

**NEET ANSWER KEY & SOLUTION****PAPER CODE :- PART TEST-1  
CLASS-XII****ANSWER KEY****PHYSICS**

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

**CHEMISTRY**

51.	(A)	52.	(B)	53.	(B)	54.	(C)	55.	(A)	56.	(D)	57.	(B)
58.	(D)	59.	(C)	60.	(B)	61.	(D)	62.	(C)	63.	(D)	64.	(C)
65.	(B)	66.	(B)	67.	(D)	68.	(B)	69.	(D)	70.	(A)	71.	(B)
72.	(B)	73.	(D)	74.	(C)	75.	(D)	76.	(D)	77.	(B)	78.	(B)
79.	(B)	80.	(D)	81.	(D)	82.	(D)	83.	(C)	84.	(C)	85.	(C)
86.	(C)	87.	(A)	88.	(A)	89.	(D)	90.	(B)	91.	(B)	92.	(C)
93.	(D)	94.	(A)	95.	(A)	96.	(B)	97.	(A)	98.	(A)	99.	(C)
100.	(B)												

**BIOLOGY**

101.	(C)	102.	(B)	103.	(A)	104.	(B)	105.	(C)	106.	(C)	107.	(C)
108.	(B)	109.	(D)	110.	(A)	111.	(C)	112.	(C)	113.	(B)	114.	(D)
115.	(C)	116.	(D)	117.	(D)	118.	(B)	119.	(D)	120.	(B)	121.	(D)
122.	(A)	123.	(A)	124.	(B)	125.	(B)	126.	(C)	127.	(A)	128.	(D)
129.	(B)	130.	(A)	131.	(D)	132.	(B)	133.	(B)	134.	(A)	135.	(B)
136.	(B)	137.	(D)	138.	(C)	139.	(A)	140.	(D)	141.	(A)	142.	(A)
143.	(D)	144.	(D)	145.	(D)	146.	(B)	147.	(A)	148.	(C)	149.	(A)
150.	(D)	151.	(C)	152.	(B)	153.	(C)	154.	(B)	155.	(D)	156.	(C)
157.	(B)	158.	(B)	159.	(C)	160.	(C)	161.	(C)	162.	(C)	163.	(D)
164.	(C)	165.	(B)	166.	(B)	167.	(D)	168.	(B)	169.	(B)	170.	(D)
171.	(D)	172.	(C)	173.	(C)	174.	(C)	175.	(B)	176.	(B)	177.	(B)
178.	(D)	179.	(D)	180.	(D)	181.	(B)	182.	(D)	183.	(C)	184.	(D)
185.	(C)	186.	(C)	187.	(C)	188.	(A)	189.	(D)	190.	(D)	191.	(D)
192.	(C)	193.	(D)	194.	(C)	195.	(B)	196.	(D)	197.	(B)	198.	(A)
199.	(A)	200.	(A)										

# SOLUTIONS

## PHYSICS

1. (D)  
**Sol.** Positive charge shows the deficiency of electrons. Number of electrons  

$$= \frac{14.4 \times 10^{-19}}{1.6 \times 10^{-19}} = 9$$

2. (A)  
**Sol.** Let separation between two parts be  $r \Rightarrow$   

$$F = k \cdot q \frac{(Q-q)}{r^2}$$

For  $F$  to be maximum  $\frac{dF}{dq} = 0 \Rightarrow \frac{Q}{q} = \frac{2}{1}$

3. (B)  
**Sol.**  $R_{AB} = 2 + 2 + 2 = 6\Omega$

4. (A)  
**Sol.** In second case, charges will be  $-2\mu C$  and  $+3\mu C$   
 Since  $F \propto Q_1 Q_2$  i.e.  $\frac{F}{F'} = \frac{Q_1 Q_2}{Q'_1 Q'_2}$   

$$\therefore \frac{40}{F'} = \frac{3 \times 8}{-2 \times 3} = -4 \Rightarrow F' = 10 \text{ N (Attractive)}$$

5. (A)  
**Sol.**  $0.144 = \frac{9 \times 10^9 \times (q)^2}{(0.05)^2} \quad q^2$   

$$= \frac{0.144}{9 \times 10^9 \times 400} = 0.2 \mu C$$

6. (A)  
**Sol.** Coulomb's law follows Newton's third law.

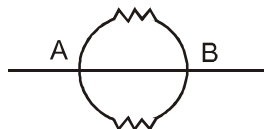
7. (A)  
**Sol.** When wire is bent to form a complete circle then

$$2\pi r = R$$

$$\Rightarrow r = \frac{R}{2\pi}$$

Resistance of each semicircle

$$= \pi r = \frac{\pi R}{2\pi} = \frac{R}{2}$$



Thus, net resistance in parallel combination of two semicircular resistances

$$R' = \frac{\frac{R}{2} \times \frac{R}{2}}{\frac{R}{2} + \frac{R}{2}} = \frac{\frac{R^2}{4}}{R} = \frac{R}{4}$$

8. (A)  
**Sol.** Dielectric constant is

$$K = \frac{E}{E'}$$

For an insulator  $E' < E$

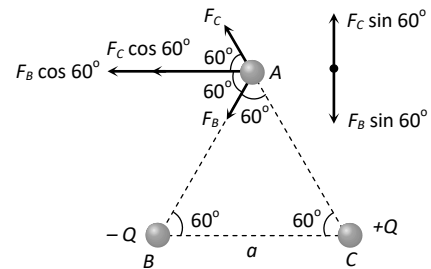
So, out of the given choice,

$$K = 5$$

9. (D)  
**Sol.** Negative charge experiences force opposite to direction of electric field.

10. (B)  
**Sol.**  $F \propto Q_1 Q_2 \Rightarrow \frac{F_1}{F_2} = \frac{Q_1 Q_2}{Q'_1 Q'_2} = \frac{10 \times -20}{-5 \times -5} = -\frac{8}{1}$

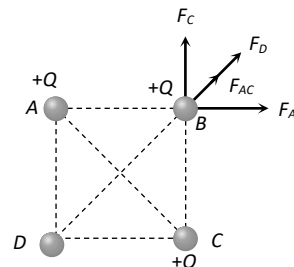
11. (C)  
**Sol.**  $|\vec{F}_B| = |\vec{F}_C| = k \frac{Q^2}{a^2}$



Hence force experienced by the charge at A in the direction normal to BC is zero.

12. (C)  
**Sol.**  $\vec{F} = -k \frac{e^2}{r^2} \hat{r} = -k \frac{e^2}{r^3} \vec{r} \quad \left( \because \hat{r} = \frac{\vec{r}}{r} \right)$

13. (C)  
**Sol.** After following the guidelines mentioned above



$$F_{net} = F_{AC} + F_D = \sqrt{F_A^2 + F_C^2} + F_D$$

$$\text{Since } F_A = F_C = \frac{kq^2}{a^2} \text{ and } F_D = \frac{kq^2}{(a\sqrt{2})^2}$$

$$F_{net} = \frac{\sqrt{2}kq^2}{a^2} + \frac{kq^2}{2a^2} = \frac{kq^2}{a^2} \left( \sqrt{2} + \frac{1}{2} \right)$$

$$= \frac{q^2}{4\pi\epsilon_0 a^2} \left( \frac{1+2\sqrt{2}}{2} \right)$$

14. (D)

Sol.  $F \propto Q_1 Q_2 \Rightarrow \frac{F_1}{F_2} = \frac{Q_1 Q_2}{Q_1' Q_2'}$

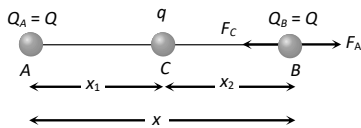
$$= \frac{3 \times 10^{-6} \times 8 \times 10^{-6}}{(3 \times 10^{-6} - 6 \times 10^{-6})(8 \times 10^{-6} - 6 \times 10^{-6})} = \frac{3 \times 8}{-3 \times 2} = -\frac{4}{1}$$

$$\Rightarrow F_2 = -\frac{F_1}{4} = -\frac{6 \times 10^{-3}}{4} = -1.5 \times 10^{-3} \text{ N (Attractive)}$$

15. (B)

Sol. Suppose in the following figure, equilibrium of charge B is considered. Hence for it's equilibrium  $|F_A| = |F_C|$

$$\Rightarrow \frac{1}{4\pi\epsilon_0} \frac{Q^2}{4x^2} = \frac{1}{4\pi\epsilon_0} \frac{qQ}{x^2} \Rightarrow q = \frac{-Q}{4}$$



16. (D)

Sol. On the equipotential surface, electric field is normal to the charged surface (where potential exists) so that no work will be done.

17. (B)

Sol.  $\therefore E = -\frac{dV}{dX} \Rightarrow V_x = -xE_0$

18. (B)

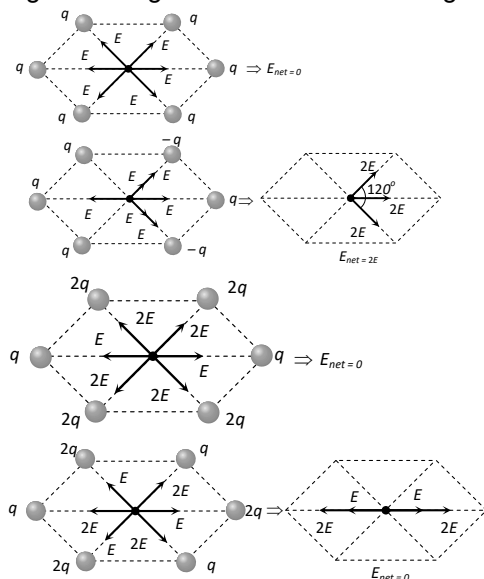
Sol.  $E = \frac{1}{4\pi\epsilon_0} \times \frac{q}{r^2} = 9 \times 10^9 \times \frac{q}{r^2}$

$$\therefore q = \frac{E \times r^2}{9 \times 10^9} = \frac{3 \times 10^6 \times (2.5)^2}{9 \times 10^9} = 2.0833 \times 10^{-3}$$

$q$  should be less than  $2.0833 \times 10^{-3}$ . In the given set of options  $2 \times 10^{-3}$  is the maximum charge which is smaller than  $2.0833 \times 10^{-3}$ .

19. (B)

Sol. Electric field at a point due to positive charge acts away from the charge and due to negative charge it act's towards the charge.



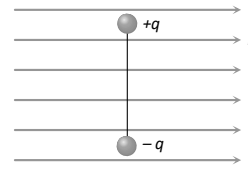
20. (A)

Sol. Potential is to be determined at a distance of 4 cm from centre of sphere i.e. inside the sphere.

21. (D)

Sol. Work done

$$= \int_{90}^{270} pE \sin \theta d\theta = [-pE \cos \theta]_{90}^{270} = 0$$



22. (D)

Sol. Field along the axis of the dipole

$$E = \frac{1}{4\pi\epsilon_0} \cdot \frac{2p}{d^3} = \frac{1}{4\pi\epsilon_0} \cdot \frac{2(q \times r)}{d^3}; \therefore E \propto \frac{qr}{d^3}$$

23. (D)

Sol. wire is stretched, therefore its volume remains unchanged

$$A_1 l_1 = A_2 l_2 \quad A_1 l = A_2 \times 3l \quad A_1 = \frac{A_2}{3}$$

Ratio of resistane  $\frac{R_1}{R_2} = \frac{l_1}{l_2} \times \frac{A_2}{A_1} = \frac{1}{3} \times$

$$\frac{1}{3} = \frac{1}{9} = \frac{20}{R_2} = \frac{1}{9} \Rightarrow R_2 = 180 \Omega$$

24. (A)

Sol.  $R_{eq} = \frac{8 \times 4}{8 + 4} = \frac{8}{3}$

25. (B)

Sol.  $R \propto \frac{1}{A} \Rightarrow R \propto \frac{1}{r^2} \propto \frac{1}{d^2}$  [ $d$  = diameter of wire]

26. (B)

Sol. In the absence of external electric field mean velocity of free electron ( $V_{rms}$ ) is given by  $V_{rms} = \sqrt{\frac{3KT}{m}} \Rightarrow V_{rms} \propto \sqrt{T}$

27. (B)

Sol.  $\Rightarrow R_{eq} = \frac{80 \times 20}{80 + 20} + 4 = 20 \Omega$

$$\Rightarrow I = \frac{V}{R} = \frac{4}{20} = \frac{1}{5} \text{ A}$$

28. (B)

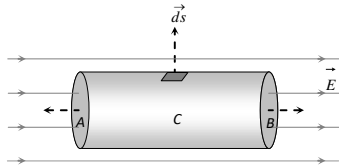
29. (D)

Sol.  $V = \frac{\rho \cos \theta}{r^2}$  If  $\theta = 0^\circ$  then  $V_a = \max$ .

If  $\theta = 180^\circ$  then  $V_e = \min$ .

30. (D)

Sol. Flux through surface A  $\phi_A = E \times \pi R^2$  and  $\phi_B = -E \times \pi R^2$



Flux through curved surface C  
 $= \int \vec{E} \cdot d\vec{s} = \int E ds \cos 90^\circ = 0$   
 $\therefore$  Total flux through cylinder  $= \phi_A + \phi_B + \phi_C = 0$

31. (B)

Sol.  $E_{medium} = \frac{E_{air}}{K} = \frac{E}{2}$

32. (D)

Sol. By using  $Q = nq \Rightarrow Q = 64q$

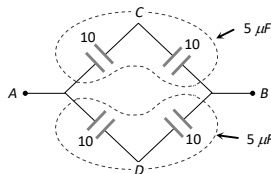
33. (A)

Sol. Initially when key is closed, the capacitor acts as short-circuit, so bulb will light up. But finally the capacitor becomes fully charged, so it will act as open circuit, so bulb will not glow.

34. (A)

35. (D)

Sol. In the given system, no current will flow through the branch CD so it can be removed



Effective capacitance of the system  
 $= 5 + 5 = 10 \mu F$

36. (D)

Sol. We know that,  $E = \frac{1}{2\rho E_0 r}$  (for infinitely

long straight wire)  
 Where  $r$  = the radius

$$\therefore E \propto \frac{1}{r}$$

Thus, according to Gauss theorem the electric field of an infinitely strong straight wire is proportional to  $\frac{1}{r}$

37. (B)

Sol.  $U = \int_0^V CV dV = \frac{1}{2} CV^2$

38. (D)

Sol. When  $\frac{Q_1}{R_1} \neq \frac{Q_2}{R_2}$ ; current will flow in connecting wire so that energy decreases in the form of heat through the connecting wire.

39. (C)

Sol. Volume of 8 small drops = Volume of big drop

$$8 \times \frac{4}{3} \pi r^3 = \frac{4}{3} \pi R^3 \Rightarrow R = 2r$$

As capacity is  $r$ , hence capacity becomes 2 times.

40. (B)

Sol.  $\rho$  : same

In parallel  $\Rightarrow i_1 R_1 = i_2 R_2$

$$\Rightarrow \frac{i_1}{i_2} = \frac{R_2}{R_1} = \frac{\rho \ell_2 / A_2}{\rho \ell_1 / A_1} = \frac{\ell_2}{\ell_1} \times \frac{r_1^2}{r_2^2}$$

$$\therefore \frac{\ell_1}{\ell_2} = \frac{4}{3} \quad \text{and} \quad \frac{r_1}{r_2} = \frac{2}{3}$$

$$\Rightarrow \frac{i_1}{i_2} = \frac{1}{3}$$

Ans.

41. (D)

Sol.  $R \propto \frac{l^2}{m} \Rightarrow R_1 : R_2 : R_3 = \frac{l_1^2}{m_1} : \frac{l_2^2}{m_2} : \frac{l_3^2}{m_3}$

$$\Rightarrow R_1 : R_2 : R_3 = \frac{9}{1} : \frac{4}{2} : \frac{1}{3} = 27 : 6 : 1$$

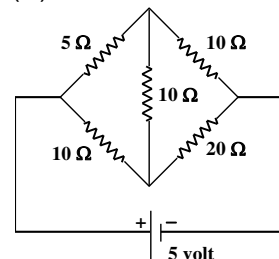
42. (B)

Sol.  $n = \frac{1 \times 10^{-3}}{1.6 \times 10^{-19}} = 6.25 \times 10^{15}$

43. (A)

Sol.  $v_d = \frac{i}{nAe} = \frac{8}{8 \times 10^{28} \times (2 \times 10^{-3})^2 \times 1.6 \times 10^{-19}}$   
 $= 0.156 \times 10^{-3} \text{ m/sec}$

44. (D)



Sol.

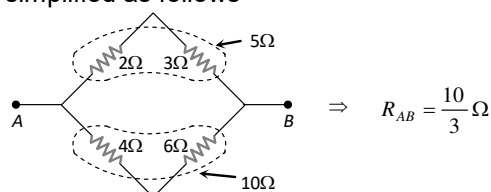
$$R_{eq} = \frac{15 \times 30}{15 + 30} = \frac{450}{45} = 10 \Omega$$

$$i = \frac{5}{10} = \frac{1}{2} = 0.5 \text{ amp}$$

45. (B)  
**Sol.**  $R \propto \frac{l}{r^2} \Rightarrow \frac{R_2}{R_1} = \frac{l_2}{l_1} \times \frac{r_1^2}{r_2^2} = \left(\frac{2}{1}\right) \times \left(\frac{1}{2}\right)^2 = \frac{1}{2}$   
 $\Rightarrow R_2 = \frac{R_1}{2}$ , specific resistance doesn't depend upon length, and radius.

46. (B)  
**Sol.** Current through each arm *DAC* and *DBC* = 1A  
 $V_D - V_A = 2$  and  $V_D - V_B = 3$   
 $\Rightarrow V_A - V_B = +1V$

47. (A)  
**Sol.** The given circuit is a balanced Wheatstone bridge type, hence it can be simplified as follows



48. (C)  
**Sol.**  $i = \frac{50}{R+r} \Rightarrow r = \frac{50}{4.5} - 10 = \frac{5}{4.5} = 1.1 \Omega$

49. (A)  
**Sol.**  $i = \frac{q}{t} = \frac{ne}{t} \quad \therefore n = \frac{it}{e}$   
 substituting  $i = 3.2 \times 10^{-3} \text{ A}$   
 $e = 1.6 \times 10^{-19} \text{ C}$  and  $t = 1 \text{ s}$   
 we get  $n = 2 \times 10^{16}$

50. (A)  
**Sol.** It is clear that electrons move in all directions haphazardly in metals. When an electric field is applied, each free electron acquire a drift velocity. There is a net flow of charge, which constitute current. In the absence of electric field this is impossible and hence, there is no current.

## CHEMISTRY

51. (A)  
**Sol.**  $V_a + V_b = 2L$   
 $V_a = (2 - V_b)$   
 apply  $N_1V_1 + N_2V_2 = N_3V_3$   
 $(2 - V_b) \times 0.5 + V_b \times 0.1 = 2 \times 0.2$   
 $V_b = \frac{3}{2} = 1.5 \text{ L} \quad V_a = 0.5 \text{ L}$

52. (B)  
**Sol.**  $\text{HCl} \rightarrow 0.2 \text{ mole}$   
 $\text{CaCl}_2 \rightarrow 0.1 \text{ mole}$   
 $\text{Cl}^- \text{ in HCl} = 0.2 \text{ mole}$   
 $\text{Cl}^- \text{ in CaCl}_2 = 2 \times 0.1 = 0.2 \text{ mole}$   
 Total  $\text{Cl}^- \text{ mole} = 0.2 + 0.2 = 0.4 \text{ mol}$   
 Molarity of  $\text{Cl}^- = \frac{0.4}{500/1000}$   
 $= 0.4 \times 2 = 0.8 \text{ M}$

53. (B)  
**Sol.** Strength of solution is 10% or  $100 \text{ g L}^{-1}$   
 Molar mass of glucose =  $180 \text{ g/mol}$   
 $\therefore$  vol. of solution 2 mole or  $360 \text{ gm}$  of glucose  
 $= \frac{1000}{100} \times 360 = 3600 \text{ ml} = 3.6 \text{ Litre}$

54. (C)  
**Sol.** Solubility of gases in liquids increases with increase in pressure and decreases in temperature.

55. (A)  
**Sol.**   
 $\Delta H_{\text{sol}} < 0$  For X.  
 $\Delta H_{\text{sol}} < 0$  For X.

56. (D)  
**Sol.** Under same condition  $\text{NH}_3$  has low solubility than that of  $\text{CO}_2$ .

57. (B)  
**Sol.** Solubility of a gas in a liquid decreases with increases in temp. and pressure.

58. (D)  
**Sol.** From Raoult's law,  $P_T = P_a^1 + P_b^1$   
 where,  $P_a^1 + P_b^1 = X_A P_a^0 + X_B P_b^0$   
 Also,  $X_A + X_B = 1$   
 $\therefore P_T = X_A [P_a^0 - P_b^0] + P_b^0$   
 $P_T$  vs  $X_A$  is a linear plot.

59. (C)  
**Sol.** Van't off factor more, boiling point more.

60. (B)  
**Sol.** Heating a solution will increase the volume through expansion of the solution. The molarity will decrease because the number of moles remains the same.

**61.** (D)  
**Sol.** It could be the movement of water (osmosis), or other (diffusion). If a cell is placed in an isotonic solution, that means the amount of stuff inside the cell and outside the cell is equal. There will be some movement of water and salt across the cell membrane, but there will be no net concentration change.

**62.** (C)

**Sol.**  $i \propto \text{elevation in B.P} \propto \frac{1}{\text{V.P.}} \propto$

$$\frac{1}{\text{freezing point}}$$

$i$  of urea is less (non-electrolyte)  
 $i$  of  $\text{Al}_2(\text{SO}_4)_3$  is higher

**63.** (D)

**Sol.**  $\Delta T_f = \frac{1000 \times k_f \times W_2}{W_1 \times M_2}$  or  $W_2$

$$= \frac{\Delta T_f \times W_2 \times M_2}{1000 \times k_f}$$

$W_1 = 1000 \text{ g}$   $W_1 = 1 \text{ L} = 1000 \text{ g}$   
 $M_2 = 180$

$$\therefore W_2 = \frac{10^{-3} \times 1000 \times 180}{1000} = .18 \text{ g}$$

$$\Delta T_f = K_f m$$

$$\frac{\Delta T_f}{K_f} = \frac{1}{1000}$$

$$\therefore \frac{1}{1000} = \text{molality}$$

$$\frac{1}{1000} = \frac{W_2}{W_1} \quad \begin{matrix} W_2 \rightarrow \text{mass of glucose} \\ W_1 \rightarrow 1 \text{ Kg of water} \end{matrix}$$

$$\frac{1}{1000} = \frac{W_2}{180}$$

$$W_2 = \frac{180}{1000} = 0.18 \text{ g.}$$

**64.** (C)

**Sol.**  $P = 100 \times \frac{2}{5} + 80 \times \frac{3}{5} = 40 + 48 = 88 \text{ torr.}$

**65.** (B)

**Sol.** Van't Hoff factor for dilute aq. solution of glucose is 1 because it is non electrolyte.

**66.** (B)

**Sol.**  $\text{K}_2[\text{PtCl}_6]$   $i = 3$   
 $\downarrow \quad \downarrow \quad \downarrow$   
 $2\text{K}^{+1} \quad \text{Pt}^{+4} \quad 6\text{Cl}^{-1}$

**67.** (D)

**Sol.** Benzoic acid gets associated in benzene.

**68.** (B)

**Sol.** Molarity of aqueous glucose = 1M

$$\text{Density} = M \left[ \frac{1}{m} + \frac{\text{M.wt of solute}}{1000} \right]$$

$$1.2 = 1 \left[ \frac{1}{m} + \frac{180}{1000} \right]$$

$$\frac{1}{m} = 1.2 - 0.18$$

$$\frac{1}{m} = 1.02$$

$$m = 0.98$$

$$\Delta T_b = K_b \times m$$

$$\Delta T_b = 0.98 K_b$$

**69.** (D)

**Sol.**  $\text{A}_2\text{B}_3 \rightarrow 3\text{A}_2 + 2\text{B}_3$

$$i = \frac{n(1-0.6) + n(1.8) + n(1.2)}{n}$$

$$i = 3.4$$

$$\Delta T = 3.4 \times 0.52 = 1.768$$

$$T = 373 + 1.768 = 374.768 \text{ K}$$

**70.** (A)

**Sol.** 90% dissociated, so  $\alpha = 0.9$

$$i = 1 + (n-1)\alpha$$

$$\text{for } \text{Al}_2(\text{SO}_4)_3 \Rightarrow i = 1 + (4) 0.9$$

$$= 4.6 \quad \pi = 4.6 \times 0.1$$

$$\text{For } \text{BaCl}_2 \Rightarrow i = 1 + 2(0.9)$$

$$= 2.8 \quad \pi = 2.8 \times 0.1$$

$$\text{For } \text{Na}_2\text{SO}_4 \Rightarrow i = 1 + 2(0.9)$$

$$= 2.8 \quad \pi = 2.8 \times 0.1$$

For (B) and (C) mixture

$$\pi = \frac{(2.8 + 2.8)0.1}{2} = 2.8 \times 0.1$$

Therefore  $\text{Al}_2(\text{SO}_4)_3$  has higher osmotic pressure.

**71.** (B)

**Sol.** Boiling point elevation of 1 molal glucose solution is half of the 1 molal KCl solution.

**72.** (B)

**Sol.**  $\pi = i CRT$

$$3.94 = [1 + (n-1)\alpha] CRT$$

$$3.94 = [1 + (4-1)\alpha] \times \frac{1}{10} \times 0.082 \times 300$$

$$3.94 = (1 + 3\alpha) \times 2.463$$

$$\frac{3.94}{2.463} = 1 + 3\alpha$$

$$3\alpha = \frac{3.94}{2.463} - 1$$

$$\alpha = \frac{1}{3} \left( \frac{3.94}{2.463} - 1 \right)$$

$$\alpha = 20\%$$

<b>73.</b>	(D)	<b>Sol.</b>	No blue colour formation.	<b>83.</b>	(C)	<b>Sol.</b>	10% w/v = 10 g in 100 mL ∴ 100 mL contains 10 g ∴ 1000 mL contains $\frac{10}{100} \times 1000 = 100$ g
<b>74.</b>	(C)	<b>Sol.</b>	$P = P_A + P_B = x_A P_A^\circ + x_B P_B^\circ$ $= 0.4 \times 100 + 0.6 \times 200$ $= 40 + 120 = 160$ mm Hg $P_A = 40$ $P_A = p \times Y_A$ $Y_A = \frac{40}{160} = 0.25$	<b>84.</b>	(C)	<b>Sol.</b>	$M_1 V_1 = M_2 V_2$ $10 \times 18 = M_2 \times 1000$ $M_2 = 0.18$ M
<b>75.</b>	(D)	<b>Sol.</b>	Osmosis is a process by which the molecules of a solvent pass from a solution of low concentration to a solution of high concentration through a semipermeable membrane.	<b>85.</b>	(C)	<b>Sol.</b>	$P_{\text{Total}} = P_A + P_B$ $(M.M)_{\text{CH}_3\text{OH}} = 32$ $(M.M)_{\text{C}_2\text{H}_5\text{OH}} = 46$ According to Raoult's law $P_{\text{total}} = P_1 + P_2$ $P_1 =$ partial vap-pressure of one components $P_2 =$ Partial vap. press of other compents $P_1 = P_1^\circ \times X_1$ $P_2 = P_2^\circ \times X_2$ $X_{\text{CH}_3\text{OH}} = \frac{\frac{16}{32}}{\frac{16}{32} + \frac{46}{46}} = \frac{\frac{1}{2}}{\frac{1}{2} + 1}$ Partial vapour pressure of ethanol = $\frac{2}{3} \times 42 = 28$ Partial vapour pressure of methanol $= \frac{1}{3} \times 88.5 = 29.5$ ∴ $X = \frac{29.5}{29.5 + 28} = \frac{29.5}{57.5} = 0.5132$
<b>76.</b>	(D)	<b>Sol.</b>	Vapour pressure is inversely proportional to "i" value $\text{NaCl} \Rightarrow i = 2$ $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ (No electrolyte) $\text{CaCl}_2 \Rightarrow i = 3$ $\text{AlCl}_3 \Rightarrow i = 4$ ∴ $i = 1$	<b>86.</b>	(C)	<b>Sol.</b>	The relative lowering in vapour pressure is equal to the mole fraction of solute.
<b>77.</b>	(B)	<b>Sol.</b>	It is 1 for glucose and for similar non electrolytes.	<b>87.</b>	(A)	<b>Sol.</b>	When a solute dissolves in water, the vapour pressure of solvent decreases and because of this boiling point increases and freezing point decreases.
<b>78.</b>	(B)	<b>Sol.</b>	Elevation in boiling point in $\text{Na}_2\text{SO}_4$ is relatively larger than NaCl because of difference in constants for elevation in B.pt hence, $T_1 > T_2$ . Higher the Van't Hoff factor, more elevation in B.P.	<b>88.</b>	(A)	<b>Sol.</b>	Positive deviation from Raoult's law occurs when the vapour pressure of component is higher than that calculated from Raoult's law. This is because that molecules are breaking away more easily than they do in pure liquids due to weak intermolecular force between two molecules. Thus the boiling point of such solution is lower than their pure forms.
<b>79.</b>	(B)	<b>Sol.</b>	$P = 0.95 P_0$ $\frac{P_0 - P}{P_0} = x_a = 0.056$ $\frac{\frac{W_a}{M_a}}{\frac{W_a}{M_a} + \frac{W_b}{M_b}} = 0.05 \Rightarrow \frac{W_a}{M_a} = \frac{1}{20} \frac{W_a}{M_a} + \frac{1}{20} \frac{W_b}{M_b}$ $\frac{19}{20} \frac{W_a}{M_a} = \frac{1}{20} \frac{W_b}{M_b}$ $\frac{W_b}{M_b} = 10 \frac{M_b}{M_a} \Rightarrow 19 \times 0.3 = 5.7$				
<b>80.</b>	(D)	<b>Sol.</b>	Molality (m) is defined as the number of moles of solute per kilogram of solvent.				
<b>81.</b>	(D)	<b>Sol.</b>	Molarity (M) is defined as the number of moles of solute per litre of solution.				
<b>82.</b>	(D)	<b>Sol.</b>	Molar mass of $\text{H}_2\text{O} = 18.02$ g/mole Density = 1000 g/litre ∴ Molar concentration = $\frac{1000\text{g/L}}{18.02/\text{mole}}$ = 55.5 moles				

<p><b>89.</b> (D) <b>Sol.</b> In an ideal solution, no change in volume on mixing, no change in enthalpy on mixing and it obeys Raoult's law but ionisation of solute should not occur to a small extent.</p>	<p>Where <math>M_1</math> molar mass of the solute  <math>W_1</math> = Mass of solute  <math>W_2</math> = Mass of solvent  <math>\Delta T_b</math> = Elevation in boiling point.</p>
<p><b>90.</b> (B) <b>Sol.</b> Greater the van't hoff's factor higher the elevation in boiling point, higher the boiling point.</p>	<p><b>95.</b> (A) <b>Sol.</b> Potassium sulphate produces large number of ions per unit formula and hence longer <math>-\Delta T_f</math></p>
<p><b>91.</b> (B) <b>Sol.</b> An Azeotropic mixture is a constant boiling mixture in which the composition of the mixtures remains same throughout boiling. For such solution, the composition of vapour at its boiling point is same as that of liquid solution. Such mixtures distill without change in composition of temperature.</p>	<p><b>96.</b> (B) <b>Sol.</b> Both Urea and sugar do not undergo any association or dissociation</p> <p><b>97.</b> (A) <b>Sol.</b> Low concentration of solute means of high concentration of solvent. As a result vapour pressure will be more.</p>
<p><b>92.</b> (C) <b>Sol.</b> In Azeotropic mixture, components do not separates at boiling point. Because it is a constant temperature boiling mixture.</p>	<p><b>98.</b> (A) <b>Sol.</b> If a pressure larger than the osmotic pressure is applied to the solution side, the pure solvent flows out of the solution through semi-permeable membrane and this phenomenon is called as reverse osmosis.</p>
<p><b>93.</b> (D) <b>Sol.</b> Colligative properties are properties of solution which depend on the number of particles present in solution. Elevation in boiling point, pressure, depression in vapour pressure and depression in freezing point are colligative properties.  <math>\Delta T_b = K_b m</math>  molal elevation constant.</p>	<p><b>99.</b> (C) <b>Sol.</b> Camphor has high molal depression constant.</p>
<p><b>94.</b> (A) <b>Sol.</b> Determination of molecular mass of a nonvolatile solute by elevation in boiling point.</p>	<p><b>100.</b> (B) <b>Sol.</b> Elevation in boiling point and depression in freezing point are colligative properties because both depend only on the number of particles (ions or molecules) of the solute in a definite amount of the solvent but not on the nature of the solute.</p>