16172

3 Hours / 100 Marks   Seat No. ☐☐☐☐☐☐☐☐

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)   Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1.   **Answer any TEN of the following :**   **20**

(a)   Write the mathematical expression of pH and explain the term involved in it.

(b)   Define viscosity. State its SI unit.

(c)   Write example of following reactions :

(i)   reversible reaction and

(ii)   irreversible reaction

(d)   Define :

(i)   Adhesive force

(ii)   Cohesive force

(e)   Define reduction reaction with suitable example.

(f)   Define :

(i)   Heat of reaction

(ii)   Heat of formation

(g) Write the principle involved in extraction process.

(h) Hydrogen ion concentration of an aqueous solution is $10^{-3.75}$. Find its P^{OH}

(i) Find molecular weight and equivalent weight of Na_2CO_3

(At.wt of Na = 23, C = 12, O = 16)

(j) Define equilibrium constant.

(k) Define surface tension. Write its value for water.

(l) Write names of four oxidizing and reducing agents.

(m) State first law of thermodynamics.

(n) Write applications of extraction process in textile industry.

2. **Answer any FOUR of the following :** 16

(a) Explain the role of pH in wet processing.

(b) Explain Lewis concept of acids and bases.

(c) Describe the mechanism of reverse osmosis.

(d) Distinguish between exothermic and endothermic reaction with example.

(e) Explain the concept of redox reaction with suitable chemical reaction.

(f) Define following terms with suitable examples :

(i) Normality

(ii) Molarity

3. **Answer any FOUR of the following :** 16

   (a) Classify the salts with suitable examples.

   (b) Find the molarity of 2 normal solution of sulphuric acid.

   (Atomic weight : H = 1, O = 16, S = 32)

   (c) State the factors affecting viscosity. Explain the effect of temperature on viscosity.

   (d) Explain the meaning of following terms :

   (i) Rate constant

   (ii) Equilibrium constant

   (e) Distinguish between emulsifying agents and dispersing agents.

   (f) Explain use of following agents in textile wet processing with suitable reactions :

   (i) Potassium dichromate and

   (ii) Sodium hypochlorite

4. **Attempt any FOUR of the following :** 16

   (a) Define pH. Represent a pH scale.

   (b) Distinguish between hydrophilic solution and hydrophobic solution.

   (c) State and explain the law of mass action.

   (d) Explain the factors which affect diazotisation reaction.

   (e) Explain surface tension in relation to angle of contact and spreading.

   (f) Explain the role of sodium m nitrobenzene sulphonate in reactive dyeing.

5. **Answer any FOUR of the following :** 16

   (a) Classify acids and bases depending upon H^+ and OH^- ions and give one example each.

   (b) Explain the concept of saturated solution.

   (c) State the role of wetting agents in wet processing.

   (d) Define the terms, (i) heat of neutralization and (ii) heat of solution with suitable examples.

   (e) State the law of distribution of solute and write its limitations.

   (f) Draw a chart indicating various oxidising and reducing agents, their Chemical formula and specify the name of wet process in which it is used.

6. **Answer any FOUR of the following :** 16

   (a) Explain the concept of strength of acid and base.

   (b) Define and give example of :

   (i) Salts (ii) Colloids

   (c) Explain the meaning of thermodynamics and thermochemistry.

   (d) Explain the role of considering heat of reaction in textile wet processing.

   (e) Distinguish between dissociation and association.

   (f) Explain the role of Na_2S in sulphur dyeing and $Na_2S_2O_4$ in vat dyeing.

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