

<b>HALF YEARLY EXAMINATION - 2024</b>	<b>12 - STD</b>	
<b>CHEMISTRY</b>	Marks <b>70</b>	Time <b>3.00 Hrs.</b>

**PART - I****I. Choose the correct answer.**

15 × 1 = 15

- Which of the following is used for concentrating ore in metallurgy?  
a) Leaching      b) Roasting      c) Froth floatation      d) Both (a) and (c)
- The stability of +1 oxidation state increase in the sequence  
a)  $Al < Ga < In < Tl$     b)  $Tl < In < Ga < Al$     c)  $In < Tl < Ga < Al$     d)  $Ga < In < Al < Tl$
- The basicity of pyrophosphorous acid ( $H_4P_2O_5$ ) is  
a) 4      b) 2      c) 3      d) 5
- Permanganate ion changes to ..... in acidic medium.  
a)  $MnO_4^{2-}$       b)  $Mn^{2+}$       c)  $Mn^{3+}$       d)  $MnO_2$
- In  $K_4 [ Fe (CN)_6 ]$ , the co-ordination number of  $Fe^{2+}$  is .....  
a) 4      b) 2      c) 3      d) 6
- Solid  $CO_2$  is an example of  
a) Covalent solid    b) metallic solid    c) molecular solid    d) ionic solid
- The addition of a catalyst during a chemical reaction alters which of the following quantities?  
a) Enthalpy      b) Activation energy    c) Entropy      d) Internal energy
- The pH of  $10^{-5}$  M KOH solution will be  
a) 9      b) 5      c) 19      d) none of these
- During the electrolysis of molten sodium chloride, the time required to produce 0.1 mol of chlorine gas using a current of 3A.  
a) 55 minutes    b) 107.2 minutes    c) 220 minutes    d) 330 minutes
- Which one of the following is correctly matched?  
a) Emulsion - smoke    b) Gel - butter    c) foam - mist    d) whipped cream - sol.
- Which of the following compound can be used as antifreeze in automobile radiators?  
a) methanol    b) Ethanol    c) Neopentyl alcohol    d) ethan-1,2-diol
- Assertion : 2, 2-dimethyl propanoic acid does not give HVZ reaction.  
Reason : 2, 2-dimethyl propanoic acid does not have  $\alpha$  - hydrogen atom.  
a) if both assertion and reason are true and reason is the correct explanation of assertion.  
b) if both assertion and reason are true but reason is not the correct explanation of assertion  
c) assertion is true but reason is false  
d) both assertion and reason are false
- The order of basic strength for methyl substituted amines in aqueous solution is  
a)  $N(CH_3) > N(CH_3)_2 > N(CH_3)_3 > NH_3$     b)  $N(CH_3)_2 > N(CH_3)_3 > N(CH_3) > NH_3$   
c)  $NH_3 > N(CH_3)_2 > N(CH_3)_3 > NH_3$     d)  $N(CH_3)_2 > N(CH_3)_3 > N(CH_3) > N(CH_3)_3$
- Complete hydrolysis of cellulose gives  
a) L - glucose    b) D - Fructose    c) D - Ribose    d) D - glucose
- Nylon is an example of  
a) polyamide    b) polythene    c) polyester    d) poly saccharide

**II. Answer any six questions. Q.No. 24 is compulsory.**

6 × 2 = 12

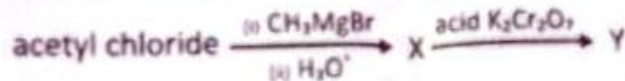
- Give the limitation of Ellingham diagram.
- What are the properties of inter halogen compounds?
- Aniline does not undergo Friedel - Crafts reaction. Why?
- Why ionic crystals are hard and brittle?
- Write Arrhenius equation and explain the terms involved.

21. State Kohlrausch law.
22. What is Tyndall effect?
23. What is urotropine? Give its use.
24. Draw the structure of D (+) glucose.

III. Answer any six question. Q.No. 33 is compulsory.

6 x 3 = 18

25. What are differences between minerals and ores?
26. Give the uses of silicones.
27. Give the differences between double salts and coordination compounds.
28. Explain pseudo first order reaction with an example.
29. Write a note on Frenkel defect.
30. What will be the product ( X and Y) for the following reactions?



31. Explain Aldol condensation reaction.
32. Write a note on vulcanisation of rubber.
33. Calculate the pH of 0.1 M  $\text{CH}_3\text{COOH}$  solution. (Dissociation constant of acetic acid is  $1.8 \times 10^{-5}$  M)

5 x 5 = 25

IV. Answer all the questions.

34. a) i) Explain zone refining process with an example. (3)  
ii) What is inert pair effect? (2)  
(OR)  
b) i) Write a short note on anomalous properties of the first element of p-block. (2)  
ii) What is lanthanide contraction? What are the effects of lanthanide contraction? (3)
35. a) Write the postulates of werner's theory. (5)  
(OR)  
b) i) Calculate the number of atoms in a BCC unit cell. (2)  
ii) What are the molecular solids? Give examples. (3)
36. a)  $\text{A} \rightarrow \text{product}$ , Derive integrated representation of first order reaction. (5)  
(OR)  
b) Derive an expression for oswald's dilution law. (5)
37. a) i) Write a note on sacrificial protection. (2)  
ii) Differentiate physisorption and chemisorption. (3)  
(OR)  
b) Write note on  
i) Cannizaro reaction (2½) ii) Gomerberg reaction (2½)
38. a) Elucidate the structure of glucose. (5)  
(OR)  
b) How will you distinguish between primary, secondary and tertiary aliphatic amines. (5)