CLASS XII
SAMPLE PAPER
CHEMISTRY

TIME : 3Hrs   **MM - 70**

INSTRUCTIONS

1. ALL QUESTIONS ARE COMPULSORY.

2. There are 27 questions. However, internal choices are given.

Question no1 to 5 carry 1 mark each.

Question no 6 to 13 carry 2 marks each.

Question no 14 to 23 carry 3 marks each.

Question no 24 carries 4 marks.

Question no 25 to 27 carry 5 marks each.

1.What is called sorption ?   **[1]**

2. Write the IUPAC structure of the following compound .   **[1]**

2-Bromo-3-oxopentanoic acid

3. Chlorine has bleaching property.Explain.   **[1]**

4. Which aliphatic aldehyde will not respond to Iodoform test ?   **[1]**

5. Arrange the basicity of the following amines in increasing order :   **[1]**

CH_3NH_2 ,   (CH_3) $_2NH$ and $(CH_3)_3N$ (in aqueous solution)

6. a) Distinguish between physiosorption and chemisorptions (any two)   **[2]**

   b) How does chemisorption vary with temperature?(Write graphical representation.)

7. An element crystallizes in a structure having a fcc unit cell of an edge of 200 pm. Calculate its

   Density if 200 gm of this element contain 24×10^{23} atoms.   **[2]**

8. Write short notes on the following :   **[2]**

   a) Broad spectrum antibiotics ,   b) Antihistamines .

9. a) Distinguish between Frenkel and Schottky defect .   **[2]**

   b) What is called doping? How is it created?

10. Write short notes on :   **[2]**

   a) Swarts reaction ,

   b) Chirality .

   11. a) Out of the noble gases , Xenon form only stable compounds. Explain.   **[2]**

      b) Give the disproportionate reaction of H_3PO_3.

   12. a) Why is the melting point of p-dichlorobenzene higher than that of o-and m- isomers? [2]

      b) Why is a racemic mixture treated as an optically inactive compound ?

OR

i) Under drastic conditions haloarenes are substituted but in presence of electron withdrawing

group nuclephillic substitution become easier. Explain.   **[2]**

ii) Which out of the two halides can easily be substituted and why ?

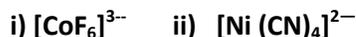$CH_3CH_2CH_2Cl$ and $CH_2 = CHCH_2Cl$

13. a) Distinguish between order and molecularity of a reaction.   **[2]**

b) What do you mean by the term orientation factor, P, with respect to collision theory ?

14. With the help of Valence Bond theory predict the shape , magnetic moment and hybridization

Of the following compounds :   **[3]**

i) $[CoF_6]^{3-}$ ii) $[Ni (CN)_4]^{2-}$

15.a) Although electron gain enthalpy of fluorine is less negative than chlorine , fluorine is the   **[3]**

stronger oxidizing agent than chlorine. Explain.

b) Account for the basicity of H_3PO_4 and H_3PO_2. Which one is stronger acid and why?

c) PCl_5 is covalent in the gaseous state but it is ionic in the solid state. Why?

16   For the reaction, 2 NO + Cl_2 ⟶ 2 NOCl , it is found that doubling the concentration

of both the reactants increases the rate by 8 times, but doubling the concentration of chlorine

alone , reaction rate increases by 2 times. What is the overall order of reaction?   **[3]**

17. a) What is the principle of zone refining ?   **[3]**

b) How would you prepare blister copper from copper matte?

c) What is meant by electrometallurgy?

18.a) Aldehydes are more reactive towards nucleophilic substitution reaction than ketone. Explain. **[3]**

b) Write a short note on Wolff- Kishner reduction.

c) Carboxylic acid is a stronger acid than phenol. Explain.

19. Distinguish between: **[3]**

i) a) 1° and 2^0 smine .

   b) Aniline and ethylamine .

ii) Acetylation of aniline is required to get p-bromoaniline from aniline. Explain.

20. a) Why is vulcanization of rubber required ?   **[3]**

b) What is Buna-N ?   Write its uses.

c)What is the difference between thermoplastic and thermosetting polymers ?

21. a) Write the mechanism of the following reaction :   **[3]**

$$CH_3---- O --- CH_2CH_3 + HI \longrightarrow CH_3CH_2I + CH_3I + H_2O$$

b) What is the function of $ZnCl_2$ in Lucus test ?

22. How would you carry out the following conversions :-   **[3]**

a) Phenol to anisole.

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b) 1° alcohol to 2° alcohol .

c) Benzaldehyde to benzophenone.

23. Write short notes on :   [3]

   a) HVZ reaction.

   b) Cannizaro reaction ,

   c(Aldol condensation.

24. Malnutrition is a serious concern to school going children .It is very much required to conduct

   awareness programme in different schools. Suggest some steps to minimize this malnutrition.]4]

25. a) The conductivity of 0.001028 mol/lt acetic acid is 4.95×10^{-5} S cm^{-1}. Calculate its dissociation

   constant if Λ^0_m for acetic acid is 390.5 S cm^2 mol^{-1} .   [5]

   b) Calculate the potential of hydrogen electrode in connect with a solution whose pH is 10.

OR

   i) What is the value of K_C for the following reaction at 25^oC?   [5]

   $Cu^{+2} + Sn^{+2}$ ———→ Sn^{+4} + Cu

 $E^0_{Cu^{+2}/Cu}$ = 0.34 volt , $E^0_{Sn+4/Sn+2}$ = 0.15 volt.

   ii) What are the advantages of using a fuel cell ?

26. a) The trend of $E_M{}^{+2}/_M$ value for the first transition series are irregular. Explain.

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b) Lanthanides show a limited range of oxidation states but actinides show a wide variety of

   oxidation states. Explain.

c) Elements of first 3d, 4d and 5d series exhibit complex compounds. Account for this.

d) How would you prepare $K_2Cr_2O_7$ from chromate ore?

OR

i) Balance the equations :

   a) $Cr_2O_7^{2-}$ + SO_3^{2-} ⟶ (acid medium)

   b) MnO_4^- + H_2S ⟶ (neutral medium)
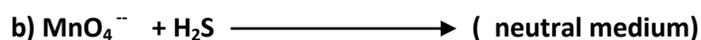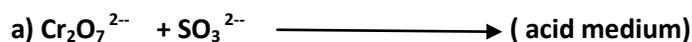
ii) Most of the tri-positive ions of lanthanoids are coloured. Explain.

iii) Melting point of Mn is too low though it has d^5 unpaired electrons . Explain.

iv) Nature of oxides of first 3d series vary .Explain.

27. i) What are meant by positive and negative deviation from Raul's law ? Explain with graph. [5]

   ii) 100 gm liquid A (molar mass 140) is dissolved in 1000 gm of liquid B (molar mass 180). The

   vapour pressure of pure liquid B is found to be 500 torr.calculate the vapour pressure of

   pure liquid A and its vapour pressure pressure in the solution if the total vapour pressure

of the solution is 473 torr.

OR

Complete the following equations : [5]

  i) $XeF_4 + H_2O$ $\longrightarrow$

  ii) $AgNO_3 + H_2O + H_3PO_2$ $\longrightarrow$

  iii) $P_4 + SOCl_2$ $\longrightarrow$

  iv) Write a short note on brown ring test with equation.