SURFACE CHEMISTRY

CHAPTER-5

TEST-A

SOLVED

Time: 1 hr. **Max. Marks: 30**

SECTION-A

Tick the correct option:

1. Which of the following is not an example of homogeneous catalysis? **[1]**

   (i) $2KClO_3(s) \xrightarrow{MnO_2(s)} 2KCl(s) + 3O_2(g)$

   (ii) $H_2(g) + 3H_2(g) \xrightarrow{Fe_2O_3(s)} 2NH_3(s)$

   (iii) $C_2H_5OH(l) + CH_3COOH(s) \xrightarrow{H_2SO_4(aq)} CH_3COOC_2H_5(l) + H_2O(l)$

   (iv) $2SO_2(g) + O_2(g) \xrightarrow{NO(g)} 2SO_3(g)$

2. Which of the following gas is adsorbed maximum on charcoal? **[1]**

   (i) NH_3 (T_C = 132°C) (ii) O_2 (T_C = –119°C)

   (iii) CO_2 (T_C = 31.2°C) (iv) H_2O (374°C)

3. Addition of silver nitrate solution to excess of potassium iodide gives a lyophobic sol which move towards the positive plate of an electric field. The representation of the lyophobic sol is

   (i) AgI/Ag^+ (ii) AgI/K^+ (iii) AgI/NO_3^- (iv) AgI/I^- **[1]**

Assertion-Reason type Questions:

(i) If assertion and reason both are correct and reason is the correct explanation of assertion.

(ii) If assertion and reason both are correct and reason is not the correct explanation of assertion.

(iii) If assertion is correct and reason is wrong.

(iv) If assertion is wrong and reason is correct.

4. Assertion: The reaction of oxalic acid with potassium permanganate is slow in the beginning but speed up as it progresses. **[1]**

   Reason: The divalent manganese ion formed catalyze the reaction.

5. Assertion: Potash alum is a better coagulating agent for blood than magnesium chloride.

   Reason: Potash alum is a double salt whereas magnesium chloride is a single salt. **[1]**

One word /One Sentence type Questions.

6. Which one is more effective in preventing coagulation of $Fe(OH)_3$ sol. coagulation of blood? and why? **[1]**

   Starch or Sulphur sol.

7. Write an equation for the preparation of gold sol. **[1]**

SECTION-B

8. Give reason: **[2]**

   (i) Presence of molybdenum in the Haber's process speed up the formation of ammonia while carbon monoxide slow down the formation of ammonia.

   (ii) Esterification takes place in the presence of dilute sulphuric acid.

9. Discuss the effect of increasing pressure on the extent of adsorption of gas on solid surface with the help of diagram. **[2]**

10. (i) What are associated colloids?

    (ii) Name the dispersed phase and dispersion medium of fog.

11. Give reason: **[3]**

    (i) KI added to $AgNO_3$ gives positively charged sol of AgI.

    (ii) NaCl added to $Fe(OH)_3$ sol results in the coagulation of sol.

    (iii) Deltas are formed when river meets sea.

12. Explain the following terms: **[3]**

    (i) Peptization

    (ii) Emulsification

    (iii) Electrophoresis

13. (i) What do you understand by shape-selective catalysis? **[3]**

    Give one example.

    (ii) What do you understand by activity and selectivity of catalyst?

14. (a) State the applications of adsorption in **[3]**

    (i) Creating high vacuum

    (ii) Froth floatation process

    (b) Define adsorption isobar.

15. (a) Write all the steps involved in the mechanism of modern theory of heterogeneous catalysis.

    (b) Define Kraft temperature.

    (c) What is collodion? **[3+1+1]**

