

STD XII - CHEMISTRY

Time : 3 hrs.]

MARCH - 2013

[Marks : 70

SECTION - I

Q. 1. Select and write the most appropriate answers from the given alternatives for each sub-question :

[7]

- (i) In body centred cubic structure the space occupied is about _____.
 (a) 68% (b) 53% (c) 38% (d) 32%
- (ii) For a gaseous reaction the unit of rate of reaction is _____.
 (a) L atm s^{-1} (b) $\text{atm mol}^{-1} \text{s}^{-1}$ (c) atm s^{-1} (d) mol s
- (iii) Which of the following compounds contains S = O as well as S = S bonds?
 (a) Sulphuric acid (b) Thiosulphuric acid
 (c) Sulphurous acid (d) Thiosulphurous acid
- (iv) Which of the following solutions shows maximum depression in freezing point?
 (a) 0.5 M Li_2SO_4 (b) 1 M NaCl (c) 0.5 M $\text{Al}_2(\text{SO}_4)_3$ (d) 0.5 M BaCl_2
- (v) For a chemical reaction $dS = -0.035 \text{ kJ/K}$ and $dH = -20 \text{ kJ}$. At what temperature does the reaction turn nonspontaneous?
 (a) 5.14 K (b) 57.14 K (c) 571.4 K (d) 5714.0 K
- (vi) The standard e.m.f. of the following cell is 0.463 V

$$\text{Cu}_{(s)} \mid \text{Cu}_{(aq)}^{++} (1\text{M}) \parallel \text{Ag}_{(aq)}^{++} (1\text{M}) \mid \text{Ag}_{(s)}$$
 . What is the standard potential of Cu electrode?
 (a) 1.137 V (b) 0.337 V (c) 0.463 V (d) -0.463 V
- (vii) Fe_2O_3 is reduced to spongy iron near the top of blast furnace by _____.
 (a) H_2 (b) CaO (c) SiO_2 (d) CO

Q. 2. Answer any SIX of the following :

[12]

- (i) Distinguish between crystalline solid and amorphous solid.
- (ii) State Kohlrausch Law and write mathematical expression of molar conductivity of the given solution at infinite dilution.
- (iii) Write cell reactions in lead storage battery during discharge.
- (iv) Draw structures and write geometry of PCl_3 and PCl_5 .
- (v) Prove that $\Delta H = \Delta U + \Delta nRT$. What is the condition under which $\Delta U = \Delta H$?
- (vi) Mention names and formulae of two ores of aluminium.
- (vii) Derive the relationship between relative lowering of vapour pressure and molar mass of nonvolatile solute.
- (viii) What is pseudo first order reaction? Give one example of it.

Q. 3. Answer any THREE of the following :

[9]

- (i) Calculate the mole fraction and molality of HNO_3 in a solution containing 12.2% HNO_3 . (Given - atomic masses : H = 1, N = 14, O = 16)
- (ii) Consider the reaction -



What are the values of the following at the same time ?

- (a) $-\frac{d[\text{I}^-]}{dt}$ (b) $-\frac{d[\text{S}_2\text{O}_8^{2-}]}{dt}$ (c) $-\frac{d[\text{I}_3^-]}{dt}$

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