April - 2013

Seat No. | | | | | | |

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कर - 041

CHEMISTRY PAPER I (NEW) : CH-121
Physical & Inorganic Chemistry

P. Pages : 3

Time : Two Hours **Max. Marks : 40**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet 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. Draw a neat diagram wherever necessary.
7. Use of logarithmic table and non programmable calculator is allowed.

1. Attempt **any eight** of the following. **8**

i) The average kinetic energy of the gas molecule is .....
   a) Inversely proportional to absolute temperature
   b) Directly proportional to absolute temperature
   c) Equal to square of absolute temperature
   d) Directly proportional to square root of absolute temperature

ii) The value of compressibility factor Z for an ideal gas is.....
   a) zero b) less than one
   c) more than one d) equal to one

iii) The kinetic energy of gas molecule in one mole of gas is .....
   a) $\frac{1}{2}RT$ b) $\frac{3}{2}RT$
   c) $\frac{5}{2}RT$ d) $\frac{2}{3}RT$

iv) Identify correct equation for an ideal gas.
   a) $PV = \frac{RT}{n}$ b) $V = \frac{nRT}{p}$
   c) $\frac{PV}{T} = \text{constant}$ d) $RT = nPV$

v) The angle between any face in cubic unit cell is .....
a) 120° b) 90°
c) 60° d) 180°

vi) Crystals can be classified into ..... basic crystal systems.
a) 3 b) 4
c) 7 d) 14

vii) As we move from left to right in period atomic size of elements .....
a) Increases b) remain constant
c) decreases d) none of these

viii) Predict which element in the following has higher Ionization energy.
a) Na b) Li
c) K d) Pb

ix) Among the I^{st} group of alkalimetals which element has higher atomic radii.
a) Na b) Cs
c) Li d) k

x) In which group H_2S is used for precipitation of metal sulphide.
a) Gr. I^{st} b) Gr. II^{nd}
c) Gr. III^{rd}-A d) Gr. IV^{th}

2. Answer **any four** of the following. **8**

i) Give unit of Vander Waal constant a and b.

ii) Write reduced state equation explain term involved in it.

iii) Define crystallography.

iv) What do you mean by Isotropic and anisotropic substances.

v) State the modern periodic law.

vi) Define common Ion effect.

3. Answer **any two** of the following. **8**

i) State any four assumptions of kinetic gas theory.

ii) Write a note on polymorphism.

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iii) Calculate the pressure exerted by 2×10^{21} oxygen molecules if the R.M.S. velocity of oxygen molecule is 1.84×10^{5} cm/sec the mass of oxygen molecule is 5.3×10^{-23} gm and it occupies 5.0 lit volume.

4. Answer **any two** of the following. **8**

i) Define electronegativity. What is the trends of electronegativity in group and period ?

ii) Explain the term solubility product.

iii) Deduced Grahams law of diffusion of gases from kinetic gas equation.

5. a) Answer **any one** of the following. **6**

i) Derive an kinetic gas equation.

ii) Explain following properties of an element -
   a) Ionization energy.
   b) Metallic character.

b) Sketch body centred cubic lattice. **2**

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