HTJ

HALF YEARLY EXAMINATION - 2022
CHEMISTRY

12- Std

Time : 3.00 Hrss

Marks : 70

PART - I

15 X 1 = 15

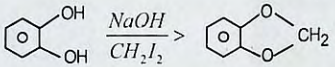
Answer all the questions.

1. Extraction of gold and silver involves leaching with cyanide ion silver is later recovered by
   a) Distillation b) zone refining
   c) Displacement with zinc d) liquation

2. The magnetic moment of Mn^{2+} ion is
   a) 5.92BM b) 2.80BM c) 8.95BM d) 3.90BM

3. CsCl has bcc arrangement, its unit cell edge length is 400pm, its inter atomic distance is
   a) 400 pm b) 800pm c) $\sqrt{3}\ X\ 100\ pm$ d) $\left(\frac{\sqrt{3}}{2}\right) X\ 400\ pm$

4. How many faradays of electricity are required for the following reaction to occur MnO_4^- ----> Mn^{2+}
   a) 3F b) 5F c) 7F d) 1F

5. The reaction  is an example of
   a) cyclic reaction b) Wurtz reaction
   c) Williamson reaction d) Kolbe reaction

6. $C_6H_5N_2 \xrightarrow{Fe/HCl} A \xrightarrow[273K]{NaNO_2/HCl} B \xrightarrow[283K]{H_2O} C$. 'C' is
   a) C_6H_5OH b) C_6H_5 - CH_2OH c) C_6H_5 - CHO d) $C_6H_5NH_2$

7. Which one of the following is a bio - degradable polymer?
   a)Nylon - 6 b) PHBV c) PVC d) HDPE

8. Vitamin B_2 is also known as
   a) Riboflavin b) Thiamine c) Nicotinamide d) Pyridoxine

9. Which one of the following is not correctly matched?
   a) Emulsion - smoke
   b) Gel - Butter
   c) Foam - Froth
   d) Paints - Sol

10. In which of the following reactions new carbon - carbon bond is not formed?
    a) Aldol condensation b) Friedel Craft reaction
    c) Kolbe's reaction d) Wolf Kishner reduction

11. The pH of an aqueous solution in zero. The solution is
    a) neutral b) slightly acidic c) strongly acidic d) basic

12. I a first order reaction x --> y if K is the rate constant and the initial concentration of the reactant x is 0.1M, then the half life is
    a) $\left(\frac{\log 2}{K}\right)$ n) $\frac{0.693}{(0.1)K}$ c) $\left(\frac{ln_2}{K}\right)$ d) None of these

13. Crystal field stabilization energy for high spin d^5 octahedral complex is
a) $-0.6\Delta_o$ b) O c) $2(p - \Delta_o)$ d) $2(p + \Delta_o)$

14. The geometery at which carbon atom in diamond are bonded to each other is
a) Tetrahedral b) hexagonal c) octahedral d) Trigonal bi pyramidal

15. An element belongs to group 15 and period 2 of the periodic table, its electronic configuration would be
a) $1s^2 2s^2 2p^4$ b) $1s^2 2s^2 2p^3$ c) $1s^2 2s^2 2p^6 3s^2 3p^2$ d) $1s^2 2s^2 2p^6 3s^2 3p^3$

PART - II

Note : Answer any six quetions. Questions No. 24 is compulsory. 6 x 2 = 12

16. What are the various steps involved in the extraction of pure metals from their ores?
17. What are the conditions are necessary for catenation?
18. What are the limitations of VB theory?
19. Give two example for zero order reaction.
20. What is buffer solution? Write the types of buffer solution with example.
21. What is electro osmosis?
22. Write the tests to differentiate alcohol and phenol.
23. Differentiate between thermoplastic and thermosetting plastic.
24. Write shorts notes on Transesterification reaction.

PART - III

Note : Answer any six questions. Question No. 33 is compulsory. 6 x 3 = 18

25. Give the structure of CO and CO_2 .
26. Transition metals show high melting points. Why?
27. Define Hume - Rothery rule.
28. Explain Schottky defect.
29. Discuss the Lowry - Bronted concept of acids and bases.
30. Explain Kolbe's reaction.
31. Write Thorpe nitrile condensation reaction.
32. What is anti oxidents reactions? Give an example.
33. Write the structure of α - D (+) glucophyranose.

PART - IV

Note : Answer all the questions. 5 x 5 = 25

34. a) i) What are the differences between minerals and ores? (2) ii) Give the uses of helium.(3)
(OR) b) i) What are the effect of lanthanoid contraction.
ii) Complete the following reaction.
$P_4 + NaOH + H_2O$ ---> ?

35. a) Write the postulates of Werner's theory. (5) ***(OR)***
b) i) Draw the structure of fcc. Calculate the number of atoms in a fcc unit cell (2).
(ii) Write Arrhenius equation and explains the terms involved. (3)

36. a) Drive an expression for Nernst equation. ***(OR)***
b) Explai inter mediate compound formation theory of Catalysis with an example.

37. a) Explain the mechanism of Cannizaro reaction. ***(OR)***
b) How will you distinguish between primary, secondary ad tertiary aliphatic amines.

38. a) Write the difference between DNA and RNA. ***(OR)***
b) Write shorts notes of Auto oxidation of ethers. (3)
(ii) Write two sweetening agent are used to prepare sweets for a diabetic patient. (2)