# HALF YEARLY EXAMINATION - 2022

**12** - Std
Time : 3.00 hrs.

## CHEMISTRY

231/1

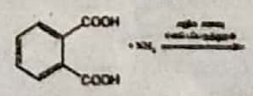
Marks : 70

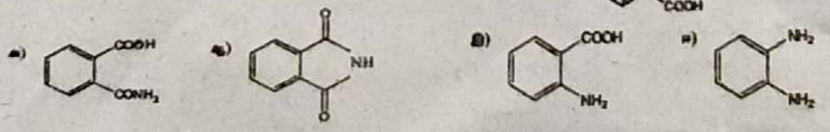
### SECTION – I

**Note: 1) Answer all the questions.** 15 X 1 = 15

**2) Choose the most suitable answer from the given four alternatives and write the option code and the corresponding answer.**

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 element that does not show catenation among the following p – block element is
   a) Carbon b) Silicon c) Lead d) Germanium
3. The metal used to prevent rusting of Iron and steel is
   a) Au b) Zn c) Ag d) All of these
4. The transition element which has only +3 oxidation state is
   a) Ni b) Mn c) Cr d) Sc
5. IUPAC name of the complex $K_3[Al(C_2O_4)_3]$
   a) potassiumtrioxalatoaluminium(III) b) potassiumtrioxalatoaluminate(II)
   c) potassiumtrisoxalatoaluminate(III) d) potassiumtrioxalatoaluminate(III)
6. In a solid atom M occupies ccp lattice and $\left(\frac{1}{3}\right)$ of tetrahedral voids are occupies by atom N. find the formula of solid formed by M and N.
   a) MN b) $M_3N$ c) $MN_3$ d) $M3N_2$
7. If 50% of a first order reaction is completed in 60 minutes, 75% of the same reaction would complete in
   a) 90 min b) 30 min c) 120 min d) 180 min
8. Which of the following flouro – compounds is most likely to behave as a Lewis base?
   a) $BF_3$ b) $PF_3$ c) $CF_4$ d) $SiF_4$
9. How many faradays of electricity are required for the following reaction to occur
   $MnO_4 \rightarrow Mn^{2+}$ a) 5F b) 3 F c) IF d) 7F
10. On which of the following properties does the coagulating power of an ion depend?
    a) Both magnitude and sign of the charge on the ion. b) size of the ion alone
    c) the magnitude of the charge on the ion alone
    d) the sign of charge on the ion alone.
11. Assertion : Phenol is more acidic than ethanol.
    Reason : Phenoxide ion is resonance stabilized
    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
12. But-2-ene on ozonolysis followed by subsequent cleavage with zinc and water gives
    a) ethanal b) propanal c) propanone d) methanal
13. The major product of the following reaction





14. In a protein, various amino acids liked together by
a) Peptide bond b) Dative bond c) α – Glycosidic bond d) β – Glycosidic bond

15. Which is the monomer of neoprene in the following? a) $CH_2-C(Cl)-CH=CH_2$

b) $CH_2$=CH-=CH c) $CH_2$ = CH - CH = $CH_2$ d) $CH_2=C(CH_3)-CH=CH_2$

## SECTION – II

**Answer any six questions and question number 23 is compulsory.** 6 X 2 = 12

16. Using Elingham diagram predict the conditions under which Magnesium could reduce alumina.
17. Why do d – block elements forms complexes?
18. $[Ti(H_2O)_6]^{3+}$ is coloured, while $[Sc(H_2O)_6]^{3+}$ is colourless – explain.
19. Atoms X and Y form bcc crystalline structure. Atom X is present at the corners of the cube and Y is at the centre of the cube. What is the formula of the compound?
20. State Kohlraush's law.
21. Peptising agent is added to convert precipitate into colloidal solution. Explain with an example.
22. How will you convert glycerol into acrolein?
23. Write short notes on Gomberg reaction.
24. Give the differences between primary and secondary structures of proteins.

## SECTION – III

**Answer any six questions and question number 29 is compulsory.** 6 x 3 = 18

25. What is catenation? Describe briefly the catenation property of carbon.
26. Which is more stable? Fe3+ or Fe2+ - explain.
27. What are the limitations of VB theory?
28. What is an elementary reaction? Give the differences between order and molecularity of a reaction.
29. Can Fe3+ oxidises Bromide to bromine under standar conditions? Given $E^o Fe_{3+}|Fe_{2+}$ = 0.771V
Eo $Br_2|Br^-$ = 1.09 V.
30. Write a note on ultrafilteration.
31. How will you distinquish primary, secondary and tertiary alcohol by victor meyer's method?
32. Identify A,B and C ethanoic acid $\xrightarrow{SOCl_2}$ A $\xrightarrow{Pd/BaSO_4}$ B dil NaOHC
33. What are bio degradable polymers? Give examples

## SECTION – D

5 x 5 = 25

**Answer all the questions.**

34. A) (i) What are the differences between minerals and ores? (2)
(ii) Describe a method for refining nickel. (3) (OR)
B) (i) Write a note on Fisher tropsch synthesis. (2)
(ii) Write a short note on hydroboration. (3)

35. A) (i) Give the uses of helium (2) (ii) Give the balanced equation for the reaction between chlorine with cold NaOH and hot NaOH. (3) (OR)
B) Based on VB theory explain why $[Cr(NH_3)_6]^{3+}$ is paramagnetic, while $[Ni(CN)_4]^{2-}$ is diamagnetic. (5)

36. A) Explain Schottky and Frenkel defect (5) (OR)
B) (i) What is common ion effect? (2) (ii) Derive an expression for Ostwald's dilution law. (3)

37. A) (i) Why does conductivity of a solution decreases on dilution of the solution? (2) (ii) Derive an expression for Nernst equation. (3) (OR)
B) (i) Give any two differences between a sol and a gel. (2)
(ii) Describe adsorption theory of catalysis. (3)

38. A) Distinquish between primary, secondary and tertiary amines (any 5 differences)(5)
(OR) B) (i) How do antiseptics differ from disinfectant? (2)
(ii) Write a short notes on peptide bond. (3)