12th Standard

CHEMISTRY

HALF YEARLY
EXAM-2023

Various District
Question Paper Collection

HMD
12 - Std
Time : 3.00 hrs.

HALF YEARLY EXAMINATION - 2022
CHEMISTRY

Marks : 70

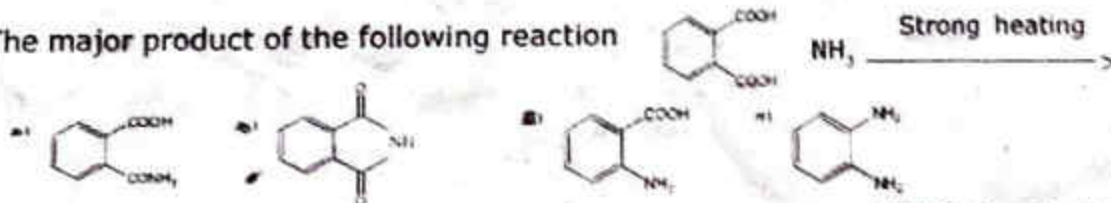## SECTION – I

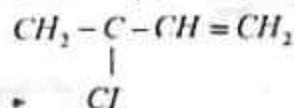**Note: 1) Answer all the questions.**   15 X 1 = 15

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) potassium trioxalato aluminium(III)   b) potassium trioxalato aluminate(II)
   c) potassium trisoxalato aluminate(III)   d) potassium trioxalato aluminate(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
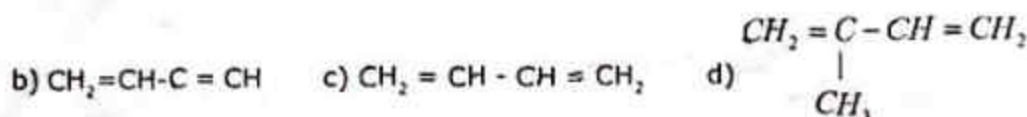   a) ethanal   b) propanal   c) propanone   d) methanal

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)

$$CH_2 - \underset{\underset{Cl}{|}}{C} - CH = CH_2$$

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

$$CH_2 = \underset{\underset{CH_3}{|}}{C} - CH = CH_2$$

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? Fe^{3+} or Fe^{2+} - 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 Fe^{3+} oxidises Bromide to bromine under standar conditions? Given
    $E^{\circ}_{Fe_3 \cdot Fe_{2+}} = 0.771V$, $E^{\circ}_{Br_2|Br^-} = 1.09V$.
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 NaOH   C
33. What are bio degradable polymers? Give examples

SECTION – IV

Answer all the questions.   5 x 5 = 25

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) Distinguish 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)

HMD 12 - வேதியியல் (EM) பக்கம் - 2

HALF YEARLY COMMON EXAMINATION - 2022

12 - Std   CHEMISTRY   Reg No [ ][ ][ ][ ][ ][ ]

Time - 3.00   Marks : 70

I   **Choose the correct answer.**   15X 1 = 15

1. Which of the metal is extracted by Hall - Haroult Process?
    a) Al   b) Ni   c) Cu   d) Zn

2. Which of the following is not sp^2 hybridsed
    a) Graphite   b) graphene   c) Fullerenc   d) Dryice

3. Match

oxoacids of phosphorous	oxidation number of phosphorous
a) Ortho phosphorous acid	i) +4
b) Hypo phosphoric acid	ii) +5
c) Hypo phosphorous acid	ii) +3
d) Pyro phosphoric acid	iii) +1

	A	B	C	D
a)	(iii)	(iv)	(i)	(ii)
b)	(iii)	(i)	(iv)	(ii)
c)	(iv)	(iii)	(i)	(ii)
d)	(iii)	(ii)	(iv)	(i)

4. **Assertion :** Ce^{4+} is used as an oxidizing agen in volumetric analysis
    Reason : Ce^{4+} has the tendency of attaining +3 oxidation state
    a) Both assertion and reason are true and reason is the correct explanation of assertion.
    b) Both assertion and reason are true but reason is not the correct explanation of assortions
    c) Assortion is true but roason is false   d) Both assertion and reason are false

5. A magnetic moment of 1.73 BM will be Shown by one among the following
    a) $Ticl_4$ b) $[CoCl_6]^{4-}$ c) $[Cu(NH_3)_4]^{2+}$ d) $[Ni(CN)_4]^{2-}$

6. The Vaccant space in fcc lattice unit cell is
    a) 48%   b) 23%   d)32%   d) 26%

7. The rate constant of reaction is $5.8 \times 10^{-2} S^{-1}$ the order of reaction is
    a) First order   b) Zero order   c) Second order   d) Third order

8. P^H value of 0.01M HCl solution   a)10   b) 1   c) 12   d) 2

9. Laptops have
    a) Lead storage battery   b) Fuel cell   c) Mercury button cell   d) Lithium-ion battery

10. Fog is colloidal solution of
    a) Liquid in gas   b) solid in gas   c) gas in liquid   d) gas in gas

11. On reacting with neutral ferric chloride, Phenol gives
    a) red colour   b) violet colour   . d) dark green colour   d) no colouration

12. Which one of the following undergoes cannizaro reaction
    (i) $CH_3 CHO$ (ii) $H CHO$ (iii) CCl_3CHO (iv) C_6H_5CHO
    a) (i) & (ii)   b) (ii) & (iv) c) (ii) (iii) & (iv)   d) All the above

13. Which of the following reagent can be used to convert nitrobenzene to aniline
    a) Sn/Hcl   b) Zn-Hg/NaOH   c) Zn/NH_4cl   d) All the above

14. If one strand of the DNA has the sequence 'ATGCTTGA' Then the sequence of complementary strand would be:
    a) TACGRAGT   b) TACGAACT   d) TCCGAACT   d) TACGTAC.

12th - Chemistry -Nmk- Page-1

15. The Medicinal value of a drug is measured in terms of its
    a) Deoxy ribose   b) Gold number   c) Therapatic   d) Eqlilibrium constant

II   Answer any 6 Questions.
Question Number 24 is compulsory   6x2 = 12

16. Write the difference between minerals and ores. ..
17. Give the uses of Borax
18. What are interhalogen Compounds? given any two examples
19. Define rate Law and rate constant
20. Frenkal defect - Define
21. What is electro phorosis? .
22. Write the acrolein preparation
23. What is harmone? Given example
24. Why is AC current used instead of DC in measuring the electrolytic conduction?

III   Answer any 6 Questions.
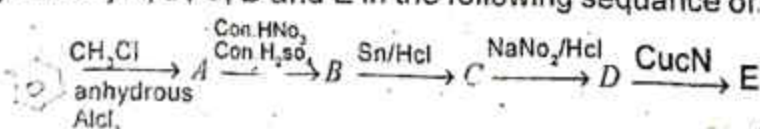**Question Number 33 is compulsory**   6x3 = 18

25. Explain Froath - Floation method
26. How will you identify borate redical?
27. Write the following for the complex $[Pt (No_2) (H_2O) (NH_3)_2]$ Br
    1) Central metal iorn 2) ligands 3) oxidation number 4) Co-ordination entity
    5) Co-ordination number 6) IUPAC Name
28. Derive integrated rate law for first order reaction?
29. Explain common iorn effect? Given example
30. Write a short notes on kinetic property of colloids
31. Give three difference between DNA and RNA
32. Explain the reducing property of formic acid
33. Write the two isoners with the formula $CH_5 NO_2$ How will you distinguish between them?

IV   Answer all the following   5x5 = 25

34. a) (i) Explain the Mond's process of refining nickel   (2mark)
       (ii) Write the uses of silicones **(or)**   (3mark)
    b) (i) Write the difference between lanthanoids and actinoids   (3mark)
       (ii) Sulphuric acid is best dehydrating agent prove that
35. a) (i) Write the postulates of werner's theory **(or)**   (5mark)
    b) (i) What is unit cell   (2mark)
       (ii) barium has a body centered cubic unit cell with a length of 508pm along   (3mark)
    edge. what is density of barium in g cm^{-3}?
36. a) (i) Derive an expression for ostwald's dilution law   (3mark)
       (ii) Diffentiate homegeneous catalyst and heterogeneous catalyst (or)   (2mark)
    b) (i) Write a short note on sacrificial protection   (3mark)
       (ii) Explain mercury - button storage battery   (2mark)
37. a) (i) Write short note on: a)Gabrial phthalimide Synethesis b) coupling reaction
    c) carbylamine reaction   (3mark)
       (ii) Differentiate primary, secondary and tertiary amine (any four points) (or)   (2mark)
    b) (i) How will you prepare nylon 6,6 and dacron   (3mark)
       (ii) Structure of glucose   (2mark)
38. a) (i) What are food preservatives?   (2mark)
       (ii) Write short notes on cleansing action of Soap **(or)**   (3mark)
    b) Identify A, B, C, D and E in the following sequance of reactions

$$\text{CH}_3\text{Cl} \xrightarrow[\text{anhydrous AlCl}_3]{} A \xrightarrow[\text{Con H}_2\text{so}_4]{\text{Con.HNo}_3} B \xrightarrow{\text{Sn/Hcl}} C \xrightarrow{\text{NaNo}_2\text{/Hcl}} D \xrightarrow{\text{CucN}} E$$

12th - **Chemistry** -Nmk- Page-2

TENKASI

Ts12C Tenkasi District Common Examinations
Common Half Yearly Examination - December 2022

OOOOO

Standard - 12
CHEMISTRY
PART - I

Time Allowed: 3.00 Hours

Maximum Marks: 70

15×1=15

I Answer all the questions.
Choose the most suitable answer from the given four alternatives:

1. Cupellation is a process used for the refining of
   a) Silver   b) Lead   c) Copper   d) Iron
2. Which of the following is used as moderator in nuclear reactors?
   a) $_6C^{14}$ b) $_7N^{15}$ c) $_5B^{10}$ d) $_8O^{16}$
3. Structure of $XeOF_4$
   a) linear   b) square planar
   c) square pyramidal   d) pyramidal
4. Colour of UO_2^{2+} ion is
   a) Red   b) Green   c) Yellow   d) Blue
5. What is the oxidation state of Fe in $[FeF_6]^{4-}$
   a) +4   b) +3   c) +2   d) 0
6. The ratio of close packed atoms to tetrahedral hole in cubic packing is
   a) 1:1   b) 1:2   c) 2:1   d) 1:4
7. After 2 hours a radioactive element becomes (1/16) of original amount then the half life is
   a) 60 min   b) 120 min   c) 30 min   d) 15 min
8. pH of seawater is
   a) 12   b) 8   c) 9   d) 2
9. Which of the following metal is used as sacrificial anode?
   a) Ni   b) Fe   c) Ti   d) Mg
10. Fog is colloidal solution of
    a) solid in gas   b) gas in gas   c) liquid in gas   d) gas in liquid
11. $HO - CH_2 - CH_2 - OH$ on heating with periodic acid gives
    a) Methanoic acid b) Glyoxal   c) Methanal   d) CO_2
12. Which of the following is used in the manufacture of thermosoftening plastic Perspex?
    a) Acetaldehyde   b) Acetone   c) Formaldehyde d) Propanone
13. Which one of the following is known as oil of mirbane?
    a) Benzene   b) Nitro benzene   c) Toluene   d) Nitro aniline
14. Nucleoside + Phosphate → ?
    a) Deoxy ribose sugar   b) Nucleotide
    c) Nucleic acid   d) Furanose
15. Which one of the following is Antihistamines?
    a) Cetirizine   b) Ranitidine   c) Isoflurane   d) Ampicillin

PART - II
II Answer any six questions. Question Number 20 is compulsory.   6×2=12

16. Give the limitations of Ellingam diagram.
17. What are interhalogen compounds? Give examples.
18. What is Zeiglar-Natta Catalyst? Write the chemical reaction where it is used.
19. What are elementary reactions? Give the differences between order and molecularity of a reaction.
20. Calculate the extent of hydrolysis and the pH of 0.1 M ammonium acetate. Given that $K_a = K_b = 1.8 \times 10^{-5}$.
21. State kohlraush law.
22. What is Electro osmosis?
23. Explain the kolbe's reaction.
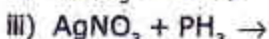24. Differentiate thermoplastic and thermosetting plastic.

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PART - III

III Answer any six questions. Question Number 31 is compulsory. 6×3=18

25. Explain the principle of electrolytic refining with an example.
26. Complete the following reaction.
    i) $XeF_6 + H_2O \rightarrow$
    ii) $KClO_3 \xrightarrow{\Delta}$
    iii) $AgNO_3 + PH_3 \rightarrow$
27. Explain why Cr^{2+} is strongly reducing, while Mn^{3+} is strongly oxidizing?
28. Draw the figure to show the splitting of d-orbitals in an octahedral Crystal field.
29. Distinguish hexagonal close packing and cubic close packing.
30. Explain the common ion effect with an example.
31. A copper electrode is dipped in 0.1m Copper Sulphate solution at 25°C. Calculate the electrode potential of copper. [Given : $E^\circ Cu^{2+}/Cu = 0.34V$].
32. How will you prepare the following.
    i) Benzaldehyde $\rightarrow$ Cinnamic acid
    ii) Benzaldehyde $\rightarrow$ benzal aniline
    iii) Benzaldehyde $\rightarrow$ Malachite green dye
33. Explain the peptide linkage.

SIVAKUMAR M.
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Vallam-627889
Tenkasi Dist.

PART - IV

Answer all the questions. 5×5=25

34. a) How the gold ore is concentrated by cyanide Leaching? (2)
    b) Give the uses of silicones. (3)

(OR)

    c) How Cl_2 is prepared in the laboratorty? (2)
    d) Write the reason for the anamolous behaviour of Nitrogen. (3)
35. a) Differentiate Lanthanoids and actinoids.
    b) Explain chromyl chloride test.

(OR)

    c) An element has bcc structure with the cell edge of 288pm. The density of the element is 7.2 gcm⁻³. How many atoms are present in 208g of the element? (3)
    d) Write the following of the complex $[Cr(PPh_3)(CO)_5]$ central metal atom, ligand, co-ordination number and IUPAC name.
36. a) Write short notes on Mercury button cell. (3)
    b) Write a note on Sacrificial protection. (2)

(OR)

    c) Distinguish between chemical and Physical absorption. (3)
    d) Give any 2 uses of emulsion. (2)
37. a) Explain how to differentiate ethanol, propan-2-ol, 2-methyl, propan-2-ol by Victor-meyer's test. (3)
    b) Explain Swern oxidation. (2)

(OR)

    c) How will you prepare primary amine by Gabriel phthalimide synthesis. (2)
    d) Complete the following reactions:
       i) $C_6H_5NO_2 \xrightarrow{Sn/Hcl}$?
       ii) $C_6H_5NO_2 \xrightarrow{Zn/Hcl}$?
       iii) $C_6H_5NO_2 \xrightarrow{Zn/NaOH}$?
38. a) Explain the Mechanism of Aldol condensation reaction. (3)
    b) Give any 2 test to identify the aldehydes. (2)

(OR)

    c) Write a note on denaturation of proteins. (3)
    d) What are hormones? Give examples. (2)

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Register Number | 1 | 2 | 0 | 0 | 7 | |

Class : 12

COMMON HALFYEARLY EXAMINATION 2022 - 23

CHEMISTRY

[Max. Marks : 70

Time Allowed : 3.00 Hours]

PART – I

15x1=15

I. **Choose the correct answer.**

1. In the extraction of aluminium from alumina by electrolysis, cryolite is added to
   a) Lower the melting point of alumina
   b) Remove impurities from alumina
   c) decrease the electrical conductivity
   d) Increase the rate of reduction.

2. The isotope - is used as moderator in Nuclear reactors.
   a) $_5B^{10}$
   b) $_6C^{11}$
   c) $_{13}Al^{27}$
   d) $_{14}Si^{28}$

3. P_4O_6 reacts with cold water to give
   (a) H_3PO_3
   (b) $H_4P_2O_7$
   (c) HPO_3
   (d) H_3PO_4

4. Equivalent weight of $KMnO_4$ in basic medium
   a) 31.6
   b) 158
   c) 52.67
   d) 79

5. IUPAC name of the complex $K_3[Al(C_2O_4)_3]$ is
   a) Potassium trioxalato aluminium (III)
   b) Potassium trioxalato aluminate (II)
   c) Potassium trisoxalato aluminate (III)
   d) Potassium trioxalato anuminate (III)

6. The vacant space in bcc Lattice unit cell is
   a) 48%
   b) 23%
   c) 32%
   d) 26%

7. What is the activation energy for a reaction if its rate doubles when the temperature is raised from 200 K to 400K? (R = 8.314 $JK^{-1} mol^{-1}$)
   a) 234.65 K J mol^{-1}
   b) 434.65 K J mol^{-1}
   c) 2.305 K J mol^{-1}
   d) 334.65 K J mol^{-1}

8. Dissociation constant of NH_4OH is 1.8×10^{-5} the hydrolysis constant of NH_4Cl would be
   a) 1.8×10^{19}
   b) 5.55×10^{-10}
   c) 5.55×10^5
   d) 1.80×10^{-5}

9. The electrode which acts as anode in lithium - ion battery is ─────
   a) Nickel
   b) Zinc
   c) Porus graphite
   d) Copper rod

10. Match the following:

A)	V_2O_5	(i)	High density poluethylene
B)	Ziegler - Nalta	(ii)	PAN
C)	Peroxide	(iii)	NH_3
D)	Finely divided Fe	(iv)	H_2SO_4

	A	B	C	D
a)	(iv)	(i)	(ii)	(iii)
b)	(i)	(ii)	(iv)	(iii)
c)	(ii)	(iii)	(iv)	(i)
d)	(iii)	(iv)	(ii)	(i)

11. Williamson synthesis of preparing dimethyl ether is a / an /
    a) SN^1 reactions
    b) SN^2 reaction
    c) electrophilic addition
    d) electrophilic substitution

12. Which one of the following reaction is an example of disproportionation reaction
    a) Aldol condensation
    b) Cannizaro reaction
    c) Benzoin condensation
    d) none of these.

13. Which one of the following is most basic?
    a) 2, 4 - dichloro aniline
    b) 2, 4 - dimethyl aniline
    c) 2, 4 - dinitro aniline
    d) 2, 4 - dibromo aniline

14. The chemical name of vitamin B_5
    a) Retinol
    b) Thiamine
    c) Pantothanic acid
    d) Biotin

15. Regarding cross - linked or network polymers, which of the following statement is incorrect?
    a) Examples are bakelite and melamine
    b) They are formed from bi and tri functional monomers
    c) They contain covalent bonds between various linear polymer chains.
    d) They contain strong covalent bonds in their polymer chains.

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PART - II

II. Answer any six questions. Question No. 24 is compulsory.   6x2=12

16. Give the limitation of Ellingham diagram.
17. What is insert pair effect?
18. What is crystal field splitting energy?
19. Differentiate crystalline solids and amorphons solids?
20. Explain Helmholtz double layer.
21. Explain Kolbe's electrolytic reaction.
22. Write a short note on peptide bond.
23. Write a note on vulcanization of rubber.
24. Calculate the electro chemical eqiuvalent of silver in silver nitrate.

PART - III

III Answer any six questions. Question No. 33 is compulsory.   6x3=18

25. Give the uses of Silicones.
26. How will you identify borate radical?
27. How is pure phosphine prepared from phosphorous acid?
28. Write the differences between order and molecularity of reaction.
29. Discuss the Lowry - Bronsted concept of acids and bases.
30. Explain the factors affecting electrolytic conductance?
31. Explain Tautomevism.
32. How is Teflon prepared?

33. Identify A, B and C   Ettanoic acid $\xrightarrow{SoCl_2}$ A $\xrightarrow{Pd/BaSO_4}$ B $\xrightarrow{NaOH}$ C
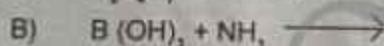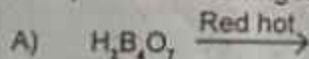
PART - IV

IV Answer all the questions.   5x5=25

34. (a) i) Describe a method for refining Nickel.
     ii) What is Auto reduction?

OR

   (b) i) Complete the following reactions.

     A) $H_2B_4O_7 \xrightarrow{Red\ hot}$

     B) $B(OH)_3 + NH_3 \longrightarrow$

     ii) Write about Holmes signal.

35. (a) (i) Compare Lanthanides and Actinides.
     (ii) Explain the structure of permaganate ion.

OR

   (b) Write the postulates of valence bond theory.

36. (a) (i) Distinguish between tetrehedral and octahedral voids.
     (ii) Explain Frenkel deffect.

OR

   (b) Derive Integrated rate law for the first order reaction.

37. (a) (i) Derive an expression for ostwalds's dilution law.
     (ii) Is it possible to store copper sulphate in an iron vessel for a long time?
         Given : $E^\circ_{Cu^{2+}/Cu} = 0.34$ V and $E^\circ_{Fe^{2+}/Fe} = -0.44$ V

OR

   (b) What are the characteristics of a catalyst.

38. (a) Explain the mechanism of cannizaro reaction.

OR

   (b) i) Write the reduction products are obtained when nitrobenzene is reduced in acid medium and neutral medium
     ii) Write short notes on Gomberg reaction.

CH / 12 / Che / 2

Register Number :

HALF YEARLY EXAMINATION - 2022
CHEMISTRY

Std: **12**

Marks : 70
Time : 3.00 hr

PART-A

I. Answer all the questions, choose the correct answer.

$15 \times 1 = 15$

1. Zinc is obtained from ZnO by
   a) Carbon reduction   b) Reduction using silver   c) Electrochemical process   d) Acid leaching2

2. The molarity of given orthophosphoric acid solution is 2M, its normality is
   a) 6N   b) 4N   c) 2N   d) none of these

3. According to Hume-Rothery rule to form a substitute alloy the difference between the atomic radii of solvent and solute is   a) greater than 15%   b) less than 15% c) equal to 15%   d) None these

4. Assertion Ce_{4+} is used as an oxidizing agent in volumetric analysis.
   Reason Ce_{4+} has the tendency of attaining +3 oxidation state.
   a) Both assertion and reason are true and reason is the correct explanation of assertion.
   b) 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

5. A magnetic moment of 1.73BM will be shown by one among the following
   a) $[TiCl_4]$ b) $[CoCl_4]^{2-}$ c) $[Cu(NH_3)_4]^{2+}$ d) $[Ni(CN)_4]^{2-}$

6. The vacant space in bcc lattice unit cell is   a) 48%   b) 23%   c) 32%   d) 26%

7. If 75% of a first order reaction was completed in 60 minutes, 50% of the same reaction under the same conditions would be completed in   a) 20 minutes b) 30 minutes c) 35 minutes d) 75 minutes

8. Which of the following can act as Lowry - Bronsted acid as well as base?
   a) HCl   b) SO_4^{2-} c) HPO_4^{2-} d) Br^-

9. During electrolysis of molten sodium chloride, the time required to produce 0.1 mole of chlorine gas using a current of 3A is   a) 55 minutes   b) 107.2 minutes   c) 220 minutes   d) 330 minutes

10. Paint is a   a) Gel   b) Emulsion   c) solid sol   d) colloidal solution

11. Williamson synthesis of preparing dimethyl ether is a / an
    a) SN^1 reactions   b) SN^2 reaction   c) electrophilic addition   d) electrophilic substitution

12. Benzoic acid $\xrightarrow[a)\Delta]{(i)NH_3}$ A $\xrightarrow{NaOBr}$ B $\xrightarrow{NaNO_2/HCl}$ C 'C' is   a) anilinium chloride
    b) O - nitroaniline   c) benzene diazonium chloride   d) m - nitro benzoic acid

13. Which of the following amines does not undergo acetylation?
    a) t - butylamine   b) ethylamine   c) diethylamine   d) triethylamine

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

15. Aspirin is a/an
    a) acetylsalicylic acid   b) benzoyl salicylic acid   c) chlorobenzoic acid   d) anthranilic acid

Std : 12 Chemistry

PART - B

Answer any six questions. Question number 24 is compulsory. $6 \times 2 = 12$

16. Write the limitation of a Ellingam diagram.
17. How will you prepare bleaching powder?
18. Write biological important coordination compounds.
19. Write the characteristics of Ionic- crystals.
20. What are antibiotics?
21. Water promoters give an example.
22. Write any two test for phenols.
23. $C_6H_5N_2Cl \xrightarrow{CuCN} A \xrightarrow{H2O/\ H+} B$ Identify that compounds A and B
24. $Cr^{3+} + 6H_2O \rightarrow [Cr(H_2O)_6]^{3+}$ Identify that Lewis acid and Lewis base for above reaction

PART-C

III. Answer any six questions question number 33 is compulsory. $6 \times 3 = 18$

25. Write the preparation and uses of pottash alum.
26. Write the properties of interstial compounds.
27. $[Cu(NH_3)_4]SO_4$ Write the above compound's
    (i) IUPAC name   (ii) Central metal atom/ion   (iii) Ligand
    (iv) Coordination number   (v)Charge on the coordination sphere
28. Explain the schotky defect.
29. Differentiate order of reaction and molecularity
30. Explain common ion effect with an example.
31. How will you prepare phenolphthalein from phenol
32. Explain Rosenmund's Reduction
33. $C_6H_5 - CO - NH_2 \xrightarrow{Br2\ /KOH} A \xrightarrow{NaNO2/\ HCl} B \xrightarrow{H2O} C$ Identify the compounds A, B and C

PART -D

IV. Answer to all the questions $5 \times 5 = 25$

34. a)(i) Explain mond's process.   (3)
       (ii) Write any two uses of borax   (2)   (or)
    b)(i) Write the chromyl chloride Test (3)   ii) What is the inert pair effect   (2)
35. a) Write the difference between Lanthanides and Actinides.   (or)
    b) Explain the shape, hybridisation and magnetic property of the following compounds using VB theory $[Fe(CN)_6]^{4-}$ and $[CoF_6]^{3-}$
36. a) Derive the rate constant for the first order reaction   (5)   (or)
    b) i) Explain Ostwald's dilution law   (3)   (ii) Define Buffer index number (2)
37. Derive Nernst Equation   (5)   (or)
    a) Write notes on i) Williamson's ether synthesis   (2)
                      ii) Write the mechanism of aldol condensation.   (3)
38. a) Write note on
       i) Carbylamine reaction   (2½)   ii) Coupling reaction   (2½) (or)
    b) Elucidate the structure of glucose molecule   (5)

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Std : 12 Chemistry

HTJ

12 - Std

Time : 3.00 Hrss

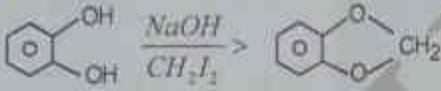# HALF YEARLY EXAMINATION - 2022
CHEMISTRY

Marks : 70

PART - I

Answer all the questions.

15 X 1 = 15

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) $\sqrt{3} \times 100 \ pm$
   d) $\left(\frac{\sqrt{3}}{2}\right) \times 400 \ pm$

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

5. The reaction $\underset{OH}{\overset{OH}{\bigcirc}} \xrightarrow[CH_2I_2]{NaOH} \bigcirc\overset{O}{\underset{O}{\diagdown}}CH_2$ 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) $\left(\frac{In_2}{K}\right)$
    d) None of these

HTJ 12 வேதியியல் EM PAGE-1

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. $6 \times 2 = 12$

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. $6 \times 3 = 18$

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 $\alpha - D(+)$ glucophyranose.

PART - IV

Note : Answer all the questions. $5 \times 5 = 25$

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.
    $P_4 + NaOH + H_2O \dashrightarrow ?$

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)

HTJ 12 வேதியியல் EM PAGE-2

HSL
XII - Std
Time : 3.00 Hrs

HALF YEARLY EXAMINATION - 2022
CHEMISTRY

Marks : 70

PART- I

Answer all the question:
Choose the most appropriate Answer.

15 x = 15

1. Considering Ellingham diagram which of the following metal can be used to reduce alumina?
   a) Fe   b) Cu   c) Mg   d) Zn

2. The basic structural unit of silicates is
   a) $(SiO_3)^{2-}$ b) $(SiO_4)^{4-}$ c) $(SiO)^-$ d) $(SiO_4)^{4+}$

3. P_4O_6 reacts with cold water to give
   a) H_3PO_3 b) $H_4P_2O_7$ c) HPO_3 d) H_3PO_4

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

5. Fac-Mer Isomerism is shown by
   a) $[CO(en)_3]^{3+}$ b) $[CO(NH_3)_4(Cl)_2]^+$ c) $[CO(NH_3)_3(Cl)_3]$ d) $[CO(NH_3)_5 Cl]SO_4$

6. The vacant space in BCC lattice unit cell is
   a) 48%   b) 23%   c) 32%   d) 26%

7. The rate constant of a reaction is $5.8 \times 10^{-2} S^{-1}$.
   a) First order   b) Zero order   c) Second order   d) Third order

8. The P^H of 10^{-5} KOH solution will be
   a) 9   b) 5   c) 19   d) none of these

9. Which of the following electrolyte solution has the least specific conductance
   a) 2N   b) 0.002N   c) 0.02N   d) 0.2N

10. Fog is a colloidal solution of
    a) Solid in gas   b) gas in gas   c) liquid in gas   d) gas in liquid

11. Carbolic acid is
    a) Phenol   b) Picric acid   c) Benzoic acid   d) Phenyl acetic acid

12. Which one of the following reduces the Tollen's reagent
    a) Formic acid   b) Acetic acid
    c) Benzophenone   d) none of these

13. The product formed by the reaction in aldehyde with primary amine
    a) Carboxylic acid   b) Aromatic acid
    c) Schiff base   d) Ketone

14. Which of the following vitamin is water soluble.
    a) Vitamine-E   b) Vitamine-K
    c) Vitamine-B   d) Vitamine-A

15. Nylon is an example of
    a) polyamide   b) polythene   c) polyester   d) poly saccaride

HSL EM 12 வெற்றியின் பக்கம் - 1

www.waytosuccess.org
13
wtsteam100@gmail.com
Kindly send me your questions and answerkeys to us : Padasalai.net@gmail.com

PART - 2

Note: (i) Answer any six question. (ii) Answer question No.24 is compulsory :-   6 x 2 = 12

16. Give the basic requirements for vapour phase refining?

17. What is inert pair effect?

18. What is crystal field stabilisation energy?

19. What are point defects?

20. What is common ion effect?

21. What is the difference between a sol and gel.

22. Write Kolbe's reaction

23. What are antibiotics?

24. Distinguish Nitro and Aciforms.

PART - 3

Note: (i) Answer any six only :- (ii) Answer the question No.33 is compulsory :-

25. Write a note on Fisher - Tropsch synthesis.   6 x 3 = 18

26. What are transition metals ? Give example

27. Differenciate crystalline solids and amorphous solids.

28. What are buffer solutions. Give example.

29. Differenciate ores and minerals.

30. Write Arrhenius Equation and explain.

31. What is Urotrophine? How it is prepared. Write the structure.

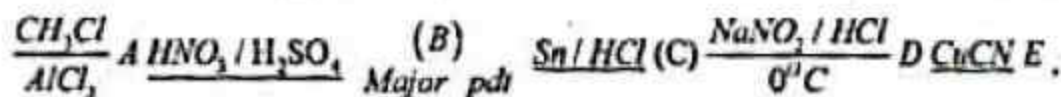32. What are redusing and non- reducing sugar.

33. $C_6H_5OH \xrightarrow{Zn\ dust} A \xrightarrow[anhydrous\ AlCl_3]{CH_3Cl} B \xrightarrow{Na} C,$ $A, B, C,$ Identify and name it.

PART- 4

Answer all the question.   5 x 5 = 25

34. (a) Explain Zone refining process. *(OR)*

    (b) What is lanthanide contraction. What are the effects of lanthanide contraction.

35. (a) Write the postulate of Werner's co ordination Theory? *(OR)*

    (b) (i) Write coupling reaction. (ii) Write any one test to distinguish $1^o, 2^o$ and 3° alcohols.

36. (a) Explain stoichiometric defects in ionic solids. *(OR)*

    (b) (i) State Kohlraasch law?

      (ii) Derive an expression for Nernst equation.

37. (a) Explain intermediate compound formation theory of catalysis. *(OR)*

    (b) Write the difference between DNA and RNA.

38. (a) Explain the reaction Mechanism of Cannizaro reaction. *(OR)*

    (b) Identify A to E in the following sequence of reaction.

 $\xrightarrow[AlCl_3]{CH_3Cl} A \xrightarrow{HNO_3/H_2SO_4} \underset{Major\ pdt}{(B)} \xrightarrow{Sn/HCl} (C) \xrightarrow[0^oC]{NaNO_2/HCl} D \xrightarrow{CuCN} E.$

HSL EM 12   *தெலியில் பக்கம் - 2*

HALF YEARLY EXAMINATION - 2022

12 - Std
Time : 3.00 hrs.
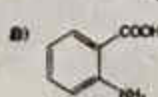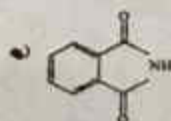
CHEMISTRY

2 3 1 a

Marks : 70
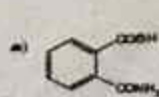
SECTION – I
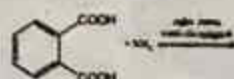
Note: 1) Answer all the questions.   15 X 1 = 15
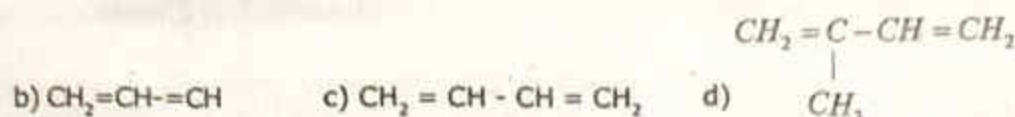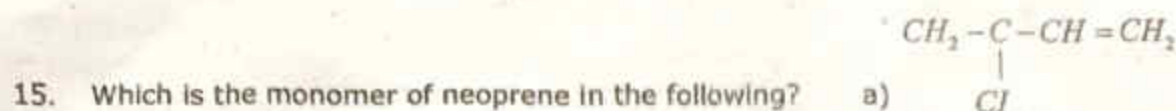
2) Choose the most suitable answer from the given four alternatives and write the option code and the corresponding answer.

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)
$$CH_2 - \overset{\underset{\displaystyle Cl}{|}}{C} - CH = CH_2$$

b) $CH_2 = CH - = CH$ c) $CH_2 = CH - CH = CH_2$ d)
$$CH_2 = \overset{\underset{\displaystyle CH_3}{|}}{C} - CH = CH_2$$

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? Fe^{3+} or Fe^{2+} - 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 Fe^{3+} 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
Answer all the questions.   5 x 5 = 25

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)

12 - வேதியியல் (EM) பக்கம் - 2

A

Cuddalore - Dt

COMMON HALF YEARLY EXAMINATION - 2022

Standard - XII
Reg No [ ][ ][ ][ ][ ][ ]

Time: 3.00 hrs.

CHEMISTRY

Marks: 70

PART - I

I. Choose and write the correct answer: 15×1=15

1. The incorrect statement among the following in
   a) Nickel in refined by Mond's process
   b) Titanium is refined by Van - Arkel process
   c) Zinc blende in concentrated by froth floatation
   d) In the metallurgy of gold, the metal is reached with dilute sodium chloride solution

2. In organic benzene is
   a) borax   b) borazole   c) boric acid   d) diborane

3. Which one of the following attack glass?
   a) HF   b) HCl   c) HBr   d) HI

4. Which one has maximum number of unpaired electrons?
   a) d^1 b) d^5 c) d^9 d) d^{10}

5. The Geometry of dsp^2 hybridisation is
   a) limar   b) square planar   c) trigonal bi pyramidal   d) tetrahedral

6. The Crystals which are good Conductors of heat and electricity are
   a) Molecular crystals   b) Ionic Crystals
   c) metallic Crystals   d) all of these

7. E_a of a reaction is zero the value of rate constant in
   a) O   b) A   c) Fa   d) $E_a/2$

8. Ionic product > K_{sp} the solution is
   a) Saturated   b) UnSaturated   c) Super Saturated   d) equilibrium

9. Which one of the following Statement in Correct?
   a) Oxidation occurs at cathode   b) Reduction Occurs at anode
   c) Electrons migrate from anode to cathode
   d) Electrons migrate from Cathode to anode

10. Which one of the following is correctly matched?
    a) Emulsion - smoke   b) Gel - butter   c) Foam - Mist   d) Whipped Cream - Sol

11. Which of the following compound can be used as anti freeze in automobile radiators?
    a) Methanol   b) Ethanol   c) Neo Pentyl alchol   d) ethane - 1,2 diol

12. The acid which reduces Tollens reagent in
    a) benzoic acid   b) Salicyclic acid   c) acetic acid   d) formic acid

13. Which is called oil of mirbane?
    a) Nitromethane   b) Aniline   c0 Methyl sulicylate   d) Nitro benzene

14. The number of SP^2 and Sp^3 hybridised carbon in glucose are respectively
    a) 1 and 4   b) 4 and 2   c) 5 and 1   d) 1 and 5

15. The polymer use in making blankets (artificial wool) is
    a) PAN   b) Orlon   c) PET   d) both a and b

PART - II

II. Answer any six questions. (Q.no.19 is compulsory) 6×2=12

16. Which type of ores can be concentrated by froth flotation method? Give two examples for such ones.

17. Write the properties of interhalogen compounds (any four)

18. Explain Coordination isomerism with an example.

19. The rate constant of first order reaction is $1.54 \times 10^{-3} s^{-1}$. Find its half life period.
20. What are the various process to prevent corrosion?
21. Write the tests for phenol.
22. What are called epimers? Give two examples?
23. Explain Popoff's rule.
24. How is nylon 66 prepared?

PART - III

III. Answer any six questions. (Q.No.31 is compulsory):   **6×3=18**

25. Write the uses of silicones
26. $[Ti(H_2O)_6]^{+3}$ is coloured Where as $[SC(H_2O)_6]^{+3}$ is colorless - Why?
27. Write a note on Frenkel defect.
28. Derive the relationship between PH and POH.
29. What are called Catalytic poisons? Give two examples.
30. How do you prepare the following :   a) Picric acid   b) TNG

31. $CH_3COCl + H_2 \xrightarrow[\text{BaSO}_4]{\text{Pd}} A \xrightarrow{\text{NaOH}} B \xrightarrow{\Delta} C$ Identify A,B and C.

32. What are the differences between Hormones and vitamins?
33. Give one example for
     a) tranquiliser   b) antihistamin   c) artificial sweetening agent

PART - IV

IV. Answer all the Questions.   **5×5=25**

34. a) Explain electromagnetic separation   (3)
     b) Define gangue and slag   (1+1)   (OR)
     a) Write the uses of borax.   (2)
     b) Write the action of dil and conc. NaOH on Cl_2.   (3)
35. a) Trnasition metals form complexes - Why?   (2)
     b) Compare the properties of lanthanoids and actinoids   (3)   (OR)
     Using VB theory explain the following: a) $[Ni(CN)_4]^{2-}$ b) $[Fe(CN)_6]^{3-}$
36. a) Calculate the number of atoms per unit cell in BCC.   (2)
     b) What are called molecular crystals? Give example.   (3)   (OR)
     a) Derive integrated rate law for zero order reaction.   (3)
     b) What are the various methods used for coagulation?   (2)
37. How is the following prepared from Phenol?
     a) Phenolphthalein   b) Salicylic acid   c) benzene   (2 + 2 + 1)   (OR)
     a) Discuss the mechanism of Cannizaro's reaction.
     b) Write Trans esterification.   (3 + 2)
38. a) NO_2 $\xrightarrow[\text{con H}_2\text{SO}_4]{\text{con HNO}_3}$ $\begin{array}{l} \xrightarrow{\text{373k}} A \\ \xrightarrow{\text{473k}} B \end{array}$
     Identify A and B
     b) What is Libermann nitroso test?   (2+3)   (OR)
     a) Give any six differences between DNA and RNA.
     b) What are called antacids? Give an example.