Sri Bhagawan Mahaveer Jain College, V.V. Puram

II PUC MOCK PAPER II

Chemistry

PART - A

I. **Answer all the questions**   **10 x 1 = 10**

1. What happens to red blood cells when placed in 1% NaCl solution?
2. State Henry's law.
3. Mention the SI unit of molar conductivity.
4. What is molecularity for the reaction $2HI \rightarrow H_2 + I_2$.
5. Above 1073K, which is the better reducing agent among C and CO for the extraction of iron from haematite?
6. Name the state of dispersed phase in gel.
7. Write the structure of $XeOF_4$
8. What are Freons?
9.

Toluene → Chromium complex → Benzaldehyde
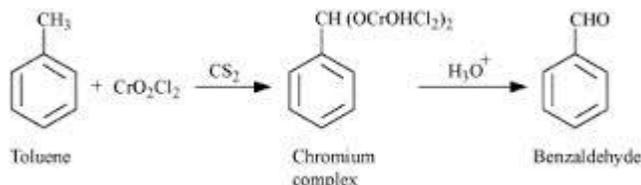
Name the reaction

10. Which enzyme catalyses hydrolysis of maltose?

PART –B

**II** **Answer any five of the following:**   **5 x 2 = 10**

11. What are ferromagnetic substances? Give one example.
12. Write the reactions that occur at anode and cathode in $H_2 –O_2$ fuel cell.
13. Calculate the half life period of a first order reaction if the rate constant of the reaction is 9.93×10^{-3} / second
14. Give reasons
    a) actinoids show variable oxidation state
    b) Zr and Hf have almost identical radii

15. What happens when secondary alcohols is passed over heated Cu at 573K ? Explain with an equation

16. Aldehydes are generally more reactive than ketones towards nucleophilic addition reaction Give reason

17. Give an example each for i) Tranquilizers   ii) Synthetic detergent

18. What are antimicrobials? Give an example.

PART C

III Answer any five of the following: **5 x 3 =15**

19. Explain the following methods of refining.
    a) Zone refining   b) Mond's process.

20. a) How is phosphine prepared in laboratory ?

    b) " Concentarated HNO_3 renders chromium and aluminium metal passive".Give reason.
       (2+1)

21. Complete the following reactions

    a) $2KClO_3 \rightarrow$

    b) $2SO_2(g)+ O_2(g)\rightarrow$

    c) $NO(g)+O_3(s)\rightarrow$ (1+1+1)

22. a) Complete the following equation

    $6NaOH+ 3Cl_2\rightarrow$ + $+ 3H_2O$

    b) Interhalogen compounds are more reactive than halogens. Why?   (2+1)

23. a) Explain the atomic radii variation of the 3d series metals.

    b) Second ionization enthalpy of copper is very high. Give reason.   (2+1)

24. a) Calculate the magnetic moment of Mn^{2+} ion.

    b) Write the general electronic configuration of transition elements.   (2+1)

25. Mention any three postulates of Werner's theory of co-ordination compounds.

26. a) What is co-ordination isomerism? Give an example.

    b) Write the IUPAC name of $[Pt(en)_2Cl_2]SO_4^{2-}$.   (2+1)

PART- D₄

IV Answer any three of the following: **3 x 5 = 15**

27. a) Calculate the number of particles per unit cell of BCC.

    b) An element having atomic mass 60g/mol has FCC unit cell. The edge length of unit cell
       is 400pm. Find the density $(Na=6.02\times10^{23}mol^{-1})$

    c) What are F-centers?   (2+2+1)

28. a) A solution of glycerol($C_3H_8O_3$) in water was prepared by dissolving glycerol in 500g of
       water. This solution has boiling point at 100.42^0C while pure water boils at 100^0C. What
       mass of glycerol was dissolved to make the solution?

    b) What is reverse osmosis? Mention any one of its use.   (3+2)

29. a) Calculate standard free energy change for the reaction

$Zn_{(s)}+2Ag_{(aq)}\leftrightarrow Zn^{2+}_{(aq)}+2Ag_{(s)}$; $E^0_{Cell}=1.56V$
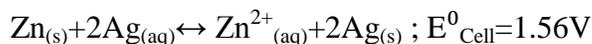
Given 1F=96500C/mol.

b) What is corrosion? Mention a method to prevent it. (3+2)

30. a) A reaction is of first order w.r.t reactant A and second order w.r.t to reactant B.

   i) Write differential rate equation.

   ii) How is the rate affected when the concentration of B alone is increased three times?

   iii) How is rate affected when the concentration of both A and B are doubled?

   b) Show that the half life period of zero order reaction is directly proportional to initial concentration. (3+2)

31. a) What is peptisation? Give an example.

   b) How is a metal sol prepared by Bredig's arc method?

   c) What is electrolysis? (2+2+1)

PART-D₅

V   Answer any four of the following: **4 x 5 = 20**

32. a) Give equation for the following conversion:

   i) chlorobenzene to phenol.

   ii) bromoethane to ethyl isocyanide.

   iii) ethene to vicinal-dibromoethane

   b) Explain Wurtz-Fitting reaction using suitable example. (3+2)

33. a) Explain the mechanism involved hydrolysis of ethene to prepare ethanol.

   b) Complete the following reaction: (3+2)

34. a) Give reasons:

   i) α-hydrogen atoms of aldehydes and ketones are acidic.

   ii) An electron donating group decreases the acidic strength of carboxylic acid.

   iii) Boiling point of aldehydes are lower than those of alcohols of similar molecular masses.

   b) Benzene reacts with carbon monoxide and dry HCl in the presence of anhydrous $AlCl_3$.
           i) Write the structure of the product.
       ii) Name the reaction. (3+2)

35. a) $CH_3COOH \xrightarrow[-H_2O]{NaOH} A \xrightarrow{B} CH_4 + C$ .Identify A,B,C.

   b) How is aniline prepared from nitrobenzene? (3+2)

36. a) Mention any two biological significance of DNA.

    b) How do you account for the presence of carbonyl group and straight chain of carbon atoms in glucose?

    c) Give an example for fibrous protein.   (2+2+1)

37. a) Write the structure of monomers of each of the following:

    i) Buna-N

    ii) Nylon-6,6

    iii) Natural rubber.

    b) What is biodegradable synthetic polymer? Give an example.   (3+2)

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