AMRITA VIDYALAYAM

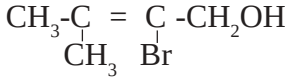
FIRST TERMINAL EXAMINATION 2018 -'19

Class : XII **Marks : 70**
Time : 3 hrs

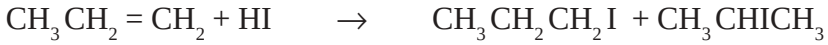
CHEMISTRY (043)

General Instructions:
1. All questions are compulsory.
2. Question No. 1 to 5 are very short answer questions of 1 mark each.
3. Question No. 6 to 10 are short answer questions of 2 marks each.
4. Question No. 11 to 22 are also short answer questions of 3 marks each.
5. Question No. 23 is a value based question carrying 4 marks.
6. Question No. 24 to 26 are long answer questions of 5 marks each.
7. Use log tables if necessary. Use of calculator is not allowed.

1. Which type of defect is shown by ZnS?
2. Why is ferric chloride preferred to potassium chloride in case of a cut leading to bleeding?
3. Write the IUPAC name of the organic compound.



4. What is Tollen's reagent?
5. Draw the structure of XeF_2.
6. Calculate the packing efficiency of a body centred cubic crystal.
7. Why are osmotic pressure measurements preferred over other colligative properties for determination of molecular masses of polymers?
8. Which of the products will be the major product in the reaction? Explain.

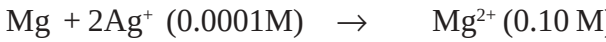


9. What are biodegradable polymers?
10. Define molar conductivity. Express the relationship between conductivity and molar conductivity of a cell.
11. Silver cyrstallises in fcc lattice. If the length of the cell is 4.07×10^{-8} cm and density is 10.5 g cm^{-3}, calculate the atomic mass of silver.

OR

Explain the following.
a) Ferromagnetism b) F-centres

12. State Henry's law and mention two applications for the law.
13. Describe the construction of H_2-O_2 fuel cell and the reactions taking place in it.
14. The following chemical reaction is occurring in an electrochemical cell.



The E^0 electrode values are Mg^{2+} / Mg = -2.36 V, Ag^+ / Ag = 0.81 V.
For this cell calculate
a) cell potential E_{cell}. b) symbolic representation of the cell.

15. A first order reaction takes 40 minutes for 30% decomposition. Calculate $t_{1/2}$.

OR

A reaction is first order in A and second order in B.
a) Write differential rate equation.
b) How is the rate affected on increasing the concentration of B three times?
c) How is the rate affected when concentration of both A and B is doubled?

16. Describe the following.
    a) Tyndal effect b) Shape selective catalysis c) Coagulation
17. What is the difference between multimolecular and macromolecular colloids? Give one example of each type. How are associated colloids different from the two types of colloids?
18. Describe how the following changes are brought about
    a) pig iron into steel. b) impure copper into pure copper. c) bauxite into pure alumina.
19. Arrange the following compounds of each set in order of reactivity towards SN_2 displacement.
    a) 2-Bromo-2-methyl butane, 1-Bromopentane, 2-Bromopentane
    b) 1-Bromo-3-methyl butane, 2-Bromo-2-methyl butane, 2-Bromo-3-methyl butane
    c) 1-Bromobutane, 1-Bromo-2, 2-dimethylpropane, 1-Bromo-2-methyl butane, 1-Bromo-3-methyl butane
20. Explain the following.
    a) RiemerTiemann reaction b) Kolbe's reaction
21. Draw the structures of monomers of the following polymers.
    a) Polythene b) PVC c) Teflon
22. a) Explain anionic detergents.
    b) Name one substance which acts as both
    (i) Analgesic and antipyretic. (ii) Antiseptic and disinfectant.
23. In home science lab Asha and Rohit want to prepare sweets for the home science teacher who is a diabetic. Both of them do not want to add sugar in sweets.
    a) As a chemistry student suggest an artificial sweetener.
    b) What values are associated with the above decision?
    c) Why Asha and Rohit did not want to add sugar in sweets?
24. a) Give a chemical test to distinguish between
    (i) isopropyl alcohol and n-propyl alcohol. (ii) Phenol and alcohol.
    b) How will you synthesise
    (i) 1-phenylethanol from a suitable alkene? (ii) propan-1-ol using asuitable alkyl halide?

    OR

    a) Explain the following observations.
    (i) The boiling point of ethanol is higher than that of methoxymethane.
    (ii) Phenol is more acidic than ethanol.
    (iii) o-and p- nitrophenols are more acidic than phenol.
    b) Write the mechanism of hydration of ethene to form ethanol.
25. a) Draw the structures of the following molecules.
    (i) $(HPO_3)_3$ (ii) BrF_3
    b) Complete the following equations.
    (i) $HgCl_2 + PH_3 \rightarrow$ (ii) $SO_3 + H_2SO_4 \rightarrow$ (iii) $XeF_2 + H_2O \rightarrow$

    OR

    a) What happens when
    (i) chlorine gas is passed through a hot concentrated solution of NaOH?
    (ii) sulphur dioxide gas is passed through an aqueous solution of a Fe (III) salt?
    b) (i) What is the basicity of H_3PO_3 and why?
    (ii) Why does fluorine not play the role of a central atom in interhalogen compounds?
    (iii) Why do noble gases have very low boiling points?
26. a) State the following.
    (i) Henry's law about the partial pressure of a gas in a mixture.
    (ii) Raoult's law in its general form in reference to solutions.
    b) Calculate the freezing point of an aqueous solution containing 10.5 g of $MgBr_2$ in 200 g of water.
    (Molar mass of water = 184 g k_f for water = 1.86 k Kg)

OR

a) Define osmosis and osmotic pressure. Is the osmotic pressure of a solution a colligative property? Explain.

b) Calculate the boiling point of a solution prepared by adding 15 g of NaCl to 250 g of water. (K_b for water =- 0.512 K Kg mol^{-1})