5. They _____ their work regularly.
   a. do not do b. does not do
   c. had not done d. had not been doing

Choose the word with correct spellings from the columns A, B, C and D and fill up the bubbles:

6. Covarage Coverege Coverage Coverige
7. Assaciation Association Asoceation Association
8. Lothe Loth Loathe Looth
9. Excele Excel Axel Axcel

Choose the correct option from the columns A, B, C and D and fill up the bubbles:

10. The synonym of "solace" is:
    a. Aggravation b. Frustration c. Comfort d. Angry
11. "Equitable" means:
    a. Privileged b. Reasonable c. Favourite d. Complicated
12. The synonym of "glorious" is:
    a. Lustrous b. Splendid c. Fabulous d. Memorable
13. "Destitute" means:
    a. Very intelligent b. Very poor c. Very rich
    d. Very able
14. The antonym of "bright" is:
    a. Dark b. Brilliant c. Clear d. Happy

Choose the correct option according to the grammar from the columns A, B, C and D and fill up the bubbles:

15. Ali was impressed _____ Sarmad's grades.
    a. with b. by c. from d. of
16. They rested <u>at sunset</u>. The underlined phrase is:
    a. Noun phrase b. Adjective phrase c. Gerund phrase
    d. Adverb phrase
17. The <u>gang</u> of robbers was arrested by the police. The underlined word is a/an:
    a. Abstract noun b. Material noun
    c. Collective noun d. Concrete noun
18. He was absent the class.
    a. to b. from c. of d. for
19. Surely, you recognize <u>somebody</u>. The underlined word is a/an:
    a. Possessive pronoun b. Indefinite pronoun
    c. Reflexive pronoun d. Relative pronoun

***

"Through Hard Work to the Stars"

A Team of Frontline Teachers of Pokhara @

GURUKUL BIDHYA SADAN

+2

- SCIENCE
- MANAGEMENT
- HOTEL MANAGEMENT
- TOURISM & MOUNTAINEERING STUDIES
- COMPUTER SCIENCE

PROSPECTUS 2023/24

INTRODUCTION

GURUKUL is situated at the most accessible location of Pokhara Metropolitan City-9, in between Nayabazar and New Road, opposite of Pokhara Metropolitan office. It was established by a group of experienced academicians in 2051 B.S. as Doon Academy and later in 2063 B.S. as Gurukul Bidhya Sadan.

This institution has been patronized by a team of professional scholars, educationists, and highly qualified and experienced lecturers and teachers of the valley.

GURUKUL has spacious and well ventilated, multi-media friendly and highly equipped physical infrastructure as per the demand and necessity of this dynamic era.

OUR MISSION

We aspire to become a core of academic eminence for the young minds who come up with a dream of attaining global perspective of world class education that builds in them a strong pillar of competence, confidence and character.

OUR VISION

We strive to be one of the best educational institutions that imparts quality education with modern and ethical values at budget price.

11 Strong Reasons to Choose GURUKUL

1. Highly experienced and renowned teachers.
2. Prime and easily accessible location with learning environment.
3. Well equipped science laboratories, hotel management laboratories and spacious classrooms.
4. Opportunities for research, innovation and creation.
5. Special training and classes on nutrition, sports, health & fitness by internationally certified SSI senior coaches & specialized trainers.
6. Project based participatory approach on teaching.
7. Focus on self skill development of students which enables them to learn how to learn.
8. Regular tours, excursions and industrial visit.
9. Scholarship for deserving students on merit/need based system.
10. Youth Development Programs.
11. Frequent sessions on counseling and motivation.

LABORATORIES

The study of Science and Hotel Management cannot be complete unless the students are provided with well-equipped laboratories with comfortable furniture. Moreover, students' safety is our major concern.

Recently, we have established separate and well-equipped laboratories for Physics, Chemistry, Biology, Hotel Management and Computer Science.

IT FRIENDLY CLASSES

We have tried to make our classrooms multimedia friendly. Besides that, we have brand new computers with high speed internet service. Similarly, the computer lab is open for all students to enhance their knowledge and to thrive their skills.

LIBRARY

A house of books, knowledge and wisdom is called library. Our library contains books on various subjects like science, economics, finance, history, literatures, geography, fashion, music etc. The academic journals, newspapers, magazines and sufficient volumes of different varieties are available.

MULTI COURT PLAY GROUND

Sports help to develop the sense of team spirit, discipline and leading capacity of the students. So, we have managed enough space where the students can play different sports like Volleyball, Basketball, Table Tennis etc.

CO-CURRICULAR ACTIVITIES

Teaching and learning activities must extend far beyond the classroom. We organize various co-curricular activities and encourage our students to involve themselves in them. We also organize 'Sports Meet' and 'Talent Show' annually. We take our students frequently on educational excursions.

CAFETERIA & TRANSPORTATION

Nutrition plays an important role for the wholesome mental and physical development. So, we have cafeteria to provide hygienic and nutritious food of different varieties in family environment.

We provide bus facilities to the students in and around the city.

ADMISSION PROCEDURE

Students with following criteria are eligible to apply for Science and Management. All prospectives students will have to appear an entrance examination, and the result will be published on the basis of merit list.

Faculty	Eligibility
Science	3.0 GPA in SEE or Equivalent
Management	2.4 GPA in SEE or Equivalent
Hotel Management	2.4 GPA in SEE or Equivalent

SCHOLARSHIPS

For Science

Entrance Topper	1/1 (B/G)	Full Scholarship
4.00 GPA in SEE	1/1 (B/G)	100% in Tuition fee
3.8 or above in SEE	1/1 (B/G)	75% in Tuition fee
3.6 to 3.79 in SEE	1/1 (B/G)	50% in Tuition fee
Entrance Topper (Nepali med.)	1/1 (B/G)	50% in Tuition fee
Needy\Differently able	1/1 (B/G)	50% in Tuition fee
Remote	1/1 (B/G)	50% in Tuition fee

For Management/Hotel Management

Entrance Topper	1/1 (B/G)	100% (Scholarship)
3.8 GPA and above	1/1 (B/G)	100% (Scholarship)
3.5 to 3.79 GPA	1/1 (B/G)	50% (Scholarship)

For deserving and needy students, the scholarship scheme can be reviewed and extended depending upon their conditions.

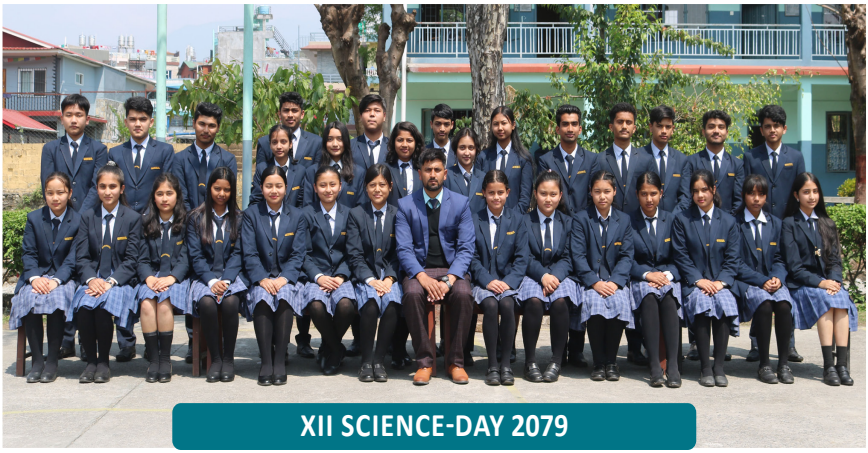
SHIFT

Nursery - Class 10

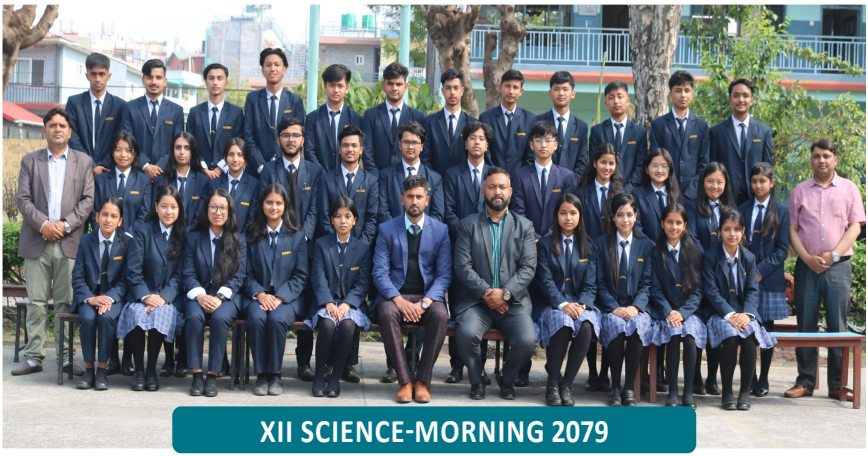
Class	Starts	Ends
Pre-Primary	10:00 am	3:00 pm
1-10	10:00 am	4:00 pm

Grade XI-XII

Class	Shift	Starts	Ends
Science	Morning	6:00 am	12:30 pm
	Day	10:00 am	5:00 pm
Management	Morning	6:00 am	9:50am
	Day	10:00 am	2:00 pm
Hotel Management	Morning	6:00 am	9:50 am
	Day	10:00 am	2:00 pm



XII SCIENCE-DAY 2079



XII SCIENCE-MORNING 2079

XII MGMT/HM-A 2079

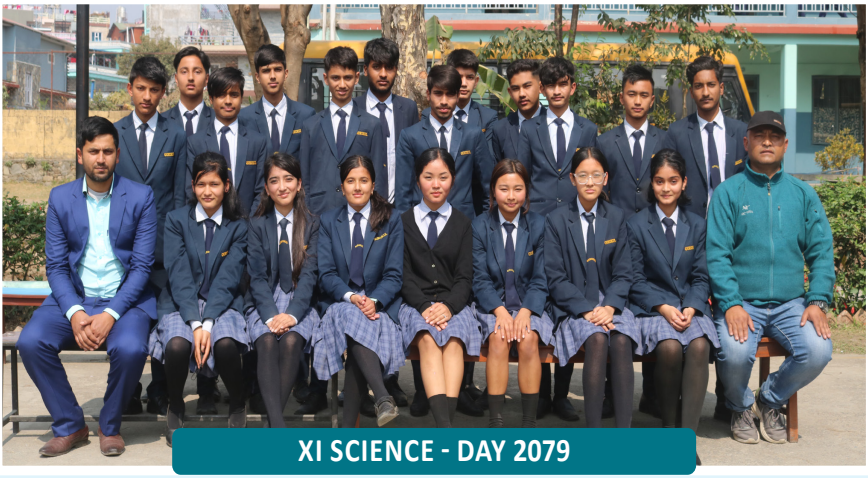
XII MGMT/HM-B 2079

XI- A MANAGEMENT - 2079

XI- B MANAGEMENT - 2079

XI- HOTEL MANAGEMENT - 2079

XI SCIENCE - MORNING 2079



XI SCIENCE - DAY 2079

EXTRA BIT

EXCURSION (SIKLES)

MOTIVATIONAL SESSION

SPORTS MEET-2078

SPORTS MEET-2078

LAB WORK

EXCURSION (MARDI)

SPORTS MEET-2078

HOLI SPECIAL (LWANG VILLAGE)

TALENT SHOW-2078 (TROPHIES)

TALENT SHOW-2078

STUDENTS MODERATING THE FORMAL SESSION OF TALENT SHOW-2078

2ND RUNNER-UP (HISSAN IDOL-2076)

2ND RUNNERUP - OPEN NATIONAL HANDBALL TOURNAMENT-2022

VOLLEYBALL BOYS - 1ST & GIRLS - 3RD (PABSON-2079)

GURUKUL INTRA-SEE FUTSAL TOURNAMENT-2080

CHAMPIONS OF INTER-COLLEGE DANCE COMP. 2079

OUR ACHIEVERS

Rachana Banstola
MBBS, KU

Vishma Kumal
BE Civil, PU

Anurag Banjara
BE Civil, PU

Anurag Pahari
BE Architect, PU

Shrish Bastola
BE Civil, PU

Sunil BK
BE Civil, PU

Shreekrishna Adhikari
BE Civil, PU

Mamata Adhikari
BE Civil, PU

Riya Sunar
BE Computer, PU

Season Paudel
BE Computer, PU

Pramila Tamang
BE Computer, PU

Samarpan Thapa
BE Computer, TU

Aayush Gurung
BE Electrical, PU

Aarju Rana
BSc. Nursing, KU

Binita Lamichhane
BSc. Nursing, GMC

Puja BK
BSc. Nursing, PU

Sulav Banstola
Bsc. Ag, AFU

Chandra Mohan Bhatta
BPH, PU

Gauri Banstola
B. Pharmacy, MU

Sushmita Nepali
B. Pharmacy, PU

Nisha Subedi
BMLT, PU

Arjun Bahadur Subedi
BMLT, PU

Ishika Pun
BBA, PU

Suzeet KC
BBA, TU

Sandhya Banstola
BCA, PU

Dinesh Gurung
BBA, TU

Alisha Poudel
BBA, PU

Roshan BK
BBA, PU

Sajan GC
BBA, TU

Shiva Sharma
BBA, PU

Srijana Paudel
BBA, PU

Sabina Banstola
BBA, TU

Yukee Paija
BBA, PU

Alisha BK
BBA, Lincon

Surakhsya Acharya
BBA, PU

Alija Telija Pun
BBA, PU

Aishwarya Kunwar
BBA, PU

Yamuna Acharya
BIM, TU

Nistha Niraula
BIT, TU

Sneha Adhikari
BALLB, TU

Bibishika Adhikari
B. Fashion Designing

Suprekshya Gurung
BHM, TU

Prashant Thapa Chhetri
BE Aeronautics, NMIT, VTU

Deepika Pariyar
BSc. Ag, AFU

Pratikshya Thapa
BE Civil, PU

Laxmi Sapkota
BSc. Ag, AFU

Riddhika Shrestha
BE Electrical, PU

Suraj Adhikari
BE Software, PU

Purnima Paudel
BBA, JMC

Bibek Shrestha
BBA, TU

Aryan Baral
BBA, PU

Grishma Poudel
BBA, PU

Manisha Adhikari
BBA, PU

Kabin Gurung
BALLB, GU

Ujjwal Tiwari
BBA, PU

Kusum Malla Thakuri
BBA, TU

STUDENTS' PERSPECTIVE

SHASHI SUBEDI, XII SCIENCE

After my SEE result, I was in dilemma to choose an appropriate college for my study of science in Grade XI. Later, I came to know that GURUKUL is a college, run by highly professional and renowned faculties in Pokhara. I decided quickly to be admitted at GURUKUL. I am very much satisfied with my decision and I recommend all of you to join the GURUKUL.

Aakriti Khatri, XI SCIENCE-2076

After SEE, choosing the best school in the valley is not an easy task. I feel fortunate to join GURUKUL which provided me great a platform to develop myself and retain my personality. I am thankful to GURUKUL which has enriched me with career development skills.

SAMUEL BANSTOLA , XI SCIENCE

I feel very lucky to be a Gurukulian. Choosing GURUKUL for my +2 level study was one of the wisest decisions ever. The school provides an excellent environment for the students. So, one can choose GURUKUL to bring the best out of them.

NARESH OJHA, XI MANAGEMENT

Honestly speaking, teaching faculties in GURUKUL are highly energetic, hardworking, friendly, caring and passionate about their work who can make you understand any hard topic like a piece of cake. Also there is a kind of good vibe in the environment which creates really a good mood for study. Overall, the experience was very nice. I have built discipline, confidence and improved a lot in my academics while studying at GURUKUL.

BIJAYA MALLA, XI HOTEL MANAGEMENT

Gurukul is an academic institution, run and managed by a group of qualified, dedicated and highly experienced educationists in Pokhara where every student finds a complete academic environment to prepare the academic excellence . It feels very sound and comfortable when we are at Gurukul. So, I suggest every aspiring learners to join Gurukul to make their dreams come true.

LAXMI GT, XII MANAGEMENT

After SEE, choosing the best college is not less than any Herculean task. I was in confusion to select the right academic place to reshape, refine and revive my capabilities. While going through +2s in the valley, I judged GURUKUL and I found it was an ideal one for me. I feel fortunate and proud to have made a timely and the best decision at choosing the school that has paved my path to the desire destination.

SAMUNDRA ACHARYA, XII HOTEL MANAGEMENT

The environment at GURUKUL is very fresh where we can study new things in fresh mood. The teachers are friendly and motivate us in every aspects. Every student can learn and involve in extra curricular activities. Also, we can share our mistakes freely and comfortably for the solution. We are being loved by the teachers here.

KABISH MALLA THAKURI, XI HOTEL MANAGEMENT

GURUKUL not only educates you for your career or bright future but also provides general knowledge and introduces real life lessons. It is a leading and innovative educational academy in Pokhara. I am very much thankful to every teachers of GURUKUL for teaching us along the right path of education.

ANUP BHANDARI, XII SCIENCE

Gurukul is one of the dream colleges of many students for their +2 studies. Every moment we spent at Gurukul is simply an awesome. So, I recommend all of you to be a part of this renowned institution. All the best!

ASMITA ADHIKARI, XI MANAGEMENT

GURUKUL is a highly reputed academic institution in Pokhara valley. No words are required to explain its good qualities. So, I strongly recommend all of you to join GURUKUL and make you future glorious.

Choosing Gurukul as the institution for my +2 Studies has been the most beautiful decision I have ever made. Every moment spent at Gurukul took me a step closer to joining Agriculture as the study of my aim in life. All the faculty members guided me not only as teachers but also as awakeners. The learning environment of this school was truly inspiring and I always felt a strong vibe of learning in the school. I will miss the team of faculties and the motivating environment of Gurukul. Heartily thanks and sincere gratitude to the Gurukul family. Keep guiding, keep inspiring the future nation builders !

Prayash

PRAYAS KUMAR SHRESTHA
Nepal's 5th Topper
Full Scholarship
B.Sc. Ag Entrance Test - 2078
Agriculture & Forestry University (AFU)

"Through Hard Work to the Stars"

Since 2051...

GURUKUL BIDHYA SADAN

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Email: gurukulpokhara@gmail.com