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April 2015

खजूर - 020



Physical & Inorganic Chemistry - I (23135)

Time : Two Hours

Max. Marks : 40

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink 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. Draw a neat diagram wherever necessary.
7. Use of calculator and logarithm table is allowed.

1. a) Multiple choice questions

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- i) Addition of non volatile solute the vapour pressure.
a) Enhances b) Lowers
c) Diminishes d) Keep constant
- ii) Phenol - water system exhibits system.
a) Maximum CST
b) Minimum CST
c) Maximum and minimum CST
d) Without CST
- iii) Highest oxidation state is shown by the element.
a) F_e b) Cr
c) Mn d) Zn
- 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.

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- i) Define critical solution temperature.
- ii) Give the example of organic and inorganic Semipermeable membrane.
- iii) Most of the transition metals are coloured why ?
- iv) What is the effect of temperature on conductivity of semiconductors.

2. Attempt **any two** of the following. 8
- Discuss the Nicotine - water system.
 - Derive the Van't Hoff equation for osmotic pressure.
 - What is meant by d- block elements ? How they are differ from S & P - block elements ?
3. a) Solve **any one** of the following. 4
- 3gm of solute when added to 30 gm of sowent, then boiling point of solvent raised by 0.3°C . Calculate the molecular weight of solute.
($K_b=3.8$ per 1000 gm. of sowent)
 - Calculate the mole fraction of water in mixture of 12 gm water, 108 gm acetic acid and 92 gm of ethyl alcohol.
(molecular weights : water = 18, acetic acid = 60, ethyl alcohol = 46)
- b) Answer **any one** of the following. 4
- Metals are good conductor of heat and electricity, Explain.
 - What is superconductivity ? Give any two uses of super conductivity.
4. Answer **any two** of the following. 8
- Show that depression in freezing point is a colligative property.
 - Explain the most of the transition metals are paramagnetic.
 - Draw the energy band diagrams for conductors, insulators and semiconductors.
5. a) Answer **any one** of the following. 6
- What is P-X and T-X diagrams ? Discuss different types of P-X and T-X diagrams in case completely miscible liquids.
 - Explain the following properties of d - block elements.
 - Ionisation energy
 - Catalytic property
- b) state and explain Raoult's law. 2
