

CHEMISTRY PAPER – I : CH - 231
Physical Chemistry & Inorganic Chemistry - I
(New) (23135)

P. Pages : 2

Time : Two Hours

Max. Marks : 40

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory.
5. Figures to the right indicate full marks.
6. Use of logarithmic table & calculator is allowed.

1. A) Multiple choice questions.

4

- i) Molal elevation constant is elevation in the boiling point when the molality of the solution is.....
- a) 1 b) 2
c) 0.5 d) None of these
- ii) The liquid mixture which shows maximum as well as minimum critical solution temperature.
- a) Phenol – water b) Nicotine – water
c) Aniline – water d) Benzene – water
- iii) Chromium has outer electronic configuration.
- a) $4d^4 4s^1$ b) $4d^5 4s^1$
c) $3d^5 4s^1$ d) $3d^5 3s^1$
- iv) Li metal has which of the following crystal structure.
- a) B.C.C. b) H.C.P.
c) F.C.C. d) C.C.P.

B) Attempt any two of the following.

4

- i) Define abnormal molecular weight.
- ii) Define critical solution temperature.
- iii) Define n – type & p – type semiconductor.
- iv) Explain Mo & W are chemical twins.

2. Attempt **any two** of following. 8
- Discuss the Nicotine – water system.
 - Describe Berkeley & Hartley's method to determine osmotic pressure of solution.
 - Write a note on intrinsic & Extrinsic semiconductors.
3. A) Answer **any one** of following. 4
- 1.5126gm of solute on dissolution in 21.01 gm benzene gives an elevation in boiling point of 1.05°C . If K_b for 100gm benzene is 26.3, Calculate the molecular weight of solute.
 - The V. P. of pure component A & B are 120 mm & 96mm Hg. What will be partial pressures of the components & total pressure when the solution contain 1 mole of component A & 4 mole component B ? Also calculate the composition in vapour phase.
- B) Answer **any one** of the following. 4
- Most of the transition metals are coloured why ?
 - Give the physical properties of metals.
4. Answer **any two** of following. 8
- Explain the working of fractionating column.
 - Calculate the magnetic moment of ions Ti^{3+} , V^{3+} , Cr^{3+} , Cu^{2+} .
(Ti = 22, V = 23, Cr = 24, Cu = 29)
 - Draw the energy band diagrams for conductors, insulators & semiconductors.
5. A) Answer **any one** of the following. 6
- Define solubility ? Discuss the phenol – water system.
 - Write the electronic configuration of first transition series.
- B) Define the term relative lowering of vapour pressure. 2
