

22242

23124

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

10

- (a) Define acid and base by Arrhenius concept.
- (b) List the two examples of each strong acid & strong base.
- (c) Define :
 - (i) Normality
 - (ii) Molarity
- (d) Define :
 - (i) Chemical kinetics
 - (ii) Chemical equilibrium



- (e) Define :
 - (i) Oxidation
 - (ii) Reduction
- (f) State second law of thermodynamics.
- (g) State distribution law.

2. Attempt any THREE of the following : 12

- (a) Define the terms pH and pOH. Derive the relation between them.
- (b) Describe osmosis and osmotic pressure.
- (c) Explain the endothermic reaction and exothermic reaction with one example of each.
- (d) Explain the term oxidizing agent and reducing agent. Give two examples of each of them.

3. Attempt any THREE of the following : 12

- (a) Define pH scale. Show acidic & basic pH range on it. Explain the importance of pH when wool & silk are dyed.
- (b) Calculate the normality of a solution containing 6.3 gram of oxalic acid crystals (mole.wt. = 126) dissolved in 500 ml of solution.
- (c) Explain the factors affecting rate of chemical reaction.
- (d) Explain the use of oxidizing agent and reducing agent in bleaching.

4. Attempt any THREE of the following : 12

- (a) Describe acids & bases using Lewis concept in detail.

- (b) Explain the heat of solution & heat of dilution.
- (c) Describe the role of thermochemistry in wet processing.
- (d) Explain the process of extraction theory with its principle.
- (e) Explain applications and limitations of distribution law.

5. Attempt any TWO of the following :

12

- (a) Certain salt is formed by combination of Potassium Hydroxide and Hydrochloric Acid. Identify its name and nature. Predict the wet process in which it can be used.
- (b) Write the applications of osmosis, osmotic pressure and reverse osmosis.
- (c) Solve both of the following :
 - (i) Predict the effect on dyeing when cellulose fabric dyed with cold brand reactive dye and process time was reduced from 1 hour to half an hour.
 - (ii) Identify the reversible and irreversible reaction of the following :
 - (a) $C_4H_{10}(g) + O_2(g) \longrightarrow CO_2(g) + H_2O(g) + \text{Heat}$
 - (b) $N_2(g) + 3H_2(g) \longrightarrow 2NH_3(g)$

6. Attempt any TWO of the following :

12

- (a) Solve both of the following :
 - (i) Identify the following chemical reaction whether it is oxidation or reduction type :
 - (a) $Zn \longrightarrow Zn^{++} + 2e^{-}$
 - (b) $Cu^{++} + 2e^{-} \longrightarrow Cu(s)$
 - (ii) Describe the role of oxidizing and reducing agent in vat dyeing.

P.T.O.

- (b) (i) State first law of thermodynamics. In closed system, how this law will work ?
 - (ii) Write procedure of measuring heat changes occur during chemical processing.
 - (c) (i) State miscibility of water and alcohol.
 - (ii) Describe the procedure for separation of alcohol & water.
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