BSC. PART - II EXAMINATION - 2014

CHEMISTRY SUBJECT

Answer six questions in all, selecting at least one from each Group in which Q.No.1 is compulsory.

1. Choose the correct answer of the following :

(a) The rate of gaseous reaction is given by the expression K[A] [B]. If the volume of reaction vessel is suddenly reduced to 1/4th of the initial volume, the reaction rate relating to original rate will be : (i) $\frac{1}{10}$ (ii) $\frac{1}{8}$ (iii) 8 (iv) 16

(b) Effect of dilution on conductance is as follows :
(i) Sp. conductance increases, molar conductance decreases
(ii) Sp. conductance decreases, molar conductance increases
(iii) Both increase with dilution (iv) Both decrease with dilution

(c) Alums purify muddy water by :
(i) Dialysis (ii) Adsorption (iii) Coagulation (iv) Forming a true solution

(d) Plane polarised light is affected by : (i) Identical molecules
(ii) All polymers (iii) Chiral molecules (iv) All biomolecules

(e) Common table sugar is : (i) Glucose (ii) Sucrose (iii) Fructose (iv) Maltose

(f) The electrophile which is considered to be active agent in the nitration of benzene is : (i) NO_2^- (ii) NO^+ (iii) NO_2^+ (iv) HNO_2^+

(g) In XeF_4 hybridization of Xe is : (i) sp^3d^2 (ii) sp^3 (iii) sp^3d (iv) sp^2d

(h) Inert pair effect is exhibited by : (i) pb (ii) B (iii) Si (iv) Al

(i) Among the elements of Group 17, fluorine is the most reactive owing to its:
(i) Electronegativity (ii) Small size of the atom
(iii) Extremely high oxidising power and low dissociation energy of F-F bond
(iv) All factors cited above

(j) $KMnO_4$ acts as oxidising agent in :
(i) Acidic medium only (ii) Neutral and acidic medium
(iii) Neutral and alkaline medium (iv) Neutral, acidic and alkaline medium

GROUP-A

2. (a) Give an expression for 1st order reaction.

(b) Prove that $t_{1/2} = \frac{0.693}{K}$ for 1st order reaction.

3. (a) Define the terms sp. conductance and eq. conductance of an electrolyte.
(b) Explain the effect of dilution on eq. conductance.
(c) Calculate eq. conductance of 2M-H_2SO_4 solution. When its specific conductivity at 25°C is 0.0125 $ohm^{-1}cm^{-1}$.

4. (a) Discuss the use of emf measurement for the determination of valency of ion.
(b) Discuss origin of electrode potential.

5. Write notes on any two of the following :
(a) Kohlrausch's Law (b) Solubility Product (c) Bronsted theory of acid and base

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GROUP - B

6. (a) How is potassium dichromate prepared on Large Scale ?
   (b) Calculate the eq. wt in acidic medium.
   (c) How does it reacts with : (i) Conc. H_2SO_4 + KCl (ii) Conc. $H_2SO_4 + H_2S$
7. (a) Explain all nobel gases are diamagnetic.
   (b) Nature of bonding in XeF_2 and XeF_4.
8. (a) How Cobalt is extracted from its important ore.
   (b) Name two important ores of CO.
   (c) Why transition metal compounds are generally coloured ?
9. Write notes on any two of the following : (a) Hydrazoic Acid
   (b) Nitrogeneous Fertilizer (c) Hydrazine (d) Phosphorous Pentachloride

GROUP - C

10. (a) How Citric Acid is isolated from lemon juice.
    (b) How does citric acid reacts with : (i) HI (ii) H_2SO_4 (iii) Acetyl Chloride
11. Discuss the structure of D(+) glucose.
12. (a) How is benzaldehyde obtained from nitrobenzene.
    (b) Discuss the synthesis of Citric Acid from Gylcerol.
13. Write notes on the following :
    (a) Optical activity (b) Enantiomerism (c) Metamerism (d) Tautomerism

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