C

INSTRUCTIONS **NUMBER OF QUESTIONS : 100** **TIME : 2 Hrs**

1. ATTEMPT ALL QUESTIONS WITHIN THE TIME.
2. EACH QUESTION CARRIES 1 MARK
3. NO NEGATIVE MARKS.
4. DON'T DO ROUGH WORK ON QUESTION PAPER AND OMR.
5. USE BLACK (OR) BLUE PEN FOR BUBBLING ON OMR.

CORRECT METHOD OF BUBBLING

WRONG METHOD OF BUBBLING

INTO 10+1-CBSE

MATHEMATICS

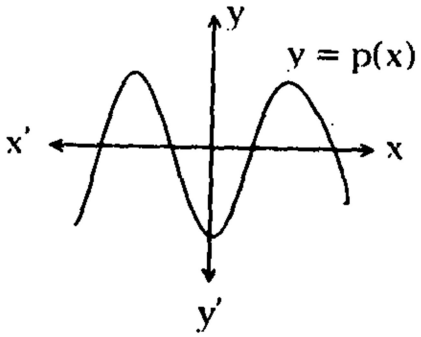
1. How many prime factors are there in the prime factrorization of 240?
   1) 20 2) 5 3) 3 4) 6

2. If two positive integers *a* and *b* are written as $a = x^3y^2$ *and* $b = xy^3; x, y$ are prime numbers, then HCF (*a, b*) is
   1) xy 2) xy^2 3) x^3y^3 4) x^2y^2

3. What is the L.C.M of greatest 2 digit number and the greatest 3 digit number?
   1) 99×999 2) 999 3) $99 \times 9 \times 111$ 4) $9 \times 11 \times 111$

4. Let $a_1, a_2, \ldots\ldots a_{30}$ are in A.P., $S = a_1 + a_2 + \ldots\ldots + a_{30}$ *and* $T = a_1 + a_3 + a_5 + \ldots\ldots + a_{29}$. If $a_5 = 27$ *and* $S - 2T = 75$, then $a_{10} =$ _____
   1) 57 2) 47 3) 42 4) 52

5. If y = p(x) is represented by the given graph, then the number of zeroes are



   1) 2 2) 3 3) 4 4) 1

6. If $x = \sqrt[3]{\left(\sqrt{2}+1\right)} - \sqrt[3]{\left(\sqrt{2}-1\right)}$, then $x^3 + 3x =$
   1) 0 2) 1 3) 2 4) 3

7. If both the zeroes of a quadratic polynomial $ax^2 + bx + c$ are equal and opposite in sign, then b is
   1) –1 2) 5 3) 1 4) 0

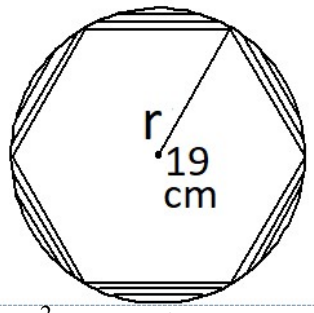
8. $p(x) = 2x^3 + x^2 - 1$, then $p(1) + p(-1) =$

1) 2 2) 3 3) 20 4) 0

9. If α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - 5x + k$ such that α – β = 1, then the value of k is _____.

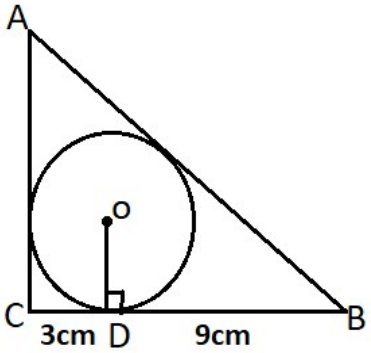
1) −6 2) 5 3) −5 4) 6

10. From adjacent diagram, a regular hexagon inscribed in a circle. Then area of shaded portion is _____



1) $196.662cm^2$ 2) $195.662cm^2$ 3) $198.662cm^2$ 4) $199.662cm^2$

11. From adjacent diagram find AB + AC. Where CD = 3cm and BD = 9cm.



1) 24cm 2) 12cm 3) 15cm 4) 9cm

12. Solve $99x + 101y = 499, 101x + 99y = 501$.

1) (–3, –2) 2) (8, 9) 3) (1, 4) 4) (3, 2)

13. The pair of equations $-3x + 4y = 7$ and $\frac{9}{2}x - 6y + \frac{21}{2} = 0$ has _____ solution.

1) Infinite 2) No 3) 2 4) 3

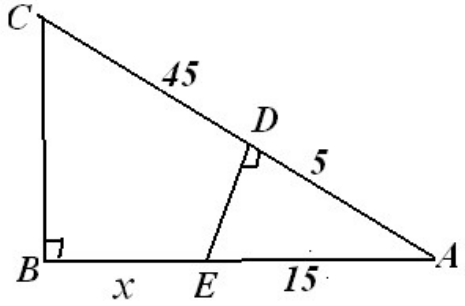
14. A fraction becomes $\frac{9}{11}$ if 2 is added to both numerator and denominator if 3 is added to both numerator and denominator it becomes $\frac{5}{6}$, then the fraction is _____

1) $\frac{3}{4}$ 2) $\frac{1}{2}$ 3) $\frac{9}{7}$ 4) $\frac{7}{9}$

15. If $a_1, a_2, ..., a_{10}$ be an A.P. If $\frac{a_1 + a_2 + ... + a_{10}}{a_1 + a_2 + ... + a_p} = \frac{100}{p^2}$, $then \frac{a_{11}}{a_{10}} =$

1) $\frac{19}{21}$ 2) $\frac{100}{121}$ 3) $\frac{21}{19}$ 4) $\frac{121}{100}$

16. If ADE, ACB are similar triangles, then x =



1) 8/3 2) 50/3 3) 5/3 4) 4/3

17. If an ordered pair satisfying the equations 2x – 3y = 18 and 4x – y = 16 also satisfies the equation 5x – py – 23 = 0, then find the value of p.

1) 1 2) 2 3) –1 4) –2

18. Find the roots of the equation $2x^2 - 5x + 3 = 0$.

1) $1, \frac{3}{2}$ 2) $1, \frac{3}{4}$ 3) $1, \frac{4}{3}$ 4) 1, 3

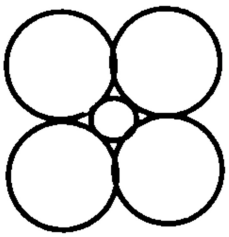
19. Find the dimensions of a rectangle whose perimeter is 28m and whose area is 40sq.m

1) 4, 10 2) 4, 12 3) 4, 8 4) 5, 10

20. If α, β are the distinct zeroes of $x^2 + 3^{1/4}x + 3^{1/2} = 0$, then the value of $\alpha^{96}\left(\alpha^{12} - 1\right) + \beta^{96}\left(\beta^{12} - 1\right)$

1) 56×3^{24} 2) 56×3^{25} 3) 28×3^{25} 4) 52×3^{24}

21. In the given figure, the radius of the outer circle is 'a', then the radius of the inner circle is



1) $\left(\sqrt{2} - 1\right)a$ 2) $\sqrt{2}a$ 3) $\frac{1}{\sqrt{2}}a$ 4) $\frac{2}{\sqrt{2}+1}a$

22. If $(a-x)^2 + (b-x)^2 = (a-b)^2$, then x = ……

1) b 2) a 3) Both A and B 4) 0

23. If $5^{x^2-4x+3} = 1$, then $x =$ _____

1) 1 or 3 2) 3 or 4 3) 8 or 7 4) 3 (or) 5

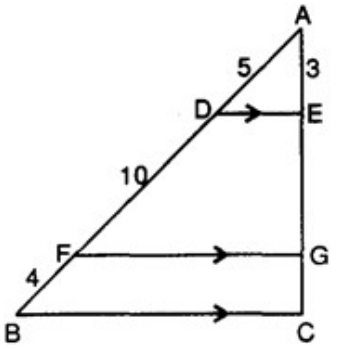
24. n^{th} term of the series 4 + 9 + 14 + …….. is

1) 5n – 1 2) 4n – 1 3) 5n + 1 4) 4n + 1

25. Let $P(x) = ax^2 + bx + c$ be such that $P(1) = 3, P(-2) = \lambda$ and $P(3) = 4$.
If $P(0) + P(1) + P(-2) + P(3) = 14$, then $\lambda =$

1) -4 2) $\frac{13}{2}$ 3) $\frac{23}{4}$ 4) 4

26. In the figure, the measures are in cm. Then GC = _____cm.



1) 6 2) 4.2 3) 2.4 4) 8

27. If 8^{th} term of an A.P is 15, then the sum of 15 terms is

1) 15 2) 0 3) 225 4) 225/2

28. Sum of first 100 odd numbers is

1) 100 2) 1000 3) 10,000 4) None

29. In an A.P., if first term is 4, 9^{th} term is 20, then 15^{th} term is

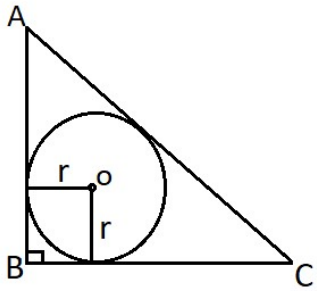
1. 16 2. 32 3. 18 4. 36

30. If $\alpha+\beta+\gamma=6, \alpha^2+\beta^2+\gamma^2=14, \alpha^3+\beta^3+\gamma^3=36$. Then the cubic polynomial having α, β, γ are zeroes

1) $x^3-6x^2+14x-36$ 2) $x^3+6x^2-14x+36$

3) $x^3-6x^2+11x-6$ 4) $x^3-6x+11x^2-6$

31. From adjacent diagram $\angle B = 90^0$. Then find r. Where $AB=c, BC=a$ *and* $AC=b$.



1) $\frac{a+b+c}{2}$ 2) $\frac{a+c-b}{2}$ 3) $\frac{a-c+b}{2}$ 4) $\frac{b+c-a}{2}$

32. If A(4, 2) B(6, 5) and C(1, 4) are the vertices of ΔABC and AD is the median. Then D =

1) $\left(\frac{7}{2},\frac{9}{2}\right)$ 2) $\left(\frac{5}{2},3\right)$ 3) $\left(5,\frac{7}{2}\right)$ 4) $\left(\frac{1}{2},\frac{1}{2}\right)$

33. Points of intersection of diagonals of a rhombus formed by (2, –3), (6, 5), (–2, 1), (–6, –7)

1) (0, 0) 2) (–1, 0) 3) (4, 1) 4) (0, –1)

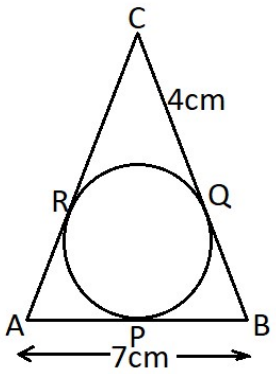
34. If x > 0, y < 0, then the point (–x, y) lies in

1) Q_1 2) Q_2 3) Q_3 4) Q_4

35. Two parallel chords in a circle having lengths 10cm and 14cm and the distance between them is 6cm. If the chord parallel to these chords and midway between them is of length $\sqrt{a}$ cm. Then find a?

1) 46cm 2) 24cm 3) 184cm 4) $2\sqrt{46}$ cm

36. In the figure, PQR is the in–circle of ΔABC. If AB=7cm and QC =4cm, then the perimeter of ΔABC =_____



1) 20cm 2) 44cm 3) 11cm 4) 22cm

37. If vertices of a triangle formed by (1,3), (3,–1), (–5,–5). Then its perimeter =

1) $5+3\sqrt{20}$ 2) $10+5\sqrt{20}$ 3) $10+3\sqrt{20}$ 4) $10+4\sqrt{20}$

38. If $\Delta ABC \sim \Delta PQR$ and $\angle A + \angle C = 70^0$, then $\angle Q =$

1) 90^0 2) 80^0 3) 70^0 4) 110^0

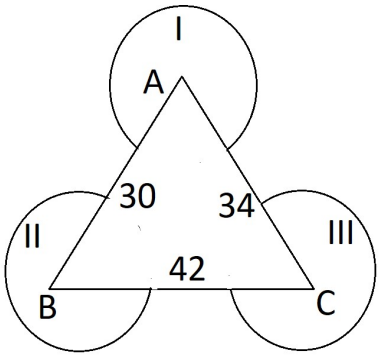
39. The area of the base of a right circular cone is 78.5 cm^2. If its height is 12 cms, then its volume is ……..cm^3.

1) 31.4 2) 314 3) 304 4) 403

40. The ratio of the radius and height of a cylinder is 3:2. The radius is 21 cm, then LSA = ……. cm^2.

1) 2043 2) 1949 3) 1848 4) 1948

41. Three horses are tethered with seven meters long ropes at the three corners of a Triangular field having sides 30, 34, 42m. Find the area of the plot which can be grazed by the horses?



1) 81150 m^2 2) 385 m^2 3) 243450 m^2 4) 154 m^2

42. The volume of cuboid is 36 m^3. If its length and breadth are 6m and 3m. Then total surface area of the cuboid is

1) 64 m^2 2) 81 m^2 3) 72 m^2 4) 96 m^2

43. A cuboidal metal of dimensions 44 cm × 30 cm × 15 cm was melted and cast into a cylinder of height 28 cm. then its radius is.

1) 15 cm 2) 20 cm 3) 25 cm 4) 18 cm

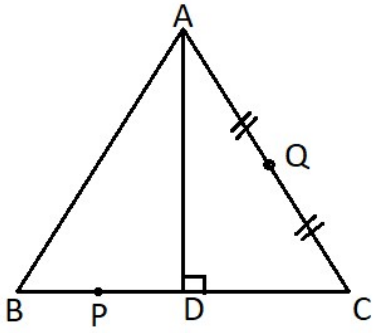
44. $2\tan^2 45^0 + \cos^2 30^0 - \sin^2 60^0 =$

1) 0 2) 1 3) 2 4) 3

45. If $15\sin^4\alpha + 10\cos^4\alpha = 6$, then $27\sec^6\alpha + 8\operatorname{cosec}^6\alpha =$

1) 500 2) 250 3) 400 4) 350

46. In $\Delta ABC, P, Q$ are midpoints of BD and AC respectively.
If $AD = 6cm, BC = 8cm, then\ PQ =$ _____cm



1) 5 2) 3 3) 2 4) 6

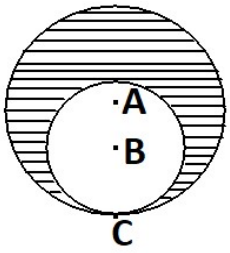
47. $\left(\tan^2\alpha - \sin^2\alpha\right).\dfrac{\cot^2\alpha}{\sin^2\alpha} =$

1) 0 2) -1 3) 1 4) none

48. If $0 \le \theta \le \dfrac{\pi}{2}, 0 \le \alpha \le \dfrac{\pi}{2}$ and $\sec^{2024}\theta + \operatorname{cosec}^{2024}\alpha = 2,$ then the value of $\cos^{2020}\theta + \sin^{2022}\alpha =$

1) $\dfrac{3}{2}$ 2) $\dfrac{1}{2^{2020}}$ 3) 1 4) 2

49. From adjacent diagram, AC = 8cm, AB = 3cm. Then area of shaded region is _____



1) $122.57cm^2$ 2) $123.57cm^2$ 3) $124.57cm^2$ 4) $125.57cm^2$

50. If the angles of a triangle are in the ratio 1:1:2, then the triangle is
1) Right angled 2) Isosceles
3) Right angled isosceles 4) Equilateral

ARITHMETIC AND LOGICAL REASONING QUESTIONS:

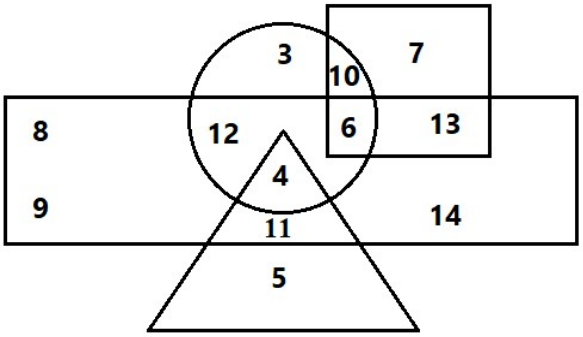
51. Select the odd word from the given alternatives.
1) Hindi 2) Telugu 3) Oriya 4) India

52. In the following question, some statements are given and these statements are followed by some conclusions. You have to take the given statements to be true even if they seem to be at variance from commonly known facts read the statements carefully and choose which of the following conclusion(s) logical follow statements
No stone is a metal
Some metals are papers
All papers are glass
Conclusions:
I. No glass is metal
II. Atleast some glass is metal
1) Only conclusion (I) follows 2) Only conclusion (II) follows
3) Either I (a) II follow 4) Both (I) and II follow

53. A postman was returning to the post office which was in front of him to the North. When the post office was 100 metres away from him, he turned to the left and moved 50metres to deliver the last letter at Shantivilla. He then moved in the same direction for 40 metres, turned to his right and moved 100 metres. How many metres was he away from the post office?

1) 0 2) 90 3) 150 4) 100

54. Study the Venn diagram given below.



1) Rectangle represents males. 2) Triangle represents educated
3) Circle represents urban 4) Square represents civil servants

Who among the following is neither a civil servant nor educated but is urban and a male?

1) 4 2) 3 3) 6 4) 12

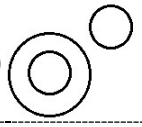
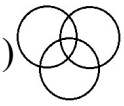
55. If '$-$' stands for '$\div$', '+'stands for '$\times$', '$\div$' stands for '$-$' and '$\times$'stands for '+', then which of the following equations is correct?

1) $30-6+5\times4\div2=27$ 2) $30+6-5\div4\times2=30$
3) $30\times6\div5-4+2=32$ 4) $30\div6\times5+4-2=40$

56. Pointing to a photograph, a lady tells Pramod, "I am the only daughter of this lady and her son is your maternal uncle. "How is the speaker related to Pramod's father?

1) Sister-in-law 2) Wife 3) Either(A) or (B) 4) Neither (A) nor (B)

57. Which of the following diagram represents professors, researches, scientists

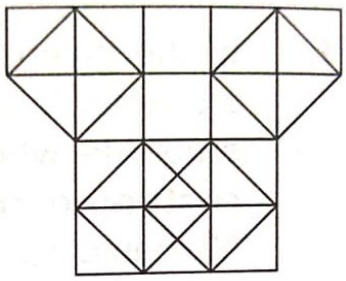
1)  2)  3)  4) 

58. Select the number which will complete the given series.

2, 7, 22, 67, ?, 607

1) 192 2) 202 3) 127 4) 232

59. Find the number of squares formed in the given figure

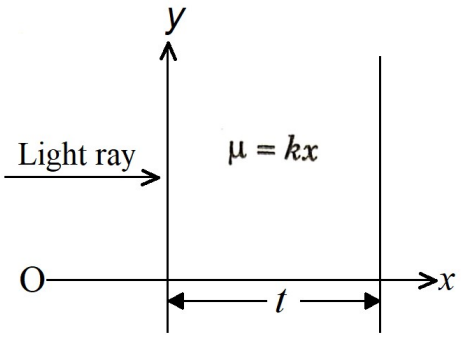


1) 18 2) 19 3) 20 4) More than 20

60. Some students planned for a picnic. The budget for food was 500. But, 5 of them failed to go and thus the cost of food for each member increased by 5. How many students planned for the picnic?

1) 15 2) 20 3) 25 4) 30

61. Refractive index of a transparent slab varies as $\mu = kx$ where x is the distance from origin. Time taken by the light to travel the slab of thickness t



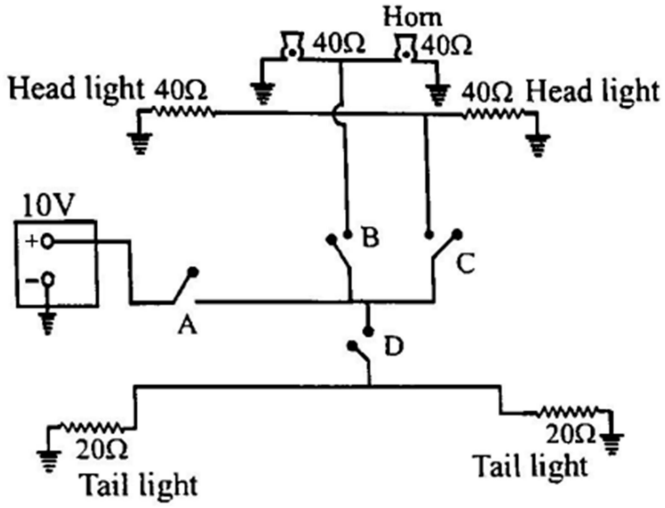
1) $\frac{t^2k}{2c}$ 2) $\frac{t^2k}{c}$ 3) $\frac{tk}{c}$ 4) $\frac{2tk}{c}$

62. Which one of the following materials cannot be used to make a lens
1) Water 2) Glass 3)Plastic 4) Clay

63. The image formed by a concave mirror is observed to be virtual, erect and larger than the object. Where should be the position of the object?
1) Between the principal focus and the centre of curvature
2) At the centre of curvature
3) Beyond the centre of curvature
4) Between the pole of the mirror and its principal focus

64. An object of height 4cm is kept at a distance of 30cm from the pole of a diverging mirror. If the focal length of the mirror is 10cm, the height of the image formed is
1)+3.0 cm 2) +2.5 cm 3)+1.0 cm 4) +0.75 cm

65. An automobile circuit. How much power (in watt) is dissipated by the automobile circuit when switches A, B, C and D are all closed



1) 10W 2) 20W 3)30W 4) 40W

66. Where should an object be placed in front of a convex lens to get a real image of the size of the object?
1) At the principal focus of the lens
2) At twice the focal length
3) At infinity
4) Between the optical centre of the lens and its principal focus

67. No matter how far you stand from a mirror, your image appears erect. The mirror is likely to be

1) Only plane
2) Only concave
3) Only convex
4) Either plane or convex

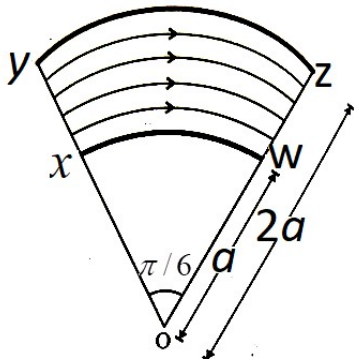
68. Which of the following lenses would you prefer to use while reading small letters found in a dictionary?

1) A convex lens of focal length 50cm
2) A concave lens of focal length 50cm
3) A convex lens of focal length 5cm
4) A concave lens of focal length 5cm

69. The refractive index of crown glass is 1.52. What is the speed of light in crown glass compared to its speed in air?

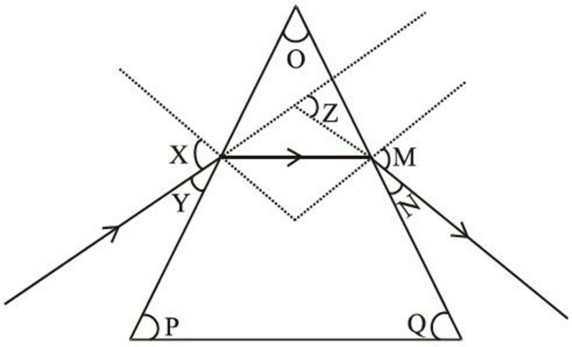
1) 1.52 times faster
2) 1.52 times slower
3) The same
4) Cannot be determined from the given information

70. Calculate the resistance (in Ω) of the conducting strip xyzw having uniform conductivity $\sigma = \frac{\pi}{6}$ mho/metre, thickness $t = \frac{1}{\ln 2}$ m, current flows along the strip as shown by arrows in figure



1) $1\,\Omega$
2) $2\,\Omega$
3) $4\,\Omega$
4) $3\,\Omega$

71. The path of ray of light passing through a glass prism is shown below:



In this diagram the angle of prism, angle of incidence, angle of emergence and angle of deviation respectively have been represented by:

1) O, Y, Z and N
2) P, Y, M and Z
3) O, X, M and Z
4) P, X, Z and N

72. Which of the following statements is true for scattering of light?

1) Colour of the scattered light depends on the size of scattered particles of the atmosphere
2) Red light is least scattered in the atmosphere
3) Scattering of light takes place as various colours of white light travel with different speed in air
4) All the above

73. The least distance of distinct vision for a young adult with normal vision is about
1) 25 m 2) 2.5 cm 3) 25 cm 4) 2.5 m

74. The human eye can focus on objects at different distances by adjusting the focal length of the eye lens. This is due to
1) Presbyopia 2) Accommodation 3) Near-sightedness 4) Far-sightedness

75. The human eye forms the image of an object at its
1) Cornea 2) Iris 3) Pupil 4) Retina

76. **Assertion (A):** Cataract is a condition in which the crystalline lens of the eye becomes milky and cloudy, leading to partial or complete loss of vision.
Reason (R): Cataract can be treated and vision can be restored by usinglens
1) Both Assertion and Reason are true and Reason is the correct explanation
2) Both Assertion and Reason are true, but Reason is not the correct explanation
3) Assertion is false, but Reason is true
4) Assertion is true, but Reason is false

77. A device consumes 500 watts of power for 4 hours,. How many kilowatt-hours(kWh) of energy does it consume?
1) 2 kWh 2) 4 kWh 3) 8 kWh 4) 16 kWh

78. Two conducting wires of the same material and of equal lengths and equal diameters are first connected in series and then parallel in a circuit across the same potential difference. The ratio of heat produced in series and parallel combinations would be-
1) 1 : 2 2) 2 : 1 3) 1 : 4 4) 4 : 1

79. A piece of wire of resistance R is cut into five equal parts. These parts are then connected in parallel. If the equivalent resistance of this combination is R', then the ratio R / R' is
1) $\frac{1}{25}$ 2) $\frac{1}{5}$ 3) 5 4) 25

80. The change in focal length of an eye lens is caused by the action of the
1) Pupil 2) Retina 3) Ciliary muscles 4) Iris

CHEMISTRY

81. $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$
The above reaction is an example of a_____
1) Displacement reaction 2) Combination reaction
3) Double displacement reaction 4) Decomposition reaction

82. Which of the following reactions will occur?
1) $MgSO_4(aq) + Cu(s) \rightarrow CuSO_4(aq) + Mg(s)$
2) $CuSO_4(aq) + Fe(s) \rightarrow FeSO_4(aq) + Cu(s)$
3) $MgSO_4(aq) + Fe(s) \rightarrow FeSO_4(aq) + Mg(s)$
4) $ZnSO_4(aq) + Cu(s) \rightarrow CuSO_4(aq) + Zn(s)$

83. Gas A, which is the major cause of global warming, combines with hydrogen oxide B in nature in the presence of an environment factor C and a green material D to form a six carbon organic compound E and a gas F. The gas F is necessary for breathing. What is the chemical formula of A?
1) CO_2 2) H_2O 3) SO_2 4) N_2O

84. How many of the statements about the reaction below are correct?

$2PbO_{(s)} + C_{(s)} \rightarrow 2Pb_{(s)} + CO_{2(g)}$

a) Lead is getting reduced
b) Carbondioxide is getting oxidized
c) Carbon is getting oxidized
d) Lead oxide is getting reduced

1) 2 2) 4 3) 1 4) 3

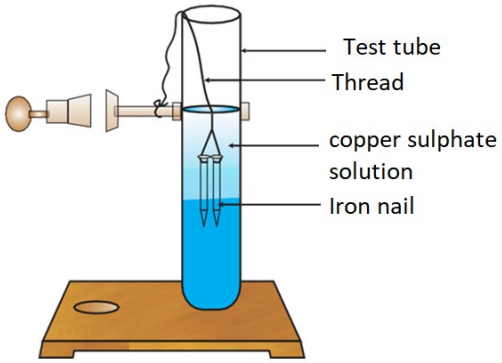
85. In the electrolysis of water, hydrogen gas is collected at X and oxygen gas is collected at Y. Then X and Y are respectively_____

1) Cathode and Anode
2) Anode and cathode
3) Both at cathode
4) Both at Anode

86. Rancidity in food products can be prevented by_____

1) Adding oxidants
2) Adding antioxidants
3) Flushing with oxygen gas
4) Flushing with hydrogen gas

87.



Which of the following statement(s) is true from the diagram?

1) The iron nail becomes brownish in colour and the blue colour of copper sulphate solution fades
2) From the above diagram, we conclude that double displacement reaction occurs
3) The iron nail becomes blue in colour and the blue colour of copper sulphate solution remains same
4) All are correct

88. The daffodil plants grow best in a soil having a pH range of 6.0 to 6.5. If the soil in a garden has a pH of 4.5, which substance needs to be added to the soil in order to grow daffodils?

1) Salt 2) Lime 3) Sand 4) Compost

89. The chemical reaction between quicklime and water is characterized by:

1) Evolution of hydrogen gas
2) Formation of slaked lime precipitate
3) No change in temperature of mixture
4) Change into red colour

90. Match the following

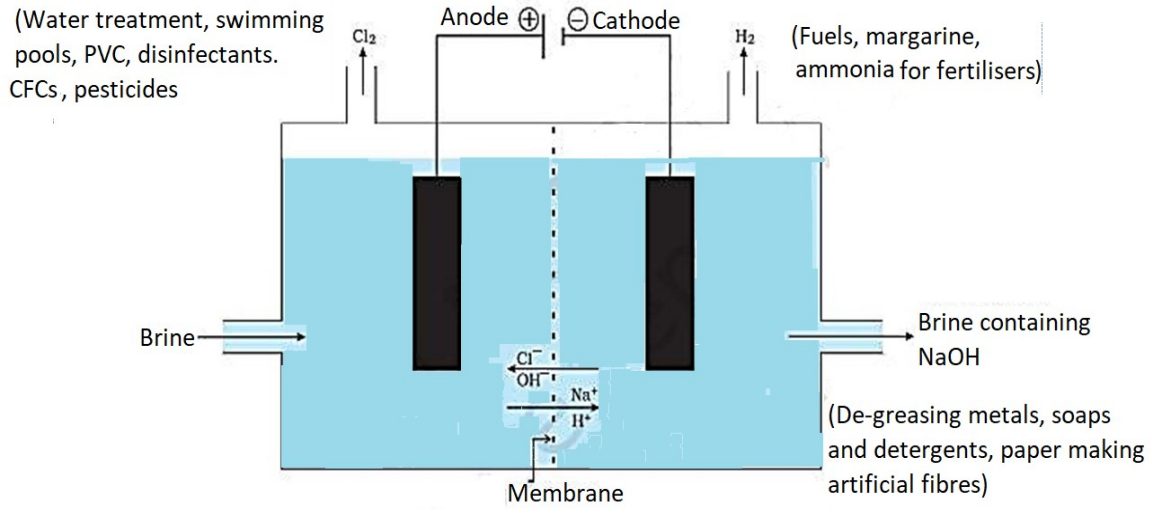
	Natural source	**Acid present**
1)	Nettle sting	(a) Acetic acid
2)	Tomato	(b) Oxalic acid
3)	Vinegar	(c) Citric acid
4)	Orange	(d) Methanoic acid

1) $1-d;2-b;3-a;4-c$ 2) $1-b;2-c;3-a;4-d$
3) $1-a;2-b;3-c;4-d$ 4) $1-d;2-c;3-b;4-a$

91. The number of molecules of water of crystallization (per formula unit) are present in: copper sulphate crystals, washing soda, gypsum are X, Y, Z respectively. Then X, Y, Z are respectively

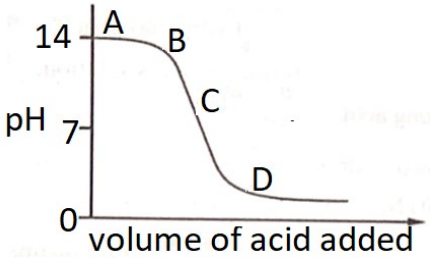
1) 5, 10, 2 2) 1, 1, 1 3) 10, 5, 2 4) 2, 5, 10

92. Which type of bond(s) is/are present in Hydrated copper sulphate
i) ionic ii) covalent iii) co-ordinate covalent iv) Hydrogen bond
1) i and ii only 2) ii and iv only 3) i and iii only 4) i, ii, iii, iv

93. 

What are the products formed from the above process
1) Cl_2 gas at anode, H_2 gas at cathode, NaOH solution is formed near the cathode
2) Cl_2 gas at cathode, H_2 gas at anode, NaOH solution is formed near the anode
3) Only Cl_2 gas formed at cathode 4) Only H_2 gas formed at anode

94. Which of the following aqueous solution is acidic in nature?
1) NaCl 2) NH_4Cl 3) KCl 4) NaOH

95. The graph given below depicts a neutralization reaction. The P^H of a solution changes as we add excess of acid to an alkali


Which letter denotes the area of the graph where only acid is present
1) A 2) B 3) C 4) D

96. Aqua regia is a mixture of
1) HCl and HNO_3 in the ratio of 3 : 1 2) HCl and HNO_3 in the ratio of 1 : 3
3) HCl and H_2SO_4 in the ratio of 3 : 1 4) HCl and H_2SO_4 in the ratio of 1 : 3

97. Brass is an alloy of _____
1) 67% Zn and 33% Cu 2) 67% Cu and 33% Zn
3) 67% Cu and 33% Sn 4) 67% Cu and 33% Pb

98. How many of the following statement(s) is/are true about electrolytic refining of silver
1) Anode is impure silver, cathode is pure silver
2) Anode is pure silver, cathode is impure silver
3) Thickness of anode decreases and Thickness of cathode increases
4) Thickness of anode increases and Thickness of cathode decreases
1) 4 2) 3 3) 2 4) 1

99. The metal that is less reactive than zinc but more reactive than silver is
1) Fe 2) Au 3) K 4) Na

100. Give an example of a non – metal which is liquid at room temperature
1) Mercury 2) Bromine 3) Chlorine 4) Gold

THE END