PAPER CONTRIBUTOR : SNEHA TUITION Classes

PHYSICS

SECTION I

(MAXIMUM MARKS 80)

- **This section contains TWENTY questions. (From question 1 to 20)**
- **Each question has FOUR options (a), (b),(c) and (d). ONLY ONE of these four options is correct.**
- **For each question, marks will be awarded in one of the following categories: FullMarks:(+4) If only the bubble corresponding to the correct option is darkened. Zero Marks:(0) If none of the bubbles is darkened.**

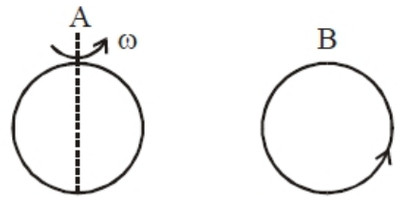
Negative Marks:(–1) In all other cases

1. The critical angle of a prism is 30°. The velocity oflight in the medium is :-

   (a) 1.5×10^8 m/s (b) 3×10^8 m/s

   (c) 4.5×10^8 m/s (d) None of these

2. There are two coils A and B as shown in figure. No current flows in B if A is at rest. Now the coil A is made to rotate about a vertical axis. At the shown instant (t = 0) what will be the current in coil A, when the current in B is counterclockwise?



   (a) current is clockwise.

   (b) current is counterclockwise.

   (c) no current flows in A

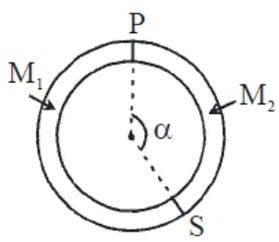
   (d) direction of current in A depends onseparation between A and B

3. A tuning fork gives 4 beats with 50cm length of a sonometer wire. If the length of the wire is shortened by 1cm, the number of beats is still the same. The frequency of the fork is :-

   (a) 396 (b) 400

   (c) 404 (d) 384

4. A ring shaped tube contains two ideal gases with equal masses and atomic mass numbers $M_1 = 32$ and $M_2 = 28$. The gases are separatedby one fixed partition P and another movableconducting partition S which can move freelywithout friction inside the ring. The angle α as shown in the figure in equilibrium is :-



(a) $\frac{7\pi}{8}$ (b) $\frac{8\pi}{7}$

(c) $\frac{15\pi}{16}$ (d) $\frac{16\pi}{15}$

5. The distance of closest approach of an α-particle is fired at a nucleus with momentum p is r_0. When the α-particles are fired at the samenucleus with momentum 5p, the distance of closedapproach will be :-

(a) $5\,r_0$ (b) $25\,r_0$

(c) $\frac{1}{5}r_0$ (d) $\frac{1}{25}r_0$

6. The motion of a particle represented by $y = \sin\omega t - \cos\omega t$ is :-

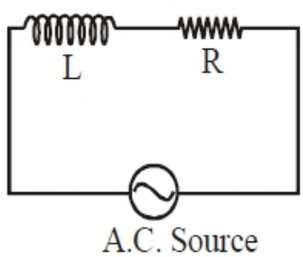
(a) NOT S.H.M.

(b) S.H.M. with period $\frac{2\pi}{\omega}$, amplitude $\sqrt{2}$

(c)S.H.M. with complicated period, amplitude1

(d) S.H.M. with period $\frac{\sqrt{2}\pi}{\omega}$, amplitude $\sqrt{2}$

7. In a simple L-R circuit with A.C. source the potential difference at any instant across inductor and resistance are V_L and V_R respectively and V_{AC} source haspotential difference V_{AC} at the same instant. Then :



(a) $V_L^2 + V_R^2 = V_{AC}^2$ (b) $V_L + V_R = V_{AC}$

(c) $V_L^2 - V_R^2 = V_{AC}^2$ (d) $V_L^3 + V_R^3 = V_{AC}^3$

8. A ray of light is incident on a convex mirror along a vector $3\hat{i}+4\hat{j}+12\hat{k}$ .The normal to the convex mirror on incidence point is along $3\hat{i}+4\hat{j}$ .The unit vector along the reflected ray is :–

(a) $\frac{1}{13}\left(-3\hat{i}+4\hat{j}-12\hat{k}\right)$

(b) $\frac{1}{13}\left(-3\hat{i}-4\hat{j}+12\hat{k}\right)$

(c) $\frac{1}{13}\left(3\hat{i}+4\hat{j}+12\hat{k}\right)$

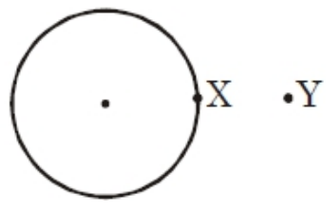
(d) None of these

9. Work done by a sample of a gas in a process A is double the work done in another process B. The temperature rises through the same amount in both the process. If C_A and C_B are molar heat capacities for the two processes then :

(a) $C_A = C_B$ (b) $C_A > C_B$

(c) $C_A < C_B$ (d) $C_A \le C_B$

10. A motorcyclist going around a circular track of radius 50 m with a speed of 25 m/s, is at a point X. A static siren at Y is emitting sound of frequency n. How many times (approximately) in an hour will the motor cyclist hear the sound of actual frequency Y?



(a) 24 (b)287

(c) 600 (d) 573

11. When light is refracted into a denser medium,

(a) its wavelength and frequency both increase

(b) its wavelength increases but frequency remains unchanged

(c) its wavelength decreases but frequency remains unchanged

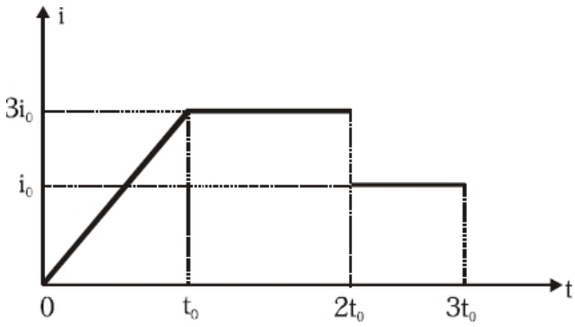
(d) its wavelength and frequency both decrease.

12. The work function of a metallic surface is 5.01 eV. Photoelectrons are emitted when light of wavelength 3250 Å falls on it. The minimum potential difference required to stop the fastest photoelectrons is :-

(a) 1.2 V (b) 2.4 V

(c) 3.6 V (d) Zero

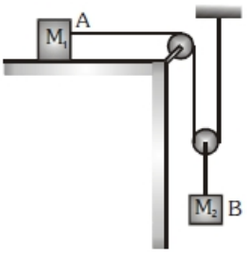
13. A time varying current i is passed through a resistance R as shown in figure. The total heat generated in the resistance is



(a) $11i_0^2Rt_0$ (b) $13i_0^2Rt_0$

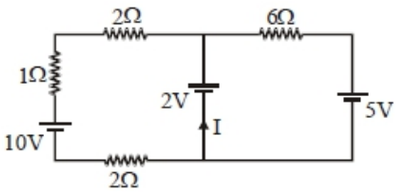
(c) $17i_0^2Rt_0$ (d) $15i_0^2Rt_0$

14. The acceleration of block B in the figure will be-



(a) $\frac{M_2g}{(4M_1+M_2)}$ (b) $\frac{2M_2g}{(4M_1+M_2)}$

(c) $\frac{2M_1g}{(M_1+4M_2)}$ (d) $\frac{2M_1g}{(M_1+M_2)}$

15. 

Find the value of I ?

(a) –1.4 A (b) –2.1 A

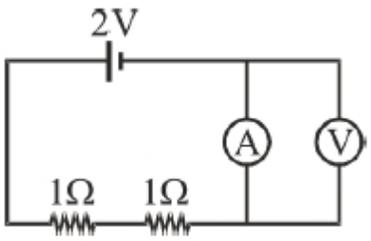
(c) 2 A (d) –4.2 A

16. The radius of hollow metallic sphere is r. If thepotential difference between its surface and a pointat a distance 3r from its centre is V, then the electric field intensity at distance of 3r from itscentre is:-

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

(c) $\frac{V}{4r}$ (d) $\frac{V}{6r}$

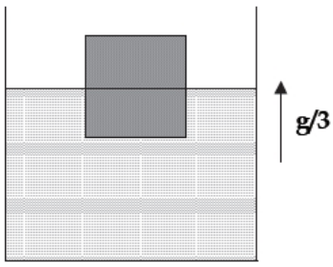
17. In the circuit shown, A and V are ideal ammeter and voltmeter respectively. Reading of the voltmeter will be:-



(a) 2V (b) 1V

(c) 0.5V (d) zero

18. A cubical block is floating in a liquid with half of its volume immersed in the liquid. When the whole system accelerates upwards with a net acceleration of g/3. The fraction of volume immersed in the liquid will be :-



(a) $\frac{1}{2}$ (b) $\frac{3}{8}$

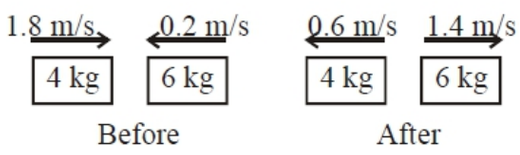
(c) $\frac{2}{3}$ (d) $\frac{3}{4}$

19. When a wave travels in a medium, the particledisplacement is given by the equation $y = a\sin 2\pi(bt - cx)$ where a, b and c areconstants. The maximum particle velocity will be twice the wave velocity if :-

(a) $c = \frac{1}{\pi a}$ (b) $c = \pi a$

(c) b=ac (d) $b = \frac{1}{ac}$

20. In figure, determine the type of the collision. The masses of the blocks, and the velocities before and after the collision are given. The collision is



(a) Perfectly elastic

(b) Partially inelastic

(c) Completely inelastic

(d) This collision is not possible

SECTION II

(MAXIMUM MARKS 20)

- **This section contains TENquestions. (From question 21 to 30)**
- **Attempt (5) out of (10) questions**
- **The answer to each question is a NUMERICAL VALUE.**
- **Answer to each question will be evaluatedaccording to the following marking scheme:**

Full Marks: (+4) If ONLY the correct numerical value is entered as answer.

Zero Marks:(0) In all other cases.

21. A proton, accelerated by a potential difference V, has de Broglie wavelength λ. If it is accelerated by a potential difference 4V, its de Broglie wavelength will become $\frac{\lambda}{n}$ where n =

22. A distant hot air balloon subtends 0.25° at the objective lens of an astronomical telescope. The image subtends 1.5° at eyepiece when viewed with relaxed eye. The objective and eyepiece are in a 35 cm long tube. Find the focal length (in cm) of the eyepiece lens .

23. A shunt of resistance 1 Ω is connected

across a galvanometer of 120 Ω resistance. A current of 5.5 ampere gives full scale deflection in the galvanometer. If current that will give full scale deflection in the absence of the shunt is 'I'. Find the value of 100 I in Amp.

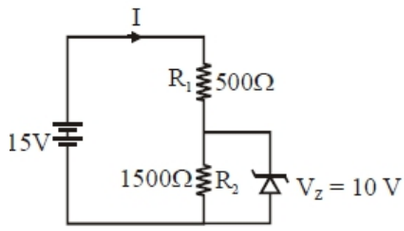
24. Two spheres of the same material have radii 1 m and 4 m and temperatures 4000K and 2000 K respectively. The ratio of the energy radiated per second by the first sphere to that by the second is.

25. Blocks A and B are resting on a smooth horizontal surface given equal speeds of 2 m/s inopposite sense as shown in the figure.

At t = 0 the position of blocks are shown, then X co-ordinate of center of mass (in cm at t = 3s) will be :-

26. A uniform spherical ball of mass m and radius r is dropped in liquid of coefficient of viscosity η. Density of liquid is ρ, where as density of ball is 2ρ. The de-broglie wavelength of ball when it is moving with terminal speed is $\frac{2\beta\pi h\eta r}{m^2 g}$. Find β. (h = planck's constant)

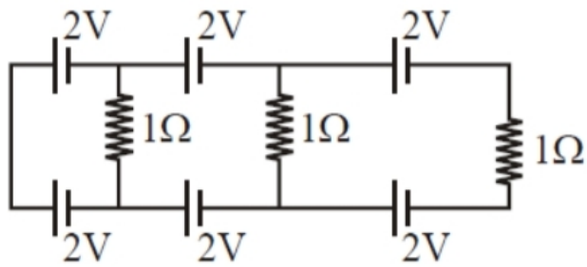
27. In the given circuit the current through the Zener diode in (mA) is :-



28. A pendulum consisting of a small sphere of mass M suspended by an inextensible and massless string of length l is made to swing in a vertical plane. If the breaking strength of the string is 2Mg, then the maximum angular amplitude of the displacement from the vertical is $\frac{\pi}{n}$ then find n:

29. In a Young's double slit experiment, slits are separated by 0.5 mm, and the screen is placed 150 cm away. A beam of light consisting of two wavelengths, 650 nm and 520 nm, is used to obtain interference fringes on the screen. The least distance from the common central maximum to thepoint (in mm)where the bright fringes due to both the wavelengths coincide is :

30. In the given circuit the current in each resistance(in Amp) is :



CHEMISTRY

SECTION I

(MAXIMUM MARKS 80)

- **This section contains TWENTY questions. (From question 31 to 50)**
- **Each question has FOUR options (a), (b),(c) and (d). ONLY ONE of these four options is correct.**
- **For each question, marks will be awarded in one of the following categories: FullMarks:(+4) If only the bubble corresponding to the correct option is darkened. Zero Marks:(0) If none of the bubbles is darkened.**

  Negative Marks:(–1) In all other cases

31. Which of the following electrolytes will be most effective in the coagulation of gold sol

(A) $NaNO_3$ (B) $K_4[Fe(CN)_6]$

(C) Na_3PO_4 (D) $MgCl_2$

32. 02.The reaction in which the yield of the products can not be increased by the application of high pressure is –

(A) $PCl_3\,(g) + Cl_2\,(g) \rightleftharpoons PCl_5\,(g)$

(B) $N_2\,(g) + 3H_2\,(g) \rightleftharpoons 2NH_3\,(g)$

(C) $N_2\,(g) + O_2\,(g) \rightleftharpoons 2NO(g)$

(D) $2SO_2\,(g) + O_2\,(g) \rightleftharpoons 2SO_3\,(g)$

33. $CH_3NH_2 + CHCl_3 + 3KOH \rightarrow X + Y + 3H_2O$; compounds X and Y are :

(A) $CH_3CN + 3KCl$

(B) $CH_3NC + 3KCl$

(C) $CH_3CONH_2 + 3KCl$

(D) $CH_3NC + K_2CO_3$

34. In presence of PbS and ZnS in a mineral the froath floatation process require NaCN because-

(A) ZnS goes into the solution as soluble complex $[Zn(CN)_4]^{2-}$

(B) $Zn(CN)_2$ is precipitated

(C) PbS forms soluble complex $Na_2[Pb(CN)_4]$

(D) ZnS forms insoluble complex $[Zn(CN)_4]^{2-}$

35. 4.4 g of CO_2 and 2.24 litre of H_2 at STP are mixed in a container. The total number of molecules presents in the container will be -

(1) 6.022×10^{23} (2)1.2044×10^{23}

(3) 6.023×10^{26} (4) 6.023×10^{24}

36. $N_2$and O_2 are converted to monocations N_2^+ and O_2^+ respectively,which is wrong statement-

(A) In N_2^+, the N—N bond weakens

(B) In O_2^+, the O—O bond order increases

(C) In O_2^+, the paramagnetism decreases(D) N_2^+ becomes diamagnetic

37. The kinetic energy of the electron emitted when light of frequency 3.5×10^{15} Hz falls on a metal surface having threshold frequency 1.5×10^{15} Hz is ($h = 6.6 \times 10^{-34}$ Js)

(A) 1.32×10^{-18} J (B) 3.3×10^{-18} J

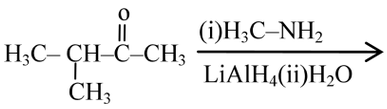
(C) 6.6×10^{-19} J (D) 1.98×10^{-19} J

38. The enthalpy of formation for C_2H_4 (g) , CO_2 (g) and H_2O (l) at 25ºC and 1 atm pressure by 52, – 394 and – 286 kJ mol^{-1}

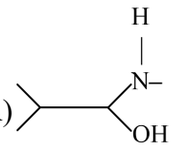
respectively. The enthalpy of combustion of C_2H_4 (g) will be -

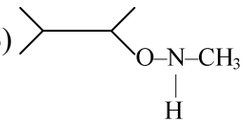
(A) + 1412 kJ mol^{-1} (B) – 1412 kJ mol^{-1}

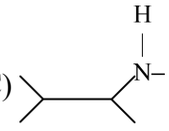
(C) + 141.2 kJ mol^{-1} (D) – 141.2kJ mol^{-1}

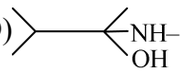
39.  'B'

Identify 'B'

(A) 

(B) 

(C) 

(D) 

40. R_3SiCl on hydrolysis followed by heating forms -

(A) R_3SiOH (B)$R_3Si–O–SiR_3$

(C) $R_2Si = O$ (D)All of these

41. Which statement is not correct -

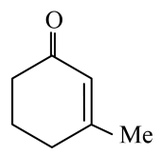
(A) Methyl amine is more basic than NH_3

(B) Amines from hydrogen bonds

(C) Ethyl amine has higher boiling points than propane

(D) Dimethyl amine is less basic than methyl amine

42. The IUPAC name of the given compound is -



(a) 3–Methyl-2–cyclohexenone

(b) 2–Methyl–3–cyclohexenone

(c) 1–Oxo–3–methyl cyclohexene

(d) 2–Oxo–6–methyl cyclohexene

43. Sodium peroxide in contact with moist air turns white due to the formation of -

(A) Na_2O (B) Na_2CO_3

(C) $NaHCO_3$ (D) NaOH

44. Van't Hoff factor (i) is the ratio of –

(A) Observed molecular mass to calculated molecular mass

(B) Observed colligative property to calculated value

(C) Calculated colligative property to observed value

(D) Number of moles dissociated to the total number of moles taken

45. The correct order of decreasing stability of hexafluorides of group 16 members is -

(A) SF_6> SeF_6> TeF_6

(B) TeF_6> SeF_6 > SF_6

(C) SF_6> TeF_6 > SeF_6

(D) TeF_6>SF_6> SeF_6

46. Carbon-60 contains:

(A) 20 pentagons and 12 hexagons

(B) 12 pentagons and 20 hexagons

(C) 30 pentagons and 30 hexagons

(D) 24 pentagons and 36 hexagons

47. Which one is a biodegradable polymer not falling in polyamide class -

(A) Albumin (B) nylon 2, nylon 6

(C) PHBV (D) Silk

48. If $E^{\circ}_{Fe^{2+}/Fe}$ is x_1, $E^{\circ}_{Fe^{3+}/Fe}$ is x_2 then $E^{0}_{Fe^{3+}/Fe^{2+}}$ will be :

(A) $3x_2 – 2x_1$ (B) $x_2 – x_1$

(C) $x_2 + x_1$ (D) $2x_1 + 3x_2$

49. A carbonyl compound with molecular weight 86, does not reduce Fehling's solution but forms crystalline bisulphite derivatives and gives iodoform test. The possible compounds can be :

(A) 2-pentanone and 3-pentanone

(B) 2-pentanone and 3-methyl-2-butanone

(C) 2-pentanone and pentanal

(D) 3-pentanone and 3-methyl-2-butano

50. A compound was found to contain nitrogen and oxygen in the ratio nitrogen 28 g and oxygen 80 g. The formula of the compound is -

(1) NO (2) N_2O_3

(3) N_2O_5 (4) N_2O_4

SECTION II

(MAXIMUM MARKS 20)

- **This section contains TENquestions. (From question 51to 60)**
- **Attempt (5) out of (10) questions**
- **The answer to each question is a NUMERICAL VALUE.**
- **Answer to each question will be evaluated according to the following marking scheme:**

Full Marks: (+4) If ONLY the correct numerical value is entered as answer.

Zero Marks:(0) In all other cases.

51. 4 ml of HCl solution of pH = 2 is mixed with 6 ml of NaOH solution of pH = 12. What would be the final pH of solution ? log 2 = 0.3

52. 4.0 kg of a radioactive drug is supplied from a reactor to a laboratory but laboratory receives only $\sqrt{2}$ kg of the radioactive substances due to its rapid decay during transportation. If 6.0 hrs are elapsed in transportation, then half-life (min) of the radioactive drug is.

53. A current of strength 2.5amp was passed through $CuSO_4$ solution for 6 minute 265 seconds. The amount of copper deposited is (At wt. of Cu = 63.5); 1 faraday = 96500 coulombs

54. 0.5g of organic compound containing I was heated with HNO_3& $AgNO_3$ in carius tube. Precipitate was filtered washed & dried & weighed 0.47 gm. Find % I in the organic compound

55. How many alcohols (neglecting stereoisomers) are possible with the molecular formula $C_5H_{12}O$?

56. 1.8 mole of B_2H_6 (g) on hydrolysis yields …… moles of H_2(g)

57. The vapour pressure of pure liquid A is 10 torr and at the same temperature when 1g of B solid is dissolved in 20 g of A, its vapour pressure is reduced to 9.0 torr. If the molecular mass of A is 200 amu, then the molecular mass of B is-

58. The number mole of unpair electron present in 0.4 mole of $[Fe(H_2O)_6]^{2+}$ is ……..

59. Ahydrocarbon A, of the formula C_8H_{10}, on ozonolysis gives compound $B(C_4H_6O_2)$only. The Compound B can also be obtained from the alkyl bromide, $C(C_3H_5Br)$ upon treatment with

magnesium in dry ether, followed by carbon dioxide and acidification. Give the number of secondary hydrogen atoms in compound A.

60. One litre of a gas at STP weighs 1.97 g. Find the molecular mass gas -

MATHS

SECTION I

(MAXIMUM MARKS 80)

- **This section contains TWENTY questions. (From question 61 to 80)**
- **Each question has FOUR options (a), (b),(c) and (d). ONLY ONE of these four options is correct.**
- **For each question, marks will be awarded in one of the following categories: FullMarks:(+4) If only the bubble corresponding to the correct option is darkened. Zero Marks:(0) If none of the bubbles is darkened.**

  Negative Marks:(–1) In all other cases

61. If 64, 27, 36 are the P^{th}, Q^{th} and R^{th} terms of a G.P., then $P+2Q$ is equal to

(a) R (b) 2R

(c) 3R (d) 4R

62. A tower of height b subtends an angle at a point O on the level of the foot of the tower and at a distance a from the foot of the tower. If a pole mounted on the tower also subtends an equal angle at O, the height of the pole is

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

(c) $a\left(\frac{a^2-b^2}{a^2+b^2}\right)$ (d) $a\left(\frac{a^2+b^2}{a^2-b^2}\right)$

63. The equation to the line bisecting the joint of (3, - 4) and (5, 2) and having its intercepts on the x-axis and the y-axis in the ratio 2 : 1 is

(a) $x+y-3=0$ (b) $2x-y=9$

(c) $x+2y=2$ (d) $2x+y=7$

64. $\int\sqrt[3]{\frac{\sin^n x}{\cos^{n+6} x}}dx,\ n\in N$ is equal to

(a) $\frac{3}{n}(\tan x)^{\frac{n}{3}+1}+c$

(b) $\frac{3}{3+n}(\tan x)^{\frac{n}{3}+1}+c$

(c) $\frac{3}{n}(\cos x)^{n+1}+c$

(d) None of these

65. The values of a, for which the points A, B, C with position vectors $2i-j+k,\ \ i-3j-5k$ and $ai-3j+k$ respectively are the vertices a right-angled triangle with $C=\frac{\pi}{2}$ are

(a) -2 and -1 (b) -2 and 1

(c) 2 and -1 (d) 2 and 1

66. The value

$^{40}C_0-{}^{40}C_1+{}^{40}C_2-{}^{40}C_3+.....$

$+{}^{40}C_{10}-{}^{40}C_{11}+...+{}^{40}C_{20}$

(a) $^{39}C_{10}$ (b) $^{39}C_{20}$

(c) $^{40}C_{10}$ (d) $^{40}C_2$

67. If $f(x)=\frac{x^2}{x-\sin x}; g(x)=\frac{x^2}{1-\cos x}$ where $x \in \left(0, \frac{\pi}{2}\right)$, then

(a) both f and g are increasing

(b) f is increasing and g is decreasing

(c) f is decreasing and g is increasing

(d) both f and g are decreasing

68. The solution set of $(2\cos x \quad 1)(3+2\cos x)=0$ in the interval $0 \le x \le 2\pi$ is

(a) $\left\{\frac{\pi}{3}\right\}$

(b) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$

(c) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}, \cos^{-1}\left(-\frac{3}{2}\right)\right\}$

(d) None of these

69. A tetrahedron has vertices O(0, 0, 0), $A(1,2,1)$, B(2, 1, 3) and C(–1, 1, 2). Then the angle between the faces OAB and ABC will be

(a) $\cos^{-1}\left(\frac{17}{31}\right)$ (b) 30^0

(c) 90^0 (d) $\cos^{-1}\left(\frac{19}{35}\right)$

70. If $\log_{1/2}\frac{|z^2|+2|z|+4}{2|z|^2+1}<0,$ then the region traced by z

(a) $|z|<3$ (b) $1<|z|<3$

(c) $|z|>1$ (d) $|z|<2$

71. The point where the function $f(x) = x^2 - 5x - 6$ satisfies the conditions of Rolle's theorem is

(a) x = 5 (b) $x=\frac{5}{2}$

(c) x = 6 (d) None of these

72. Let p be the statement '7 is not greater than 4' and q be the statement 'Paris is in France'. Then $\sim (p \vee q)$ is the statement

(a) 7 is greater than 4 or Paris is not in France

(b) 7 is not greater than 4 and Paris is not in France

(c) 7 is greater than 4 and Paris is in France

(d) 7 is greater than 4 and Paris is not in France

73. If AM and HM between two numbers are 27 and 12 respectively, then their GM is

(a) 9 (b) 18

(c) 24 (d) 36

74. The differential equation representing the family of curve $y^2 = 2c(x+\sqrt{c})$, where $c>0$ is a parameter, is of order and degree as follows

(a) first order, first degree

(b) first order, second degree

(c) second order, second degree

(d) first order, third degree

75. The function $f(x)=[x]\cos\left(\frac{2x-1}{2}\right)\pi$, when [·] denotes the greatest integer function, is discontinuous at

(a) all x

(b) all integer points

(c) no x

(d) all non-integer points

76. A man has 10 friends. In how many ways he can invite one or more of them to a party

(a) 10 ! (b) 2^{10}

(c) 10! – 1 (d) $2^{10} - 1$

77. If the line $\frac{x}{a}+\frac{y}{b}=1$ moves in such a way that $\frac{1}{a^2}+\frac{1}{b^2}=\frac{1}{c^2}$ where c is a constant, then the locus of the foot of perpendicular from the orgin on the straight line is

(a) Straight line (b) parabola

(c) ellipse (d) circle

78. If A is 3×4 matrix and B is a matrix such that A'B and BA' are both defined. Then B is of the type

where A' and B' represents transpose of matrix A and B respectively.

(a) 3 × 4 (b) 3 × 3

(c) 4 × 4 (d) 4 × 3

79. Let A and B be two events such that

$$P(\overline{A \cup B})=\frac{1}{6}, P(A \cap B)=\frac{1}{4} \text{ and } P(\bar{A})=\frac{1}{4}$$

where $\bar{A}$ stands for complement of event A. Then, events A and B are

(a) mutually exclusive and independent.

(b) independent but not equally likely.

(c) equally likely but not independent.

(d) equally likely and mutually exclusive.

80. If $f(x) = x^2 - mx + 1$ is negative for values of x in (1, 2), then m lies in the interval

(a) $\left(-\frac{3}{2},\frac{1}{2}\right)$ (b) $\left(\frac{5}{2},\infty\right)$

(c) $\left(\frac{1}{2},\frac{5}{2}\right)$ (d) $\left(-\infty,\frac{-3}{2}\right)$

SECTION II

(MAXIMUM MARKS 20)

- **This section contains TENquestions. (From question 81 to 90)**
- **Attempt (5) out of (10) questions**
- **The answer to each question is a NUMERICAL VALUE.**
- **Answer to each question will be evaluated according to the following marking scheme:**

Full Marks: (+4) If ONLY the correct numerical value is entered as answer.

Zero Marks:(0) In all other cases.

81. The number of non-empty subsets of the set {1, 2, 3, 4} is

82. If $x^2 + ax + 10 = 0$ and $x^2 + bx - 10 = 0$ have a common root, then $\frac{a^2-b^2}{3}$ is equal to

83. The number of arrangements of the letters of the word BANANA in which two N's do not appear adjacently is

84. The minimum value of $4e^{2x} + 9e^{-2x}$ is 5 k then find k =

85. Let $X > 0$, then $\lim_{x\to 0}(\sqrt{\tan x})^{\sqrt{x}} + (\sec x)^{\frac{1}{x}}$ is equal to 2k then k =

86. For what value of λ, the system of equations

x + y + z = 6,

x + 2y + 3z = 10,

x + 2y + λz = 12

is inconsistent

87. If the line x – 1 = 0 is the directrix of the parabola y^2 – kx + 8 = 0, then one of the values of k is

88. The chord of circle C, having centre at $(2, 2)$ is the diameter of the circle $x^2 + y^2 - 4x + 6y \quad 3 = 0$. If r is radius of the

circle C, then r^2 is equal to

89. The area of the largest rectangle that can be inscribed in the ellipse $4x^2 + 9y^2 = 36$, is

90. Sum of infinite number of terms in G.P. is 20 and sum of their square is 100. The common ratio of G.P. is

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PHYSICS

Q	ANS	Q	ANS
1	A	16	D
2	A	17	D
3	A	18	A
4	D	19	A
5	D	20	A
6	B	21	2.00
7	A	22	5.00
8	B	23	4.54
9	B	24	1.00
10	D	25	2.25
11	C	26	6.00
12	D	27	3.33
13	B	28	3.00
14	A	29	7.80
15	B	30	0.00

CHEMISTRY

Q	ANS	Q	ANS
31	D	46	B
32	C	47	C
33	B	48	A
34	A	49	C
35	B	50	C
36	D	51	11.3
37	A	52	240
38	B	53	0.514
39	C	54	50.8
40	B	55	8
41	D	56	10.8
42	A	57	90
43	D	58	1.6
44	B	59	8
45	A	60	44.12

MATHS

Q	ANS	Q	ANS
61	C	76	D
62	B	77	D
63	C	78	A
64	B	79	B
65	D	80	B
66	B	81	15
67	C	82	13.33
68	B	83	40.00
69	D	84	2.40
70	A	85	1.00
71	B	86	3.00
72	D	87	4.00
73	B	88	41.00
74	D	89	12.00
75	B	90	0.60