S

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

MATHEMATICS

1. If $A=\{1,2,3,4\}, B=\{1,2,3,4,7\}$ *then* $(A-B)\cap(A\cap B)=$

   1. A 2. ϕ 3. B 4. {1, 3, 4}

2. The value of $1+\frac{1}{1+2}+\frac{1}{1+2+3}+\frac{1}{1+2+3+4}+....+\frac{1}{1+2+3+....+2019}=$

   1. $\frac{2019}{2020}$ 2. $\frac{4038}{2020}$ 3. $\frac{2018}{2019}$ 4. $\frac{4036}{2019}$

3. If α and β are the zeros of the polynomial $P(x)=3x^2-x-4$ then $\frac{1}{\alpha}+\frac{1}{\beta}=$

   1. $\frac{1}{3}$ 2. $\frac{-1}{3}$ 3. $\frac{1}{4}$ 4. $\frac{-1}{4}$

4. If $\frac{2}{\sqrt{x}}+\frac{3}{\sqrt{y}}=2$ and $\frac{4}{\sqrt{x}}-\frac{9}{\sqrt{y}}=-1$ then

   1. $x=2, y=3$ 2. $x=4, y=9$ 3. $x=2, y=9$ 4. $x=4, y=3$

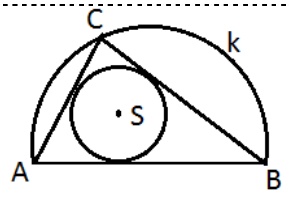
5. The value of *t* for which the pair of equations $3x+4y+2=0$ and $9x+12y+t=0$ represent coincident lines is

   1. 2 2. 3 3. 12 4. 6

6. The discriminant of the quadratic equation $2x^2+3x-1=0$ is

   1. 1 2. 14 3. 17 4. 12

7. AB is the diameter of semi-circle k, C is any point on the semi – circle (other than A or B) and S is the centre of the circle inscribed into ΔABC, then



   1. $\angle ASB=45^0$, *for all C* 2. $\angle ASB=120^0$, *for all C*
   3. $\angle ASB=135^0$, *for all C* 4. $\angle ASB=150^0$, *for all C*

8. If A = $\cos ec\theta + \cot\theta$ *and* $B = \cot\theta - \cos ec\theta$ then AB =

1. -1 2. 1 3. 2 4. 0

9. The ratio of volumes of a cylinder and a cone

1. 2 : 1 2. 1 : 3 3. 3 : 1 4. 1 : 2

10. Two dice are thrown at the same time. What is the probability that the sum of the two numbers appearing on the top of the dice is 8?

1. $\frac{31}{36}$ 2. $\frac{5}{36}$ 3. $\frac{8}{36}$ 4. $\frac{1}{12}$

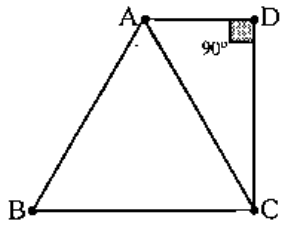
11. The number of factors of $N = 2^7 \times 3^8 \times 5^9 \times 7^{10}$ that are perfect cube

1. 72 2. 3960 3. 144 4. 7920

12. If all the sides of a parallelogram touch a circle then the parallelogram is

1. A square 2. A rhombus 3. A rectangle 4. A trapezium

13. ABCD is a trapezium in which ABC is an equilateral triangle with area $9\sqrt{3}$ square units. If $\angle ADC = 90^0$ then area of the trapezium in square units is:



1. $12\sqrt{3}$ 2. $\frac{15\sqrt{3}}{2}$ 3. $\frac{27\sqrt{3}}{2}$ 4. $\frac{35\sqrt{3}}{2}$

14. For the G.P. $\frac{2}{81}, \frac{2}{27}, \frac{2}{9}$..... common ratio =

1. 3 2. $\frac{1}{3}$ 3. -3 4. $-\frac{1}{3}$

15. A bag contains 5red balls and some blue balls. If the probability of drawing a blue ball is double that of a red ball. Find the number of blue balls in the bag.

1. 20 2. 15 3. 6 4. 10

16. Three metal cubes with edges 15cm, 12cm and 9cm respectively are melted together and formed into a simple cube. Find the diagonal of this cube.

1. $18\sqrt{3}$ 2. $12\sqrt{3}$ 3. 18 4. $9\sqrt{3}$

17. If $\cos x + \cos^2 x = 1$ and $p\sin^{12} x + q\sin^{10} x + r\sin^8 x + s\sin^6 x = 1$ then $\frac{q+r}{p+s} =$ _____

1. 3 2. 2 3. 1 4. 4

18. Which of the following is a terminating decimal

1. $\frac{16}{125}$ 2. $\frac{100}{81}$ 3. $\frac{41}{75}$ 4. $\frac{10}{3}$

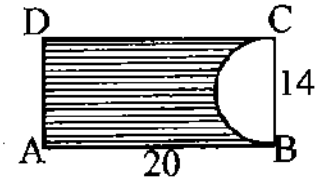
19. Euclids division lemma states that given positive integers *a* and *b* there exist unique pair of integers *q* and *r* satisfying $a = bq + r$; where

1. $0 < r < b$ 2. $0 \le r < b$ 3. $0 < r \le b$ 4. $0 \le r \le b$

20. If $\sec\theta + \tan\theta = p$ then $\sec\theta - \tan\theta$ =

1. p^2 2. $-p$ 3. $-\frac{1}{p}$ 4. $\frac{1}{p}$

21. A paper is in the form of a rectangle ABCD in which AB = 20cm and BC =14cm. A semicircle portion with BC as diameter is cut off. Find the area of the remaining portion. (in cm^2)



1. $201cm^2$ 2. $202cm^2$ 3. $203cm^2$ 4. $204cm^2$

22. The number of pairs of parallel tangents to a circle is

1. 2 2. 4 3. 1 4. Infinitely many

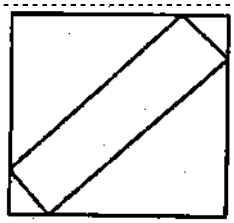
23. The area of a sector, whose radius is 7cm with angle 60^0 is

1. $52.66cm^2$ 2. $25.66\ cm^2$ 3. $62.56\ cm^2$ 4. $24.66\ cm^2$

24. Rahim takes out all the hearts from a deck of 52 cards. The probability of picking a diamond is

1. $\frac{1}{13}$ 2. $\frac{1}{39}$ 3. $\frac{1}{3}$ 4. $\frac{1}{52}$

25. An isosceles right triangle is removed from each corner of a square piece of paper so that a rectangle remains. What is the length of a diagonal of the rectangle if the sum of the areas of the cut–off pieces is 200sq. units?



1. 20units 2. 40 units 3. 10units 4. 25 units

26. Two men on either side of a temple of 30 meter height observe its top at the angles of elevation 30^0 and 60^0 respectively. Find the distance between the two men.

1. $30\sqrt{3}$ mts 2. $120\sqrt{3}$ mts 3. $40\sqrt{3}$ mts 4. $20\sqrt{3}$ mts

27. If $P(x) = 2x^2 + 3x - 5$ *then* $P(2) + P(-2) =$

1. 16 2. 0 3. -6 4. 6

28. Rajender observes a person standing on the ground from a helicopter at an angle of depression 45^0. If the helicopter flies at a height of 50 meters from the ground, what is the distance of the person from Rajender?

1. $50\sqrt{2}mts$ 2. $\frac{50}{\sqrt{2}}mts$ 3. $100mts$ 4. $50mts$

29. Number of solutions of the equation $2017x + 2018y = 2019$

1. Only one 2. Two 3. 2019 4. Infinite

30. If *a, b, c* are in G.P. and both *a, x, b* and *b, y, c* are in A.P then $\frac{a}{x} + \frac{c}{y} =$

1. 2 2. 3 3. 1 4. 4

31. $\Delta ABC \sim \Delta DEF$ and their areas are respectively $64cm^2$ and $121cm^2$. If EF = 15.4cm then BC=_____

1. 11.5cm 2. 11.4cm 3. 11.2cm 4. 11.3cm

32. If $n(A) = 4$ *and* $n(B) = 7$ then the minimum and maximum values of $n(A \cup B)$ are respectively

1. 4, 11 2. 7, 11 3. 11, 7 4. 4, 7

33. If $A=(1,7), B=(4,2)$ then distance between the two points is

1. $\sqrt{8}$ 2. 34 3. 4 4. $\sqrt{34}$

34. The least L.C.M of 20 natural numbers not necessarily different, whose sum is 801.

1. 1640 2. 1600 3. 1641 4. 1621

35. Centroid of the triangle formed by the vertices (1, 1), (-1, 2) and (3, 2) is

1. $\left(-1,\frac{5}{3}\right)$ 2. $\left(-\frac{1}{3},\frac{5}{3}\right)$ 3. $\left(1,\frac{5}{3}\right)$ 4. $\left(\frac{1}{3},\frac{5}{3}\right)$

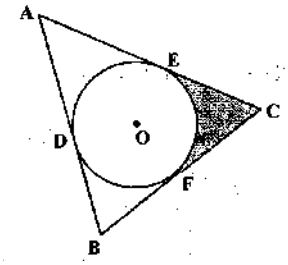
36. If $ax^2+bx+8=0\ (a\neq 0)$ has exactly one solution then $\frac{b^2}{a}=$

1. 34 2. 31 3. 33 4. 32

37. If XY and X^1Y^1 are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY at A and X^1Y^1 at B then $\lfloor \underline{AOB} =$

1. 80^0 2. 100^0 3. 90^0 4. 60^0

38. Circle with centreO is inscribed in ΔABC and has radius 1cm. ΔABC is isosceles with AC = BC. Suppose that $AB=2\sqrt{3}$. find the area of the shaded region.



1. $\left(\sqrt{3}-\pi\right)$ 2. $\left(\sqrt{3}+\pi\right)$ 3. $\frac{1}{3}\left[3\sqrt{3}-\pi\right]$ 4. $\frac{1}{3}\left[3\sqrt{3}+\pi\right]$

39. The value of $\frac{\sin 30^0+\tan 45^0-\operatorname{cosec} 60^0}{\cot 45^0+\cos 60^0-\sec 30^0}=$

1. -1 2. 1 3. $-\frac{1}{2\sqrt{3}}$ 4. $\frac{1}{2\sqrt{3}}$

40. Ram and Raju, play a tennis match. If probability of Ram winning the match is 0.72 then probability of Raju winning the match is

1. 0.38 2. 0.28 3. 0.48 4. 0.18

41. If mode of the data 2, 6, 4, 5, 0, 2, 1, 3, *x*, 3 is 2 then its mean = _____

1. 2.8 2. 3.8 3. 1.8 4. 2.08

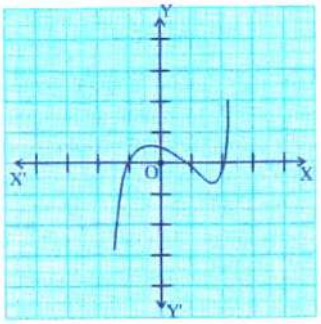
42. For drawing "more than" ogive which one can be taken on X axis

1. Upper boundaries 2. Lower boundaries
3. Midpoints of class interval 4. Greater than cumulative frequency.

43. The polynomial in x $P(x)=1-x+x^2-x^3+.....-x^{2009}+x^{2010}$ is expressed as a polynomial in y. $Q(y)=a_0+a_1y+a_2y^2+.....+a_{2009}y^{2009}+a_{2010}y^{2010}$ *where* $y=x-4$ *then* $\sum_{i=0}^{2010}a_i=$

1. $\frac{5^{2010}+1}{6}$ 2. $\frac{3^{2009}-1}{2}$ 3. $\frac{5^{2011}+1}{6}$ 4. $\frac{5^{2010}-1}{6}$

44. The number of zeroes of the graph shown below.



1. 2
2. 3
3. 1
4. Infinite

45. Let ABC and ABC' be two non-congruent triangles with sides AB=4, AC = AC' $=2\sqrt{2}$ and angle B $=30^0$. Then absolute value of the difference between the areas of the triangles.

1. $2\sqrt{2}$ 2. 8 3. 4 4. $4\sqrt{2}$

46. Volume of hemisphere of radius 3.5cm is

1. $115.5cm^3$ 2. $89.38cm^3$ 3. $115.05cm^3$ 4. $89.83cm^3$

47. The median of the following distribution is

Class interval	0-9	10-19	20-29	30-39
Frequency	10	16	24	29

1. 23.75 2. 23.25 3. 25.125 4. None

48. Area of equilateral triangle of side $10\sqrt{3}$ cm is

1. $100\sqrt{3}\ cm^2$ 2. $25\sqrt{3}cm^2$ 3. $50\sqrt{3}cm^2$ 4. $75\sqrt{3}\ cm^2$

49. The value of $2^{-\left(2+\log_2^3\right)} =$

1. $\frac{1}{12}$ 2. $-\frac{1}{12}$ 3. $\frac{1}{7}$ 4. $-\frac{1}{7}$

50. If the curved surface area of a cone is $4070cm^2$ and its diameter is 70cm then its slant height is

1. 27cm 2. 37cm 3. 47cm 4. 57cm

51. The value of $\log_{10}^{100}+\log_{10}^{1} =$

1. 2 2. 3 3. 11 4. 10

52. If *a, b, c* real numbers such that $a+\frac{1}{b}=\frac{7}{3}, b+\frac{1}{c}=4, c+\frac{1}{a}=1$ then *abc*= _____

1. -1 2. 1 3. 0 4. 2

53. The number of digits in 4^{2019} if $\log_{10}^{2}=0.3010$

1. 1214 2. 1215 3. 1213 4. 1216

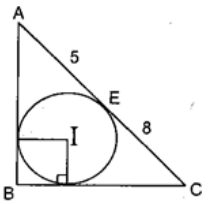
54. If A(-3, 4), B (-1, -2), C(5, 6) are the vertices of a triangle ABC then its area =

1. 26 2. 28 3. 52 4. 22

55. Probability of sure event is

1. 0 2. 1 3. $\frac{1}{2}$ 4. Always lies between 0 to 1

56. ABC is a right angled triangle such that the in – circle meets hypotenuse AC at E. Also AE = 5cm and EC = 8cm. Area of ΔABC is.



1. $6\sqrt{2}sq.cms$ 2. $30sq.cms$ 3. $12\sqrt{2}sq.cms$ 4. 40sq. cms

57. If $\sin A = \cos B$ then A + B =

1. 30^0 2. 45^0 3. 90^0 4. 60^0

58. If A and B are subsets of a universal set μ then $A \cap B^C =$ _____

1. $A - B$ 2. $A \cup B$ 3. ϕ 4. μ

59. The sum of lower limit of median class and upper limit of modal class of

Class interval	10–20	20–30	30–40	40–50	50–60	60–70
Frequency	1	3	5	9	7	3

1. 60 2. 40 3. 90 4. 50

60. In an A.P. If $a_n = 3 + 2n$ then sum of first 10 terms of the A.P.

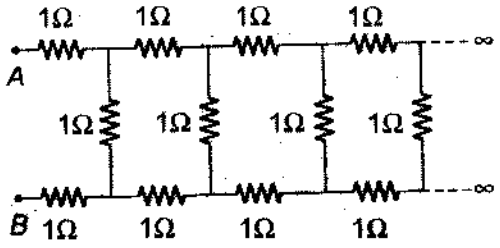
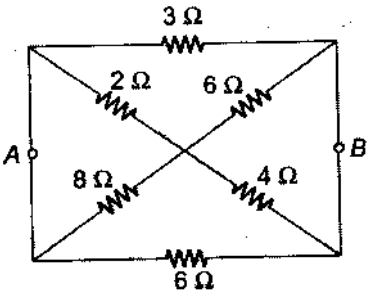
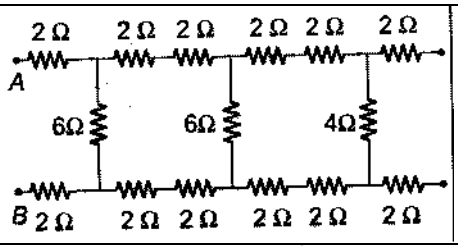
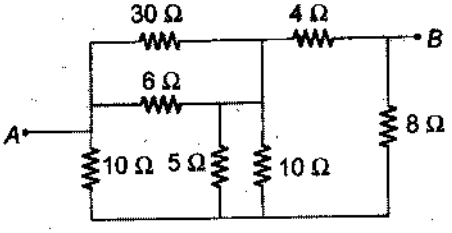
1. 90 2. 120 3. 140 4. 130

PHYSICS

61. Boiling point of water at normal atmospheric pressure is ……..

1. 0^0C 2. 100^0C 3. 110^0C 4. -5^0C

62.

	Circuit		R_{eq}
(A)		(i)	$\left(\sqrt{3}+1\right)\Omega$
(B)		(ii)	$\frac{4}{3}\Omega$
(C)		(iii)	8Ω
(D)		(iv)	6Ω

	A	B	C	D		A	B	C	D
1.	i	ii	iii	iv	2.	ii	i	iv	iii
3.	i	iii	ii	iv	4.	i	ii	iv	iii

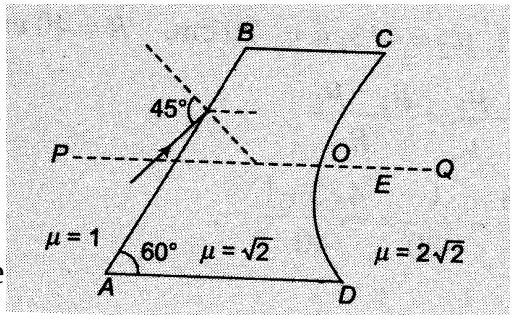
63. A ray which seems to be travelling through the focus of a convex mirror passes…….after reflection.

1. Parallel to the principal axis
2. Along the same path in opposite direction
3. Through F
4. Through C

64. Focal length of the plano – convex lens is …….. when its radius of curvature of the surface is R and n is the refractive index of the lens.

1. $f = R$ 2. $f = \frac{R}{2}$ 3. $f = \frac{R}{(n-1)}$ 4. $f = \frac{(n-1)}{R}$

65. Figure shows an irregular block of material of refractive index $\sqrt{2}$. A ray of light strikes the face AB as shown in the figure. After refraction it is incident on a spherical surface CD of radius of curvature 0.4m and enter a medium of refractive index $2\sqrt{2}$ to meet PQ at E. Find the distance OE up to two places of decimal.

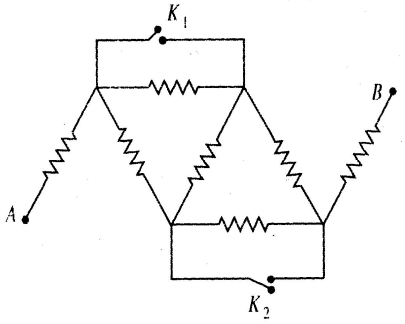


1. 0.2m 2. 0.4m 3. 0.6m 4. 0.8m

66. When objects at different distance are seen by the eye which of the following remain constant?

1.Focal length of eye – lens 2.Object distance from eye-lens
3.The radius of curvature of eye-lens 4.Image distance from eye- lens

67. All wires have same resistance and equivalent resistance between A and B is R_0. Now keys are closed, then the equivalent resistance will become.



1. $\frac{7R_0}{3}$ 2. $\frac{7R_0}{9}$ 3. $7R_0$ 4. $\frac{R_0}{3}$

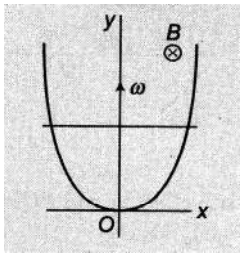
68. Consider the following statements.

A) In series connection, the same current flows through each element.
B) In parallel connection,the same potential difference gets applied across each element.

1. Both A and B are correct 2. A is correct but B is wrong

3. A is wrong but B is correct 4. Both A and B are wrong

69. A wire bent as a parabola $y = ax^2$ is located in a uniform magnetic field of induction B, the vector B being perpendicular to the plane $x - y$. At moment $t = 0$ a connector starts sliding translation wise from the parabola apex with a constant acceleration ω . Find the emf of electromagnetic induction in the loop thus formed as a function of *y*.



1. $e = By\sqrt{\frac{6\omega}{a}}$ 2. $e = By\sqrt{\frac{12\omega}{a}}$ 3. $e = By\sqrt{\frac{16\omega}{a}}$ 4. $e = By\sqrt{\frac{8\omega}{a}}$

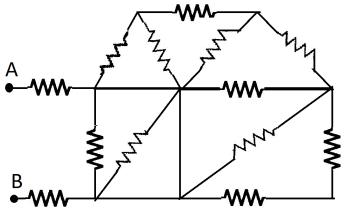
70. Prism angle and refractive index for a prism are 60^0 and 1.414 then angle of minimum deviation will be …….

1. 15^0 2. 30^0 3. 45^0 4. 60^0

71. A charged particle *q* is moving with a speed V perpendicular to the magnetic field induction B. Find the radius of the path and time period of the particle.

1. $r = \frac{mv}{qB}, T = \frac{2\pi m}{Bq}$ 2. $r = \frac{mvB}{q}, T = \frac{2\pi}{mBq}$ 3. $r = \frac{mvq}{B}, T = \frac{2\pi B}{mq}$ 4. $r = \frac{qB}{mv}, T = \frac{Bq}{2\pi m}$

72. In the given circuit all resistances are of value R ohm each. The equivalent resistance between A and B is:

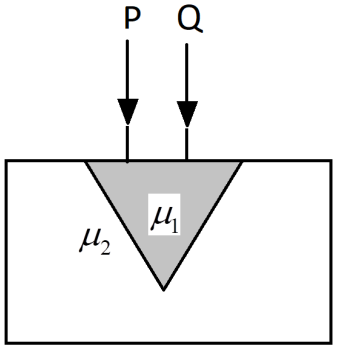


1. $\frac{4R}{2}$ 2. $\frac{5R}{2}$ 3. $\frac{5R}{3}$ 4. $\frac{3R}{2}$

73. A transparent sphere of radius R and refractive index *n* is kept in air. At what distance from the surface of the sphere should a point object be placed on the principal axis so as to form a real image at the same distance from second surface of the sphere?

1. $x = \frac{R}{n+1}$ 2. $x = \frac{R}{n^2-1}$ 3. $x = \frac{R}{n-1}$ 4. $x = \frac{R}{n^2+1}$

74. Consider a glass slab of refractive index μ_2. An equilateral prism is cut from the slab as shown in figure. This space is filled by liquid of refractive index μ_1.Two narrow beams P and Q are incident as shown in figure. The angle between two emergent beams is θ select incorrect statement.



1.If $\mu_1 = 1$ *and* $\mu_2 = \sqrt{3}$ *then* $\theta = 120^0$

2. If $\mu_1 = \frac{4}{\sqrt{3}}$ *and* $\mu_2 = \sqrt{4}$ *then* $\theta = 180^0$

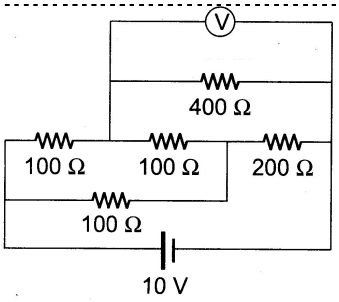
3. If $\mu_1 = \frac{2}{\sqrt{3}}$ *and* $\mu_2 = 2$ *then* $\theta = 90^0$

4. If $\mu_1 = \mu_2$ *then* $\theta = 0^0$

75. Heat energy is supplied at a constant rate to 100g of ice at 0^0C. The ice is converted into water at 0^0C in 2 minutes. How much time will be required to raise the temperature of water from 0^0C to 20^0C? Given: Specific heat capacity of water = 4.2J $g^{-1}{}^0C^{-1}$, specific latent heat of ice=336J/g

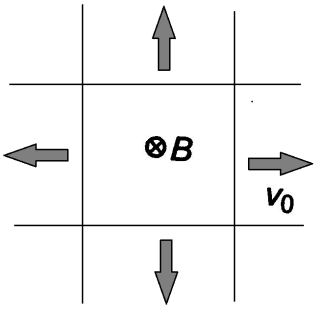
1. 20sec 2. 30sec 3. 40sec 4. 50sec

76. An electrical circuit is shown figure. Calculate the potential difference across the resistor of 400 Ω, as will be measured by the voltmeter V of resistance 400Ω , either by applying Kirchhoff's rules or otherwise



1. $\frac{10}{3}V$ 2. 20V 3. $\frac{20}{3}V$ 4. 10V

77. Two parallel long straight conductors lie on a smooth plane surface. Two other parallel conductors rest on them at right angles so as to form a square of side *a*. A uniform magnetic field B exists at right angles to the plane containing the conductors. Now, conductors start moving outward with a constant velocity $v_0$at t = 0. Then induced current in the loop at any time*t* is (λ is resistance per unit length of the conductors)

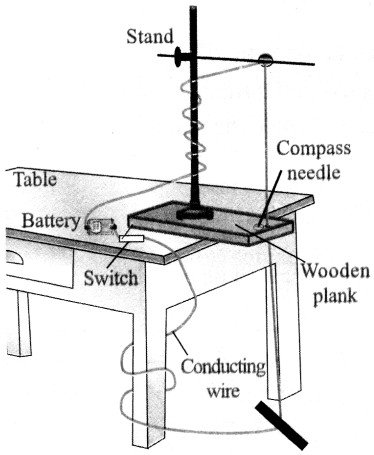


1. $\frac{aBv_0}{\lambda(a+v_0t)}$ 2. $\frac{aBv_0}{2\lambda}$ 3. $\frac{Bv_0}{\lambda}$ 4. $\frac{Bv_0}{2\lambda}$

78. H^+, He^+ *and* O^{++} Ions having same kinetic energy pass through a region of space filled with uniform magnetic field B directed perpendicular to the velocity of ions. The masses of the ions H^+, He^+ *and* O^{++} are respectively in the ratio 1:4:16. As a result

1. H^+ ions will be deflected most
2. O^{++} ions will be deflected least
3. He^+ and O^{++} ions will undergo same deflection
4. All ions will undergo the same deflection

79. The activity shown in the figure is performed to understand



1. Electromagnetic induction - Faraday's law.
2. Induced current - Lenz's law
3. Magnetic field due to straight wire carrying current.
4. Magnetic force on current carrying wire

80. The composition of manganese

1. 80% - copper, 12% - manganese, 8% - nickel
2. 86% - copper, 12% - manganese, 2% - nickel
3. 80% - copper, 18% - manganese, 2% - nickel
4. 86% - copper, 2% - manganese, 12% - nickel

CHEMISTRY

81. Electronic configuration of the element with atomic number 56 and mass number 138 is

1. $[Xe]6s^2$ 2. $[Kr]5s^2$ 3. $[Xe]6s^26p^2$ 4. $[Xe]3d^25d^2$

82. The first (IP_1)and the second (IP_2) ionisation potential ($kJ^{-1}mol^{-1}$)of a few elements designed by roman numerals are shown below

Element	**IP_1**	**IP_2**
I	2372	5251
II	520	7300
III	900	1760
IV	1680	3380

Identify the element which are likely to be a noble gas and a reactive metal respectively

1. I and II 2. II and III 3. I and IV 4. II and IV

83. The correct order of electron affinity is:

1. O > F > Cl 2. F > O > Cl 3. F > Cl > O 4. Cl > F > O

84. The hybridization of orbitals of N atom is NO_3^-, NO_2^+ and NH_4^+ are respectively

1. sp, sp^2, sp^3 2. sp^2, sp, sp^3 3. sp, sp^3, sp^2 4. sp^2, sp^3, sp

85. A carbon compounds has more functional groups, then order of preference while naming it according to IUPAC nomenclature is

1. –CHO>–COOH>–OH>–NH_2 2. –COOH>–CHO>–NH_2>–OH
3. –COOH>–OH>–NH_2>–CHO 4. –COOH>–CHO>–OH>–NH_2

86. 'X' is substance which combines chemically with impurities associated with the ore to form easily fusible mass 'Y'. Here X and Y are

1. Flux, slag 2. Slag, flux 3. Gangue, slag 4. Reductant, flux

87. During the process of electrolytic refining of copper, some metals present as impurity settle as 'anode mud'. These are

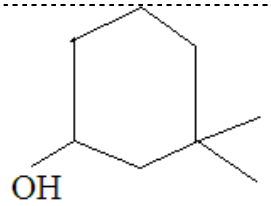
1. Sn and Ag 2. Pb and Zn 3. Ag and Au 4. Fe and Ni

88. Which of the following is a redox reaction?

1. $CaCO_3 \rightarrow CaO+CO_2$ 2. $H_2+Cl_2 \rightarrow 2HCl$
3. $CaO + 2HCl \rightarrow CaCl_2 + H_2O$ 4. $NaOH + HCl \rightarrow NaCl + H_2O$

89. Bucky ball or buck minister fullerence is

1. Allotrope of carbon
2. It is referred as C – 60
3. It has SP^2hybridised nature and resembles with soccer ball
4. all of the above

90. The IUPAC name of  is

1. 3, 3–dimethyl – 1– hydroxyl cyclohexane
2. 1, 1–dimethyl – 3–cyclohexanol
3. 3, 3–dimethyl –1–cyclohexanol
4. 1, 1–dimethyl – 3–hydroxy cyclohexane

91. The ionization potential of hydrogen atom is 13.6eV. The wave length of the energy radiation required for the ionization of H–atom

1. 1911nm 2. 912nm 3. 68nm 4. 91.2nm

92. Out of the following values for quantum numbers, which are not possible for an electron in an atom.

	n	*l*	*m*
I.	4	0	–1
II.	4	2	–3
III.	4	2	0
IV.	4	3	–1

1. III, IV 2. I, II 3. II, III 4. I, IV

93. A mixture of Na_2CO_3 and $NaHCO_3$ having a total weight of 100 gram on heating produced 11.2 litre of CO_2 under STP conditions. The percentage of Na_2CO_3 in the mixture is

1. 55.8% 2. 44.2% 3. 84% 4. 16%

94. Most ionic compounds have

I) High melting points and low boiling points
II) High melting points and non–directional bonds
III) High solubilities in polar solvent and low solubilities in non–polar solvents
IV) Three dimentional network structures and are good conductors of electricity in the solid state.

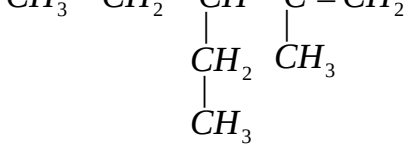
The correct combination is

1. All are correct 2. II,III 3. II, IV 4. I, IV

95. In the compound $CH_2 = CH - CH_2 - CH_2 - C \equiv CH$, the C_2–C_3bond is of the type

1. $sp - sp^2$ 2. $sp^3 - sp^3$ 3. $sp - sp^3$ 4. $sp^2 - sp^3$

96. IUPAC name of



1. 2-methyl-3-ethyl-1-pentene 2. 3-ethyl-4-methyl-4-pentene
3. 3-ethyl-2-methyl-1-pentene 4.3-methyl-2-ethyl-1-pentene

97. Three beakers labelled as A, B and C each containing 25ml of water were taken. A small amount of NaOH, anhydrous $CuSO_4$, and NaCl were added to the beakers A, B and C respectively. It was observed that there was an increase in temperature of solution, contained in beakers A and B, where as in beaker C, the temperature of the solutions falls. Which one of the following statements is/are correct?
1. In beakers 'A' and 'B' exothermic process has occurred
2. In beakers 'A' and 'B' endothermic process has occurred
3. In beaker 'C', exothermic process has occurred
4. In beaker 'C' endothermic process has occurred

1. 2 2. 2, 3 3. 1, 4 4. 1

98. Arrange the following metals in the order of their decreasing reactivity: Fe, Cu, Mg, Ca, Zn, Ag
1. Ca> Mg > Zn > Fe > Cu > Ag 2. Ca>Zn> Cu > Mg > Ag > Fe
3. Ca> Zn > Mg > Cu > Ag > Fe 4. Ca> Mg > Fe >Zn > Cu > Ag

99. A student takes about 2ml of ethanoic acid in a test tube and adds a pinch of $NaHCO_3$ to it. He report the following
i) Immediately a colourless and odourless gas evolves with a brisk effervescence.
ii) The gas turns water milky
iii) The gas burns with an explosion when a burning splinter is brought near it.
iv) The gas extinguishes the burning splinter.

1. i, ii and iv 2. i, ii and iii 3. ii, iii and iv 4. ii and iii

100. Which of the following mixture solutions has pH = 1.0?

1. $100ml\frac{M}{10}HCl + 100ml\frac{M}{10}NaOH$
2. $55ml\frac{M}{10}HCl + 45ml\frac{M}{10}NaOH$
3. $10ml\frac{M}{10}HCl + 90ml\frac{M}{10}NaOH$
4. $75ml\frac{M}{5}HCl + 25ml\frac{M}{5}NaOH$

THE END