

22242

11819

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) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks**1. Answer any FIVE :****5 × 2 = 10**

- (a) Define acid and base w.r.t. Arrhenius concept.
- (b) Define pH and write its mathematical expression.
- (c) Define normality and grams per litre.
- (d) Define endothermic and exothermic reaction.
- (e) Write any two roles of reducing agent in wet processing.
- (f) State second law of thermodynamics.
- (g) Define dissociation and association.

2. Answer any THREE :**3 × 4 = 12**

- (a) Explain the differences between the Arrhenius and Lewis concept of acids and bases. Give suitable examples of both.
- (b) Explain classification of colloidal solutions with examples from each category.
- (c) Explain the factors affecting the rate of chemical reaction.
- (d) Explain the role of oxidising agent in dyeing and printing.

3. Answer any THREE :**3 × 4 = 12**

- (a) Identify the following either as an “acid” or a “base” and identify their “conjugate” relationship.
- (i) $\text{CH}_3 - \text{CH}_2 - \text{OH} + \text{NaOH} \rightleftharpoons \text{CH}_3 \text{CH}_2 \text{ONa} + \text{H}_2\text{O}$
- (ii) $\text{CH}_3 - \text{CH}_2 - \text{NHLi} + \text{CH}_3\text{OH} \rightleftharpoons \text{CH}_3 - \text{CH}_2 - \text{NH}_2 + \text{CH}_3 \text{OLi}$
- (iii) $\text{CH}_3 - \text{CH}_2 \text{COOH} + \text{CH}_3 \text{MgBr} \rightleftharpoons \text{CH}_3 - \text{CH}_2 - \text{CO}_2\text{MgBr} + \text{CH}_4$
- (iv) $\text{CH}_3\text{OH} + \text{H}_3\text{O}^+ \rightleftharpoons \text{H}_2\text{O} + \text{CH}_3\text{OH}_2^+$
- (b) Calculate the equivalent weight and molecular weight of $\text{K}_2\text{Cr}_2\text{O}_7$ and KMnO_4 . (At. Wt. of K = 39, O = 16, Cr = 24, Mn = 25)
- (c) Distinguish between reversible and irreversible reaction with example of both.
- (d) Explain the use of oxidising agent and reducing agent in azo dyeing.

4. Attempt any THREE :**3 × 4 = 12**

- (a) Explain the term “Salts”. Classify them giving examples.
- (b) Explain the terms :
- (i) Heat of solution
- (ii) Heat of dilution
- (c) Explain the role of heat of displacement reaction during bleaching of polyester and wool.
- (d) Explain distribution law with a labelled diagram.
- (e) Explain four application of extraction theory.

5. Answer any TWO :**2 × 6 = 12**

- (a) What is the pH and the degree of dissociation in a
- (i) 0.1 M
- (ii) 0.01 M and
- (iii) 0.001 M acetic acid solution respectively

- (b) Explain the role of osmosis and viscosity in the dyeing and scouring process.
- (c)
 - (i) A cellulose based fabric is dyed with cold brand reactive dye at room temperature. State the effect of dyeing on the fabric with suitable reasons.
 - (ii) Certain silk fabric is dyed with hot brand reactive dye at a temperature at 68° C. State the effect of this dyeing on the silk fabric.

6. Answer any TWO :

2 × 6 = 12

- (a) Explain the role of hydrogen peroxide and potassium permanganate solution on cotton and silk.
 - (b) Identify the following chemicals into scouring, bleaching, dyeing and mercerizing agent of fabric.
 - (i) Mixture of NaOH and Na₂CO₃
 - (ii) Sodium hypochlorite
 - (iii) Hydrogen peroxide
 - (iv) Sodium perborate
 - (v) Potassium permanganate
 - (vi) Alkyl phenol ethoxylates
 - (c)
 - (i) State miscibility of water and alcohol.
 - (ii) Describe the procedure for separation of alcohol and water.
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