HISSAN CENTRAL EXAMINATION - 2080 (2024)

Class: XII **Subject: Chemistry** **Subject Code: 3021 D1**

F.M: 75 (11 Marks Obj+ 64 Marks Sub) **Time : 3hrs**

GROUP A

Multiple Choice Question **[11 × 1 = 11]**

Attempt all questions.

Rewrite the correct option in your answer sheet.

1. The normality of 1 % solution of Sulphuric acid is
   a. 0.1 N b. 0.2 N c. 1.0 N d. 1.5 N

2. Which of the following can act both as Bronsted acid and Bronsted base.
   a. OH^- b. NH_3 c. HCO_3^- d. Na_2CO_3

3. Instantaneous rate of reaction is increased by 8 folds when the concentration is doubled. The order of reaction is
   a. 1 b. 2 c. 3 d. 4

4. A system absorb 10 KJ of heat and does 6 KJ of work. The internal energy of the system
   a. Decreases by 4 KJ b. Increases by 4 KJ
   c. Increases by 14 KJ d. Decreases by 14 KJ

5. What is formed when H_2S is passed through of $CuSO_4$ solution acidified with HCl?
   a.$CuCl_2$ b. $CuHSO_4$ c. CuS d. Cu_2S

6. During the extraction mercury from cinnabar, pure mercury can be obtained by
   a. Treatment with HNO_3 b. Distillation in vacuum
   c. Solidifying d. Electrolytically

7. $A(C_3H_8O) \xrightarrow{[O],\ KMnO_4/H^+} C_3H_6O \xrightarrow{I_2/NaOH} CHI_3 + X$

   The compound A is
   a. Propan-l-Ol b. Propan-2-Ol
   c. Propanal d. Propanone

8. Possible isomeric amines by C_3H_9N is
   a. 3 b. 4 c. 5 d. 6

9. The number of tertiary (3°) carbon is 3,3,2-trimethylbutanol is
   a. One b. Two c. Three d. Four

10. Which of the following ether undergoes electrophilic substitution reaction?
    a. CH_3OCH_3 b. $C_2H_5OC_2H_5$
    c. $C_6H_5OCH_3$ d. $CH_3OC_2H_5$

11. The compound which gives acetaldehyde on ozonolysis is
    a. 1- butene b. 2- butene
    c. Ethene d. Propene

GROUP B

Short Answers Question **[8 × 5 = 40]**

12. Solubility of sparingly soluble salt can be determined from solubiltiy product value.
    a. Define solubiltiy product. [1]
    b. What is the effect of temperature on solubility product . [1]
    c. The solubility product of $Mg(OH)_2$ at 25°C is 1.4×10^{-11}. Calculate the solubility of $Mg(OH)_2$ at this temperature. [3]

    OR,

    a. Differentiate between equivalence point and end point of a reaction. [2]
    b. Why is titration between ammonium hydroxide and carbonic acid uncommon. [1]
    c. A sample of Na_2CO_3 weighing 0.54 gm is added to 100 cc of N/10 H_2SO_4 . Will the resulting solution be acidic, basic or neutral? [2]

13. Given $E^0\ Zn^{2+}$ / Zn = -0.76 V and $E^0\ Fe^{2+}$ / Fe = -0.44 V.
    a. Construct cell notation for a Galvonic cell indicating anode and cathode. [2]
    b. Write down correct cell reaction showing anodic and cathodic reaction. [2]

c. Calculate the emf of the cell. [1]

14. a. Elements of d-block in modern periodic table are considered as transition metals.
    i. Define transition metal. [1]
    ii. Why is zinc known as non-typical transition metal through it lies in d-block? [1]
  b. i. Write the chemical reaction occurred involved in roasting during extraction of zinc. [2]
    ii. What is meant by spelter zinc? [1]

15. Mercury is known as quick silver and generally used to make amalgams.
    a. What is meant by amalgam? [1]
    b. Write the chief ore of mercury giving its molecular formula. [1]
    c. Why is mercury known as quick silver? [1]
    d. What happens when treated with (i) ozone (ii) excess chlorine. [2]

16. Compound X reacts with acetone in presence of alkali to give crystalline colourless solid known as a sleeping inducing drug.

    a. Identify **X**giving proper reaction. [2]
    b. What happens when **X** is reacted with silver powder? [1]
    c. Write its preparation from acetone? [1]
    d. Convert X into methane. [1]

OR

Write down primary and secondary alcohol of each of $C_4H_{10}O$. Give Victor Mayer's test to distinguish them. [1+4]

17. When CO_2 is reacted with '**A**' in presence of dry ether and followed by hydrolysis, acetic acid is produced.
    a. Name the compound **'A'**. [1]
    b. How is ethanol prepared from (A). [1]
    c. What happens when acetic acid is treated with P_2O_5. [1]
    d. Why is acetic acid less acidic than chlorocetic acid? [2]

18. A list of compounds are given as follows;
    Aniline, Benzenediazonium chloride, Phenol, Benzene, Toulene
    From the above list of compounds, prepare a sequence of reaction chain using suitable chemical conditions and reagents. [5]

19. a. Write an unsymmetrical ether of C_3H_8O. [1]
    b. How would you prepare the unsymmetrical ether by using Williamson's synthesis. [1]
    c. What happens when the ether is reacted with excess HI? [1]
    d. Why are old sample of ether not subjected to distillation? [2]

GROUP C

Give long answers to the following questions. [3 × 8 = 24]

20. a. How do temperature concentration of reactant and catalyst affect rate of reaction? [3]
    b. Consider the reaction: $2NO + 2H_2 \rightarrow N_2 + 2H_2O$

Experiment	[NO] mol lit^{-1}	[H_2] mol lit^{-1}	Rate of reaction mol lit^{-1} S^{-1}
1	0.20	O.20	3.0×10^{-3}
2	0.40	0.20	1.2×10^{-2}
3	0.20	0.40	6.0×10^{-3}
4	0.60	0.20	2.7×10^{-2}

    i. Find the overall order of reaction. [3]
    ii. Calculate the value of rate constant with its unit. [1]
    iii. What is the initial rate of reaction when the concentration of H_2 and NO are 0.2 M and 0.5 M respectively. [1]

OR

First law of thermodynamics deals about the exchange of energy in universe.
    a. Give the statement of first law of thermodynamics and its mathematical deduction. [2]
    b. Mention any two limitations of this law. [2]

c. A system absorbs 300 J of heat. Calculate change in internal energy if work done by system is 700 J. [1]

d. Calculate ΔG^0 for the reaction [3]

$CO(g)+1/2\ O_2(g) \rightarrow CO_2(g)$

$\Delta H^0 = -282.84$ KJ mol^{-1}

ΔS^0 CO (g)= 213.8 J K^{-1} mol^{-1}

ΔS^0 CO_2 (g)= 197.9 J K^{-1} mol^{-1}

ΔS^0 O_2 (g) = 205 J $K^{-1}mol^{-1}$

21. a. How is chlorobenzene prepared from

(i) benzene (ii) benzenediazonium chloride [1+1]

b. Convert cholorobenzene into toluene. [2]

c. Separate 1°, 2° and 3° amines using Hoffmann's method. [4]

OR

Write the example of each of the following reactions. [8 × 1 = 8]

a. Aldol Condensation

b. Carbylamine test

c. Dehydrohalogenation Reaction

d. Gattermann-Koch Reaction

e. Hoffmann's Ammonolysis

f. Rosenmund Reduction

g. Hell-VolhardZelinsky

h. Claisen condensation

22. a. Depending on mode of polymerization, polymers are classified as addition and condensation polymers. Distinguish between addition and condensation polymer. [2]

b. What do you mean by antibiotics? Give an example of each broad spectrum and narrow spectrum antibiotics. [1+1]

c. Name the flow sheet diagram for the manufacture of cement. [2]

d. What are insecticides? Draw the structure of DDT. [2]

THE END