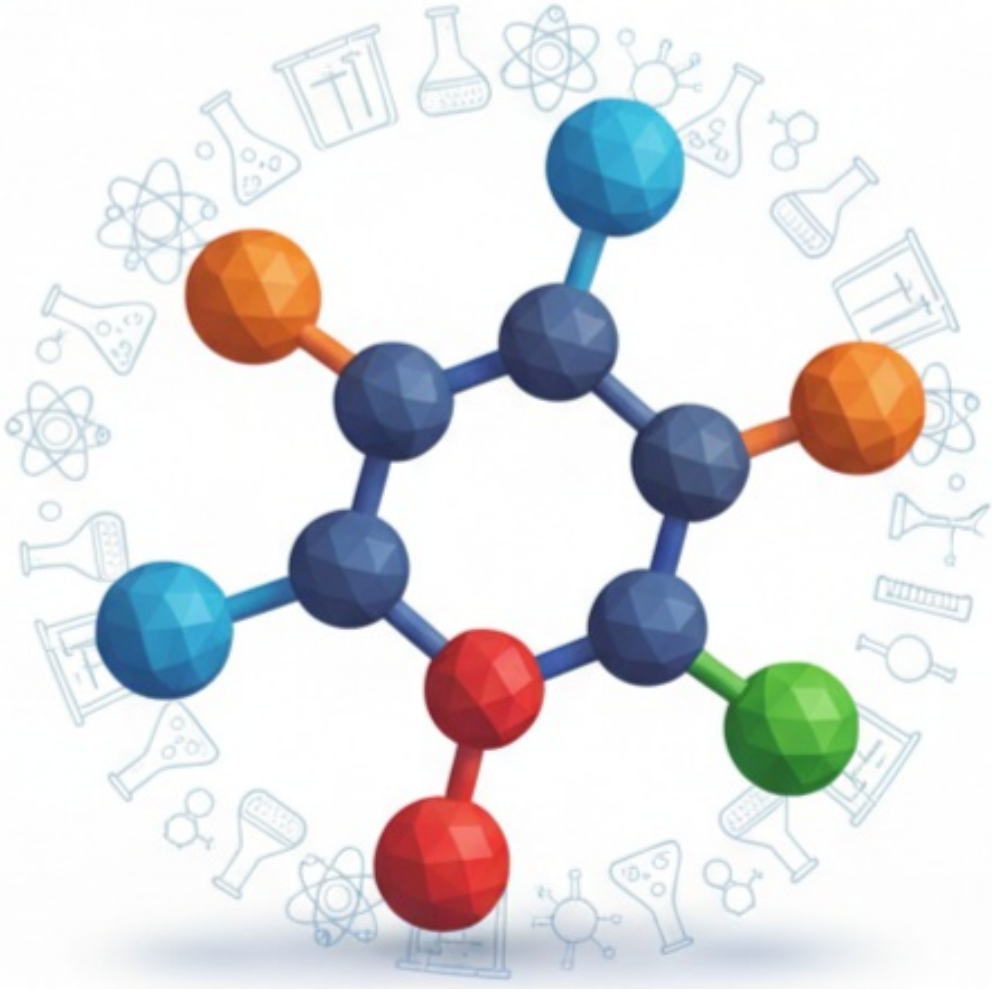
CHEMISTRY

12th STANDARD

QUARTERLY EXAMINATION 2025

COLLECTION OF QUESTION PAPER (ENGLISH MEDIUM)



BY S.Manikandan.M.Sc.BEd., 7708543401

QUARTERLY EXAMINATION - 2025

CLASS : 12 | Reg.No

Time : 3.00 Hours | **CHEMISTRY** | Total Marks : 70

PART - A

I Answer all the questions. **15x1=15**

1. The metal extracted by Hall-Heroult process is
   a) Cu b) Al c) Zn d) Ni
2. Carbon atoms in Fullerene with formula C_{60} have ..... hybridisation.
   a) sp^2 b) sp^3 c) sp^3d d) sp
3. Which of the following is used as the source of gamma rays?
   a) Xe b) Ar c) Rn d) Kr
4. Which of the following Lanthanoid ions is diamagnetic?
   a) Eu^{2+} b) Yb^{2+} c) Ce^{2+} d) Sm^{2+}
5. CsCl has bcc arrangement, its unit cell edge length is 400 pm, its inter atomic distance is
   a) 400 pm b) 800 pm c) $\sqrt{3}\times 100$ pm d) $\left[\frac{\sqrt{3}}{2}\right]\times 400$ pm
6. In a first order reaction $x \rightarrow y$: if k is the rate constant any the initial concentration of the reactant x is 0.1M, then, the half life is
   a) $\left[\frac{\log 2}{k}\right]$ b) $\left[\frac{0.693}{(0.1)k}\right]$ c) $\left[\frac{ln2}{k}\right]$ d) None of these
7. On hydrolysis, PCl_3 gives
   a) H_3PO_3 b) PH_3 c) H_3PO_4 d) $POCl_3$
8. p^H of a saturated solution of $Ca(OH)_2$ is 9. The solubility product (K_{sp}) of $Ca(OH)_2$
   a) 0.5×10^{-15} b) 0.25×10^{-10} c) 0.125×10^{-15} d) 0.5×10^{-10}
9. Which of the following compounds on reaction with methyl magnesium bromide will give tertiary alcohol.
   a) Benzaldehyde b) Porpanoic acid c) Methyl Propanoate d) Acetaldehyde
10. $CH_2 = CH_2 \xrightarrow[ii)\ Zn/H_2O]{i)\ O_3} X \xrightarrow{NH_3} y$ 'y' is
    a) Formaldehyde b) di acetone ammonia c) Hexamethylene tetra amine d) Oxime
11. The number of moles of acidified $KMnO_4$ required to oxidize 1 mole of ferrous oxalate ($Fe C_2O_4$) is
    a) 5 b) 3 c) 0.6 d) 1.5
12. At 25 C, ionic product constant K_w of water is 1.00×10^{-14}. Its value at 40°C is
    a) 1.00×10^{-14} b) $1.1\cdot14\times10^{-15}$ c) 2.71×10^{-14} d) 2.95×10^{-15}
13. Assertion : The C - O - C bond angle in ether is slightly greater than the tetrahedral bond angle.
    Reason : Repulsive interaction between the two bulkier alkyl groups.
    a) Assertion is true but Reason is false
    b) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
    c) Both Assertion and Reason are false
    d) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
14. Match items in Column - I with the items Colum - II and assign the correct code

Column - I	Column - II		A	B	C	D
A) Tollens Reagent	(i) N_2H_4 / C_2H_5ONa	a)	(i)	(ii)	(iii)	(iv)
B) Octyl acetate	(ii) Ammonical silver nitrate	b)	(ii)	(iii)	(iv)	(i)
C) Acetic acid	(iii) Orange	c)	(iii)	(iv)	(i)	(ii)
D) Wolf Kishner Reduction	(iv) Table Vinegar	d)	(iv)	(iii)	(ii)	(i)

15. The most common oxidation state of actinoids is
    a) +2 b) +3 c) +4 d) +6

PART - B

II **Answer any six questions (Question No:24 is compulsory)** **6x2=12**

16. What are the various steps involved in extraction of pure metal from their ores.
17. CO is a reducing agent. Justify with an example.
18. Give a reaction between nitric acid and basic oxide.
19. Why 'd' block elements exhibit variable oxidation state?
20. Define Packing efficiency?
21. Define Half life period.
22. What are Lewis acids and bases? Give one example for each.
23. Give the uses of Diethyl ether.
24. Show that in case first order reaction the time required for the completion of 99% is twice the time required for the completion of 90% of the reaction.

PART - C

III **Answer any six questions (Question No:33 is compulsory)** **6x3=18**

25. Write the difference between mineral and ore.
26. Write note on Fisher tropsch synthesis.
27. Why HF not stored in glass bottle?
28. What is Lanthanide contraction? and what are the effect of Lanthanide contraction.
29. Calculate the number of atoms in a fcc unit cell.
30. Derive integrated rate law for a zero order reaction.
31. Explain common ion effect with suitable example.
32. Write the preparation of Urotropine and give the uses.
33. Write the test for Secondary alcohol with equation.

PART - D

IV **Answer the following questions.** **5x5=25**

34. a) Explain Zone refining process. **[OR]** (5)

    b) i) Find the oxidation state of Halogen in the following compounds.

    (1) OF_2 (2) O_2F_2 (2)

    ii) Complete the following reactions.

    1) $B(OH)_3+NH_3$ -------- ?

    2) $Ca(OH)_2+Cl_2$ ----------? (3)

35. (a) i) Write short notes on Holmes signal. (3)

    ii) How will you prepare chlorine from Deacon's process. **[OR]** (2)

    (b) What are interstitial compounds? Write the properties of interstitial compound. (5)

36. (a) Differentiate crystalline solids and amorphous solids **[OR]** (5)

    (b) i) Explain the effect of Catalyst on reaction rate with an example. (3)

    ii) Define rate law. (2)

37. (a) Derive an expression for Ostwald's Dilution Law. **[OR]** (5)

    (b) Compound (A) molecular formula C_6H_6O gives purple coloration with neutral $FeCl_3$. (5)
    Compound (A) reacts with benzene diazonium chloride to give compound (B) and it also react with Nitrating mixture at 298k to give compound (c). Identify the compounds A, B, and C and write down the equations.

38. (a) i) How malachite green is prepared from Benzaldehyde? (3)

    ii) Explain Rosenmund reduction. **[OR]** (2)

    (b) Explain reducing nature of formic acid with suitable example. (5)

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12 R

Reg. No. | | | | | | | |

Time : 3.00 hrs.

Quarterly Examination - 2025

CHEMISTRY

Max. Marks : 70

PART - I

I. (i) Answer all questions. **15x1=15**

(ii) Choose the best answer from given four alternatives and write the option code and the corresponding answer.

1. Elements like silicon and germanium to be used as a semi-conductor is purified by
   a) heating under vacuum b) Van Arkel method c) Zone refining d) Electrolytic refining
2. Match items in column-I with items in column-II and assign the correct code.

Column-I		Column-II
A) Borazole	-	1. $B(OH)_3$
B) Boric Acid	-	2. $B_3N_3H_6$
C) Quartz	-	3. $Na_2[B_4O_3(OH)_4]\ H_2O$
D) Borax	-	4. SiO_2

	A	B	C	D
a)	2	1	4	3
b)	1	2	4	3
c)	1	2	3	4
d)	none of these			

3. Most easily liquefiable gas a) Ar b) He c) Ne d) Kr
4. Which of the following lanthanoid ion is diamagnetic. a) Eu^{2+} b) Ce^{2+} c) Yb^{2+} d) Sm^{2+}
5. CSCl has bcc arrangement, its unit cell edge length is 400pm, its interionic distance is
   a) 800pm b) $\left(\frac{\sqrt{3}}{2}\right)$ x 400pm c) 400pm d) $\sqrt{3}$ x 100pm
6. For the reaction $2A+B \rightarrow 3C+D$ which of the following does not express the reaction rate.
   a) $\frac{d[D]}{dt}$ b) $-\frac{d[A]}{2dt}$ c) $-\frac{d[c]}{3dt}$ d) $-\frac{d[B]}{dt}$
7. Which of the following fluro-compounds most likely to behave as a Lewis base?
   a) BF_3 b) CF_4 c) SiF_4 d) PF_3
8. Which of following used in medicine in Hypnotic historically known as "Hypnone"?
   a) Acetophenone b) formaldehyde c) paraldehyde d) Benzaldehyde
9. On reacting with neutral $FeCl_3$, phenol gives
   a) red colour b) dark green colour c) violet colour d)no colouration
10. Which of the following compound is used as antifreeze in automobile?
    a) Ethanol b) Ethylene glycol c) Methanol d) Neopentyl alcohol
11. Assertion: Bond dissociation energy of fluorine is greater than chlorine gas.
    Reason: Chlorine has more electronic repulsion than fluorine.
    a) Both assertion and reason are true and reason is the correct explanation of assertion b) Both assertion and reason are true and reason is not correct explanation of assertion
    c) Assertion is true but reason is false d) Both assertion and reason are false.
12. Which of the metal is extracted by Hall-Herrold process?
    a) Ni b) Zn c) Al d) Cu

13. In Wolf Kishner reduction _____ acts as reducing agent and _____ acts as catalyst.
a) Hydrazine & Sodium ethoxide b) Ketone & Hydrazine c) Sodium ethoxide & Hydrazine
d) Aldehyde & Hydrazine
14. In given transition metal ion series which series has all the metal ion in $3d^2$ electronic configuration. (Atomic number: Ti = 22, V = 23, Cr = 24, Mn = 25)
a) Ti^{2+}, V^{3+}, Cr4+, Mn^{5+} b) Ti^{3+}, V^{2+}, Cr^{3+}, Mn^{4+} c) Ti^{+}, V^{4+}, Cr^{6+}, Mn^{7+} d) Ti^{4+}, V^{4+}, Cr^{2+}, Mn^{3+}
15. The conjugate acid of NH_2^- is a) NH^{2-} b) NH_2 c) NH_3 d) NH_4^+

PART - II

Note: Answer any six questions. Question No.24 is compulsory. **6x2=12**

16. Name the methods to extract following pure metals. (i) Zirconium (ii) Nickel
17. Co is a reducing agent. Justify with example.
18. What is the hybridization of iodine in IF_7 and give its structure?
19. Which is more stable Fe^{2+} & Fe^{3+}? Explain.
20. Calculate the number of atoms in FCC unit cell.
21. Give two example for zero order reaction.
22. Write the expression for solubility product of Hg_2Cl_2.
23. Explain Williamson Synthesis.
24. Which compounds give 2-methyl propane on Clemmenson reduction?

PART - III

Note: Answer any 6 questions. Question No.33 is compulsory. **6x3=18**

25. Write the uses of Boric acid.
26. Differentiate between Order and Moleculority.
27. Why d-block elements form complexes?
28. Define common ion effect with example.
29. Write a note on Fischer-Tropsch Synthesis.
30. What are the limitations of Ellingham diagram?
31. How will you prepare acetaldehyde from acetyl chloride? Write equation.
32. Write short note on Lucas test.
33. In a first order reaction Aproduct 60% of A decomposes in 40 min. What is half-life period?

PART - IV

Note: Answer all questions. **5x5=25**

34. a) Write short note on the following with example:
1. (i) Gangue (ii) Slag (2) 2. Explain froth-floatation process with diagram. (3) **(OR)**
b) Differentiate Lanthanoids and Actinoids. (5)
35. a)(i) How will you identify Borate radical (3)
(ii) Give reason to support sulphuric acid is dehydrating agent. (2) **(OR)**
b) (i) Derive the expression for Oswald dilution law. (3) (ii) Define unit cell. (2)
36. a) Derive expression for zero order integrated rate constant equation. A product. **(OR)**
b) (i) Write short note on Frenkel's defect. (3) (ii) Write Bragg's equation and write its terms. (2)
37. a)(i) What is urotropine? How it is prepared? (3)
(ii) Formic Acid reduces Tollen's reagent. Give reasons. (2) **(OR)**
b) Explain the mechanism of Aldol condensation.
38. a)(i) How will you convert Boric acid into Boron Nitride? (2) (ii) Give the uses of Helium. (3) **(OR)**
b) An organic compound (A) of molecular formula C_6H_6 on reaction with propylene. $AlCl_3$ gives (B) in presence of H_3PO_4 at 523k. (B) on air oxidation gives (C) of molecular formula $C_9H_{12}O_2$. (C) on acidification with H_2SO_4 gives (D). Identify A, B, C, D and write equations.

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COMMON QUARTERLY EXAMINATION - 2025

Standard XII

Reg.No. | | | | | | |

CHEMISTRY

Time : 3.00 hrs | *Marks : 70*

Part - I

15 x 1 = 15

I. Answer all the questions.

1. In the electrolytic refining of copper, which one of the following is used as anode?
   a) pure copper b) impure copper c) carbon rod d) platinum electrode
2. Which of the following is not sp^2 hybridised?
   a) graphite b) graphene c) fullarene d) dry ice
3. The stability of +1 oxidation state increases in the sequence,
   a) Al < Ga < In < Tl b) Tl < In < Ga < Al
   c) In < Tl < Ga < Al d) Ga < In < Al < Tl
4. The compound used as high energy fuel for propellant is
   a) BF_3 b) B_2H_6 c) $AlCl_3$ d) H_3BO_3
5. H_2SO_5 is called as
   a) sulphurous acid b) dithionus acid c) caro's acid d) Marshall's acid
6. The crystal has metal excess defect,
   a) FeO b) AgCl c) NaCl d) $CdCl_2$
7. For the reaction, $2NH_3 \rightarrow N_2 + 3H_2$, if $\frac{-d[NH_3]}{dt} = k_1[NH_3]$, $\frac{d[N_2]}{dt} = k_2[NH_3]$, $\frac{d[H_2]}{dt} = k_3[NH_3]$, then the relation between k_1, k_2 and k_3 is
   a) $k_1 = k_2 = k_3$ b) $k_1 = 3k_2 = 2k_3$ c) $1.5k_1 = 3k_2 = k_3$ d) $2k_1 = k_2 = 3k_3$
8. What is the pH of 0.1 M CH_3COOH solution? ($Ka = 1.8 \times 10^{-5}$)
   a) 2.87 b) 3 c) 1.8 d) 0.1
9. Most easily liquifiable gas is
   a) Ar b) Ne c) He d) Kr
10. Which of the following oxidation state is most common among the lanthanoids?
    a) +4 b) +2 c) +5 d) +3
11. Ethanol $\xrightarrow{PCC}$ X. X is
    a) acetaldehyde b) propanal c) 1-butanol d) 2-butanol
12. Which of the following compounds on reaction with methyl magnesium bromide will give tertiary alcohol,
    a) benzaldehyde b) propanoic acid c) methyl propanoate d) acetaldehyde
13. Which one of the following reduces Tollens reagent?
    a) formic acid b) acetic acid c) benzophenone d) none of these
14. In which of the following reaction new carbon-carbon bond is not formed?
    a) Aldol condensation b) Friedel-Crafts reaction
    c) Kolbe's reaction d) Wolf Kishner reaction
15. On hydrolysis PCl_3 gives
    a) H_3PO_3 b) PH_3 c) H_3PO_4 d) $POCl_3$

Part - II

II. Answer any 6 questions. (Q.No.24 is compulsory) 6 x 2 = 12

16. Give the limitations of Ellingham diagram.

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17. Give one example for each :
    a) Chalcogen b) Icosagen c) Pnictogen d) Tetragen
18. What are inter-halogen compounds? Give examples.
19. Which is more stable : Fe^{2+} or Fe^{3+}. Why?
20. Define solubility product.
21. Convert : Glycol into Acetaldehyde
22. Explain Kolbe's reaction.
23. What is Williamson synthesis?
24. Find the order of the following reactions :
    a) Radioactive disintegration of $_{92}U^{238}$
    b) $2A + 3B \rightarrow$ Products. rate = $k[A]^{1/2}[B]^2$

Part - III

III. Answer any 6 questions. (Q.No.33 is compulsory) **6 x 3 = 18**

25. Write a short note on anamolous properties of the first element of p-block.
26. Write the uses of Xenon.
27. What is Ziegler-Natta catalyst? Give its uses.
28. Give the differences between order and molecularity.
29. What is common ion effect? Explain with example.
30. What is Glycerose? How is it formed?
31. Explain the coupling reaction of phenol.
32. What is Perkin's reaction?
33. Barium has body centered unit cell with a length of 508 pm along an edge. What is the density of the Barium in g cm^{-3}?

Part - IV

IV. Answer all the questions. **5 x 5 = 25**

34. a) i) Distinguish between mineral and ore? (3)
        ii) Give any two uses of zinc. (2) ***(OR)***
    b) i) What is ethyl borate test? (3)
        ii) Give two uses of potash alum. (2)
35. a) i) Explain the reaction of dehydrating nature of sulphuric acid. (3)
        ii) State Hume-Rothery rule. (2) ***(OR)***
    b) Distinguish between crystalline solids & amorphous solids. (5)
36. a) Derive integrated first order equation. (5) ***(OR)***
    b) i) Define pH. (2)
        ii) What is ionic product of water? Give its value at room temperature. (3)
37. a) i) Convert : Glycerol into Acrolein. (2)
        ii) What is the action of con.H_2SO_4 on Glycol. (3) ***(OR)***
    b) Write any three electrophilic substitution reaction of phenol. (5)
38. a) Explain the mechanism of aldol condensation. (5) ***(OR)***
    b) An organic compound A with molecular formula C_7H_6O reduces Tollens reagent, not reduces Fehlings solution. A reacts with 50% NaOH to give B and C. C on treatment with sodalime to give D. Identify A,B,C & D. Write the equations. (5)

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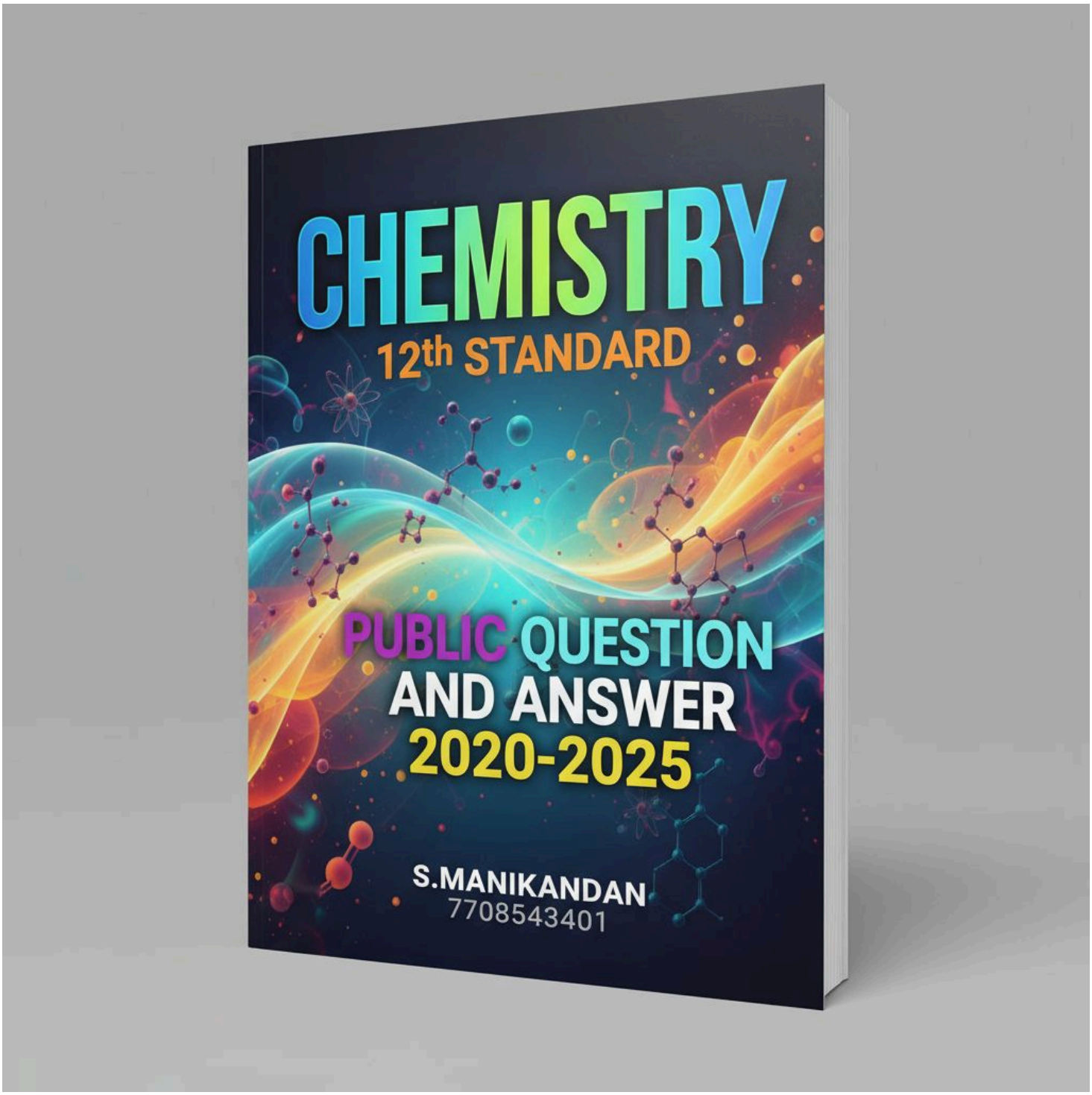
CHEMISTRY
12th STANDARD
PUBLIC QUESTION AND ANSWER 2020-2025
S.MANIKANDAN
7708543401

Class : 12

Register Number

COMMON QUARTERLY EXAMINATION 2025-26

Time Allowed : 3.00 Hours] **CHEMISTRY** [Max. Marks : 70

PART – I

I. Choose the correct answer. **15x1=15**

1. Zinc is obtained from ZnO by
   a) Carbon Reduction b) Electrochemical process
   c) Reduction using silver d) Acid Leaching
2. The Collector used in froth flotation process is
   a) Sodium Cyanide b) Sodium argentocyanide
   c) Sodium ethyl xanthate d) Sodium hydroxide
3. The compound that is used in nuclear reactors as protective shields and control rods is
   a) Metal borides b) Metal oxides c) Metal carbonates d) Metal carbides
4. **Assertion** : Bond Dissociation energy of Fluorine is greater than Chlorine Gas.
   Reason : Chlorine has more Electronic Repulsion than fluorine.
   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. The rotten fish smell gas is ----------
   a) Ammonia b) Phosphine
   c) Phosphorus tri chloride d) None of these
6. In acid medium, Pottassium permanganate oxidises oxalic acid to
   a) Oxalate b) Carbondioxide c) Acetate d) Acetic acid
7. Solid CO_2 is an example of
   a) Covalent solid b) Metallic solid c) Molecular solid d) Ionic solid
8. The Bragg's equation is
   a) $2d = \frac{n\lambda}{2 \sin \theta}$ b) $2\lambda \sin \theta = nd$ c) $\lambda = 2 \sin \theta$ d) $n\lambda = 2d \sin \theta$
9. 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
10. The number of collisions depends upon
    a) Pressure b) Concentration c) Temperature d) All the above
11. Concentration of the Ag^+ ions in a saturated solution of $Ag_2C_2O_4$ is 2.24×10^{-4} Mol L^{-1} solubility product of $Ag_2C_2O_4$ is
    a) 2.42×10^{-8} $mol^3 L^{-3}$ b) 2.66×10^{-12} mol^3L^{-3} c) 4.5×10^{-11} mol^3L^{-3} d) 5.619×10^{-12} mol^3L^{-3}
12. Carbolic acid is ----------
    a) Phenol b) Picric Acid c) Benzoic acid d) Phenylacetic acid
13. IUPAC name diphenyl ether is
    a) Methoxybenzene b) Ethoxy benzene c) Phenoxy benzene d) Phenoxy ethane
14. Formaldehyde reacts with ammonia to form ----------
    a) Aldimine b) Hexamethylene Tetra
    c) Urotropine d) Both (B) and (C)
15. In which of the following reactions new carbon - Carbon bond is not formed
    a) Aldol condensation b) Friedal crafts reaction
    c) Kolbe's reaction d) Wolf - Kishner reduction

PART - II

II. Answer any Six questions of the following. Question No. 24 is compulsory. **6x2=12**

16. What is the role of Quicklime in the extraction of Iron from its oxide Fe_2O_3?
17. Write a short note on Hydroboration?
18. Give the Uses of Helium?

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19. Out of $Lu(OH)_3$ and $La(OH)_3$ which is more basic and Why?
20. Calculate the number of atoms in a FCC unit cell?
21. Write the Limitations of Arrhenius concept of Acids and bases?
22. How will you prepare Phenolphthalein from Phenol?
23. Write a note on Rosenmund reduction?
24. For a reaction x + y+z → Products the rate law is given by rate = $K[x]^{3/2}[y]^{1/2}$ what is the overall order of the reaction and what is the order of the reaction with respect to Z.

PART - III

III **Answer any six questions of the following. Question No. 33 is compulsory.** 6x3=18

25. Write a short note on Electrochemical Principles of Metallurgy?
26. Write a note on Zeolites?
27. **Complete the following reactions.**
    i) $AgNO_3 + PH_3 \longrightarrow$
    ii) $Xe + F_2 \xrightarrow[400°C]{Ni\ /\ 200\ atm}$
28. Calculate the number of unpaired electrons in Ti^{3+} Mn^{2+} and Calculate the Spin only magnetic moment.
29. Explain Schottky Defects.
30. Explain common ion effect with an example?
31. Write a note on Friedel Craft's reaction?
32. **How will you prepare.**
    i) Ethyl acetate from methyl acetate. ii) Acetamide from methyl cyanide
33. **Complete the following reactions.**
    $CH_3CH_2OH \xrightarrow{PBr_3}$ (A) $\xrightarrow{aq.\ NaoH}$ (B) $\xrightarrow{Na}$ (C)

PART - IV

IV **Answer all the questions.** 5x5=25

34. (a) i) What is acid Leaching? **(2)**
    ii) Explain the principle of Electrolytic refining with an example? **(3)**

    (OR)

    (b) Describe the structure of Diborane. **(5)**
35. (a) i) Explain why Fluorine always exhibit an oxidation state of -1? **(2)**
    ii) **Give the oxidation state of Halogen in the following. (3)**
    a) OF_2 b) O_2F_2 c) Cl_2O_3

    (OR)

    (b) Compare Lanthanoides and Actinoides. **(5)**
36. (a) i) Why Ionic crystals are hard and Brittle? **(2)**
    ii) Explain briefly seven types of Unit Cell? **(3)**

    (OR)

    (b) Explain briefly the collision theory of bimolecular reaction? **(5)**
37. (a) (i) Derive an expression for Ostwald's Dilution law. **(5)**

    (OR)

    (b) i) Identify the product (s) is / are formed when 1- methoxy propane is heated with excess HI? **(2)**
    i) Write a tests to differentiate Phenol and Alcohol. **(3)**
38. (a) Write the Mechanism of Aldol Condensation? **(5)**

    (OR)

    (b) i) What are Interstitial compounds? **(2)**
    ii) Write a note on Haloform Reaction. **(3)**

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Reg No :

QUATERLY EXAMINATION SEPTEMBER -2025

CHEMISTRY

Class : 12 Std

Maximum Marks : 70
Time : 3.00 hours

PART –I

15x1 = 15

Answer All the questions. Choose the Most appropriate answer 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 basic structural unit of silicates is
   a) $(SiO_3)^{2-}$ b) $(SiO_4)^{2-}$ c) $(SiO)^{-}$ d) $(SiO_4)^{4-}$
3. The basicity of pyrophosphorous acid ($H_4P_2O_5$) is a) 4 b) 2 c) 3 d) 5
4. Among the following, which is the strongest oxidizing agent? a) Cl_2 b) F_2 c) Br_2 d) I_2
5. **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
6. The actinoid elements which show the highest oxidation state of +7 are
   a) Np, Pu ,Am b) U, Fm, Th c) U, Th, Md d) Es, No, Lr
7. The vacant space in bcc lattice unit cell is a) 48% b) 23% c) 32% d) 26%
8. The rate constant of a reaction is $5.8 \times 10^{-2}\ s^{-1}$. The order of the reaction is
   a) First order b) zero order c) Second order d) Third order
9. 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
10. The pH of an aqueous solution is Zero. The solution is
    a) slightly acidic b) strongly acidic c) neutral d) basic
11. On reacting with neutral ferric chloride, phenol gives
    a) red colour b) violet colour c) dark green colour d) no colouration.
12. Reaction of acetone with one of the following reagents involves nucleophilic addition followed by elimination of water. The reagent is
    a) Grignard reagent b) Sn / HCl c) hydrazine in presence of slightly acidic solution
    d) hydrocyanic acid
13. Which one of the following reduces tollens reagent
    a) formic acid b) acetic acid c) benzophenone d) none of these
14. P_4O_6 reacts with cold water to gives a) H_3PO_3 b) $H_2P_2O_7$ c) HPO_3 d) H_3PO_4
15. which one of the following is a strong acid
    a) 4 -Nitrophenol b) 2 -Nitrophenol c) 2 -Nitrophenol d) 4 -Chlorophenol

PART –I I

6x2= 12

Answer **any six** Questions and Question No. **24** is **Compulsory**

16. Give the basic requirement for vapour phase refining.
17. Give the structure of CO and CO_2
18. .why cannot HF be stored in glass bottles. Give reason
19. calculate the spin only magnetic moment (μ_s) of Mn^{2+}
20. Calculate the number of atoms in a FCC unit cell.

21. what is meant by activation energy
22. How is Nitroglycerin is prepared?
23. write Benzoin condensation reaction
24. Calculate the pH value of 0.001M *NaOH* solution.

PART –III

6x3= 18

*Answer **any six** Questions and Question No. **33** is **Compulsory***

25. Explain zone refining process with an example.
26. What is meant by Inorganic benzene? How it is prepared.
27. write short notes on bleaching action of Chlorine.
28. Explain the Aluminothermic process.
29. Write short notes on Interstitial compounds?
30. Explain the Common ion effect with suitable example
31. Complete the following reaction and identify A, B & C

$$C_6H_5OH \xrightarrow{Zn_{dust}} A \xrightarrow[anhydrous\,AlCl_3]{CH_3Cl} B \xrightarrow{Acidified\ KMnO_4} C$$

32. Explain the reducing properties of Formic acid
33. Show that in case of first order reaction, the time required for 99.9% completion is nearly ten times the time required for half completion of the reaction.

PART –IV

Answer All the questions.

5x5= 25

34. **A) i.** Explain the Cyanide leaching process 3
    ii. Give the uses of Potash alum **(OR)** 2
    B) i. Give the balanced equation for the reaction between chlorine with cold NaOH and hot NaOH. 3
    ii. write the structural formula for Ortho phosphoric acid and Pyrophosphoric acid. 2
35. **A)** Compare lanthanoids and actinoids. **(OR)**
    B) Calculate the percentage efficiency of packing in case of body centered cubic crystal.
36. **A) i.** Write the differences between Order and Molecularity of a reaction. 3
    ii. Explain the effect of catalyst on reaction rate with an example. **(OR)** 2
    B) Derive an expression for Ostwald's dilution law. 5
37. **A) i.** Define Buffer index (β). 2
    ii. What is meant by Conjugate acid – base pairs. Give an example **(OR)** 3
    B) How will you differentiate Primary, Secondary and tertiary alcohols using Victor mayer test.
38. **A)** Explain the mechanism of Aldol condensation reaction. **(OR)**
    B) i. What is trans esterfication reaction. 2
    ii. write short notes on a) Phenolphthalein reaction b) Coupling reaction. 3

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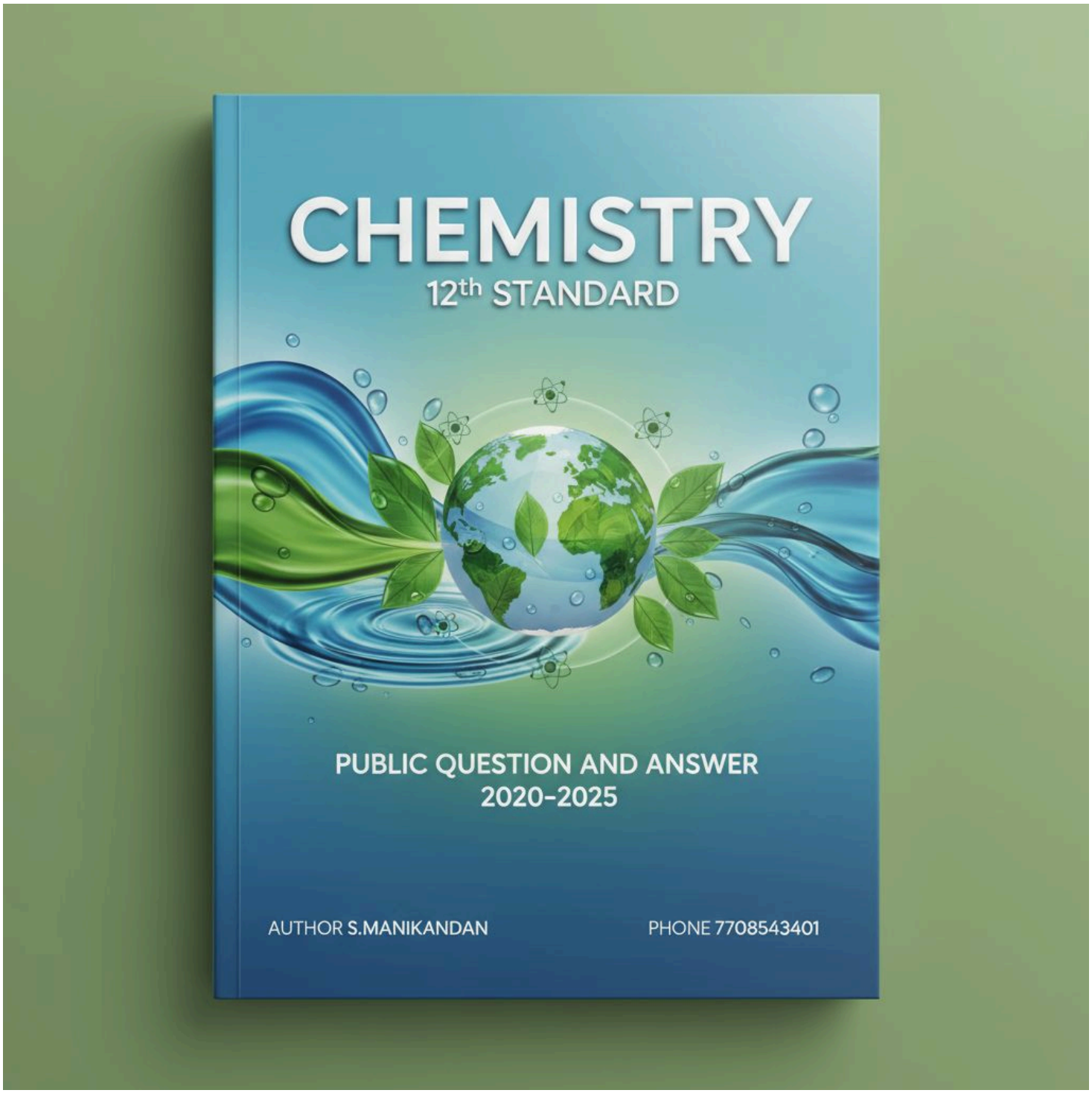

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COMMON QUARTERLY EXAMINATION – 2025

Standard XII

Reg.No.: | | | | | | |

CHEMISTRY

Time: 3.00 hrs. **Part - I** **Marks: 70**

I. Choose the correct answer: **15 x 1 = 15**

1. Which of the following plot gives Ellingham diagram?
   a) ΔS Vs T b) ΔG^o Vs T c) ΔG^o Vs $\frac{1}{T}$ d) ΔG^o Vs T^2
2. Which of these is not a monomer for a high molecular mass silicone polymer?
   a) Me_3SiCl b) $PhSiCl_3$ c) $MeSiCl_3$ d) Me_2SiCl_2
3. XeF_6 on complete hydrolysis produces
   a) $XeOF_4$ b) XeO_2F_2 c) XeO_3 d) XeO_2
4. In acid medium, potassium permanganate oxidizes oxalic acid to
   a) oxalate b) carbon dioxide c) acetate d) acetic acid
5. Assertion : Due to Frankel defect, density of the crystalline solid decreases
   Reason : In Frankel defect cation and anion leaves the crystal
   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
6. If the initial concentration of the reactant is doubled, the time for half reaction is also doubled. Then the order of the reaction is
   a) zero b) one c) fraction d) none
7. The pH of 10^{-5}M KOH solution will be
   a) 9 b) 5 c) 19 d) None of these
8. Among the following ethers which one will produce methyl alcohol on treatment with hot HI?
   a) $(CH_3)_3C-O-CH_3$ b) $(CH_3)_2CH-CH_2-O-CH_3$
   c) $CH_3-(CH_2)_3-O-CH_3$ d) $CH_3-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-O-CH_3$
9. 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
10. Which is used as moderator in nuclear reactors?
    a) boron nitride b) boron c) borax d) boric acid
11. The compounds used in Holme's signal are
    a) CaC_2 and Ca_3P_2 b) Al P and Ca_3P_2
    c) CaC_2 and P_4 d) Al P and P_4
12. The transition element which has only +3 oxidation state is
    a) Ni b) Mn c) Cr d) Sc
13. The time required for 99.9% completion of a first order reaction is equal to
    a) $2\ t_{1/2}$ b) $5\ t_{1/2}$ c) $10\ t_{1/2}$ d) $100\ t_{1/2}$
14. Which of the following is the strongest base?
    a) Cl^- b) SO_4^{2-} c) CH_3COO^- d) NO_3^-
15. The IUPAC name of acrolein is
    a) ethanol b) but-2-enal c) prop-2-enal d) but-1-enal

Part - II

II. Answer any 6 questions. (Q.No.24 is compulsory) **6 x 2 = 12**

16. What are the difference between minerals and ores?
17. How will you convert boric acid to boron nitride?
18. Give the uses of argon.
19. Why do transition elements and its compounds act as catalyst?
20. What is primitive unit cell?
21. Write the expression for the solubility product of $Ca_3(PO_4)_2$
22. Write the bromination reaction of anisole.
23. What is urotropine? How is it prepared?
24. For a reaction X + Y + Z → Products the rate law is given by rate = $k[X]^{3/2}[Y]^{1/2}$. What is the overall order of the reaction and what is the order of the reaction with respect to 'Z'.

Part - III

III. Answer any 6 questions. (Q.No.33 is compulsory) **6 x 3 = 18**

25. Explain how gold ore is leached by cyanide process.
26. Write the uses of aluminium chloride.
27. Mention the characteristic of interhalogen compounds.
28. Which is stronger reducing agent Cr^{2+} or Fe^{2+}? Explain.
29. Calculate the number of atoms in a fcc unit cell.
30. Give the examples for zero order reaction.
31. What is buffer index (β) ?
32. How is picric acid prepared?
33. How will you prepare Malachite green from benzaldehyde.

Part - IV

IV. Answer all the questions. **5 x 5 = 25**

34. a) Explain zone refining process with an example. ***(OR)***
    b) i) Give the uses of silicones (3 m)
    ii) Write a note on Fisher Tropsch synthesis. (2 m)
35. a) i) What is the hybridisation of Iodine in IF_7? Give its structure. (2 m)
    ii) Give a reason to support that sulphuric acid is a dehydrating agent. (3 m)
    (OR)
    b) i) Write the electronic configuration of Ce^{4+} and Co^{2+}. (2 m)
    ii) Compare Lanthanides and Actinoides. (3 m)
36. a) Write short note on metal excess and metal deficiency defect with an example.
    (OR)
    b) Derive integrated rate law for a first order reaction.
37. a) i) What are Arrhenius acids and bases. Give examples. (2 m)
    ii) Write the relationship between ionic product and solubility product. (3 m)
    (OR)
    b) i) Write the reaction of nitrating mixture with the following compounds :
    (i) Ethylene glycol (ii) Glycerol
38. a) Compound 'A' of molecular formula C_7H_6O reduces Tollen's reagent. When 'A' reacts with 50% NaOH gives compound 'B' of molecular formula C_7H_8O and 'C' of molecular formula $C_7H_5O_2Na$. Compound 'C' on treatment with dil.HCl gives compound 'D' of molecular formula $C_7H_6O_2$. When 'D' is heated with sodalime gives compound 'E'. Identify A,B,C,D & E. Write the corresponding equations.
    (OR)
    b) Write a note on : (i) Claisen-Schmidt condensation (ii) Etard reaction

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QUARTERLY EXAMINATION - 2025 | **Exam No.** | | | | | | |

Time: 3-00 Hrs. | **XII - CHEMISTRY** | **Marks : 70**

PART - I

Note: i) Answer all the questions. ***(15x1=15)***

ii) Choose the best answer and write option code with corresponding answer.

1. The transition element which has only +3 oxidation state is
   a) Ni b) Mn c) Cr d) Sc
2. On reacting with neutral ferric chloride, phenol gives
   a) Dark green colour b) Red
   c) No colouration d) Violet colour
3. Bauxite has the composition
   a) $Al_2O_3\ nH_2O$ b) $Fe_2O_3\ 2H_2O$ c) Al_2O_3 d) None of these
4. If 75% of a first order reaction was complete in 60min, 50% of the same reaction under the same condition would be completed in _____ minutes
   a) 35 b) 20 c) 75 d) 30
5. The crystal with a metal deficiency defect
   a) ZnO b) NaCl c) KCl d) FeO
6. Which of the following Lanthanoid ions is diamagnetic?
   a) Eu^{+2} b) Yb^{+2} c) Ce^{+2} d) Sm^{+2}
7. The aqueous solution of sodium formate, anilinum chloride and potassium cyanide are respectively
   a) Acidic, acidic, acidic b) Acidic, acidic, basic
   c) Basic, acidic, basic d) Basic, neutral, basic
8. The major product obtained when phenol reacts with Con H_2SO_4 at 373K is
   a) Salicylic acid b) Picric acid
   c) O-Phenol sulphonic acid d) P-Phenol sulphonic acid
9. Formula for hyponitrous acid
   a) HOONO b) $H_2N_2O_2$ c) HNO_2 d) HNO_4
10. ***Match the following.***

1) Fluorine	i) Identification of coloured metal ions
2) Borax	ii) Strong oxidising agent
3) Aluminium	iii) Chalgogens present in volcanic ashes
4) Sulphur	iv) Most abundant element

   a) 1-iii 2-ii 3-iv 4-i
   b) 1-ii 2-i 3-iv 4-iii
   c) 1-iv 2-iii 3-ii 4-i
   d) 1-ii 2-iv 3-i 4-iii
11. The radius of an atom is 300Pm, if it crystallizes in a face centered cubic lattice, the length of the edge of the Unit cell is
   a) 848.5Pm b) 488.5Pm c) 884.5Pm d) 484.5Pm
12. ***The incorrect statement among the following is.***
   a) Nickel is refined by Mond's process
   b) In the metallurgy of gold, the metal is leached with sodium chloride solution
   c) Titanium is refined by Van Arkel's process
   d) Zinc blende is concentrated by froth floatation
13. The reagent used to distinguish between acetaldehyde and benzaldehyde is
   a) Tollens reagent b) Fehling's solution
   c) 2, 4 - di nitro phenyl hydrazine d) Semi carbazide
14. Which of the following is not SP^2 hybridised?
   a) Fullerene b) Graphite c) Diamond d) Graphene
15. Conjugate base for Bronsted acids H_2O and HF are
   a) OH^- and F^- respectively b) OH^- and H_2FH^+ respectively
   c) H_3O^+ and F^- respectively d) H_3O^+ and H_2F^- respectively

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PART - II

Note: Answer any 6 questions. Question No.24 is compulsory. ***(6x2=12)***

16. What is auto reduction?
17. Write any two uses of borax?
18. Why transition elements shows variable oxidation state?
19. What is inert pair effect?
20. Distinguish between Isotropy and Anistrophy in solids.
21. The rate of reaction $x+2y \rightarrow$ product is $4x10^{-3}$ mol L^{-1} S^{-1} if [x] = [y] = 0.2M and rate constant at 400k is $2x10^{-2}S^{-1}$. What is the overall order of the reaction?
22. State Ostwald's dilution law.
23. How will you convert phenol to benzene?
24. Write any one test for aldehyde?

PART - III

Note: Answer any 6 questions. Question No.33 is compulsory. ***(6x3=18)***

25. Explain the following terms with suitable examples: 1) Gangue 2) Slag
26. What are the reasons that are responsible for the anomalous behaviour of P-block first elements?
27. What are interhalogen compounds? Give two examples.
28. What is meant by the term "Coordination Number"? What is the coordination number of atoms in a bcc structure?
29. $[Sc(H_2O)_6]^{+3}$ is colourless why?
30. Write any two methods of preparation of diethyl ether.
31. Write a note on Rosenmund reduction.
32. Give examples for first order reaction.
33. Calculate the p^H of 0.04M HNO_3 solution (log 4 = 0.6021).

PART - IV

Note: Answer the following questions. ***(5x5=25)***

34. a) (i) What is known as blister copper? (2)
    (ii) Which type of ores can be concentrated by Froth flotation method? Give two examples for such ores. (3)

(OR)

    b) Write a note on Zeolites. (5)

35. a) (i) Write the products formed in the reaction of nitric acid (both dilute and concentrated) with Zinc. (3)
    (ii) What type of hybridisation occur in a) BrF_5 b) BrF_3 (2)

(OR)

    b) Compare Lanthanoids and Actinoids. (5)

36. a) (i) Classify molecular crystals with an example for each type. (3)
    (ii) If the number of close packed sphere is 6. Calculate the number of octahedral voids and Tetrahedral voids generated. (2)

(OR)

    b) Show that for a first order reaction the time required for 99.9% completion of the reaction nearly ten times that required for half completion of the reaction. (5)

37. a) Derive Henderson - Hasselbalch equation. (5)

(OR)

    b) (i) Write the test to differentiate alcohol and Phenol. (3)
    (ii) Give the Coupling reaction of Phenol. (2)

38. a) Explain the mechanism of Cannizaro reaction. (5)

(OR)

    b) Identify A, B and C for the following reactions.

(i) Benzal dehyde $\xrightarrow[KMnO_4]{alk}$ Ⓐ (1)

(ii) Methylcyanide $\xrightarrow[[H]]{SnCl_2/HCl}$ Ⓑ $\xrightarrow{H_3O^+}$ Ⓒ + NH_3 (2)

(ii Draw the structure and write the uses of Utrotrophine. (2)

12

Reg. No. | | | | | | | |

Time : 3.00 hrs.

Quarterly Examination - 2025

CHEMISTRY

Max. Marks : 70

PART - I

Answer all questions. Choose the most appropriate answer from the given four alternatives and write the option for the corresponding answer. **15 x 1 = 15**

1. Which metal is refined by Van Arkel method?
   a) Zr b) Ti c) Zr & Ti d) Ni
2. Which of the following is not sp^2 hybridised?
   a) Graphite b) Graphene c) Fullerene d) Dry ice
3. The basicity of hypophosphorous acid is
   a) 1 b) 2 c) 3 d) 4
4. The correct order of bond dissociation enthalpy of halogens in the following order is
   a) $Br_2 > I_2 < F_2 > C\ell_2$ b) $C\ell_2 > Br_2 > F_2 > I_2$ c) $F_2 > C\ell_2 > Br_2 > I_2$ d) $I_2 > Br_2 > C\ell_2 > F_2$
5. Which is used in smoke screen?
   a) Borax b) diborane c) phosphine d) potash alum
6. Which ion has the number of unpaired electron equivalent to V^{+3}.
   a) Ti^{+3} b) Fe^{+3} c) Ni^{+2} d) Cr^{+3}
7. The general electronic configuration of Lanthanides is
   a) $(Xe)4f^{0-14}$ b) $(Xe)\ 4f^{1-14}\ 5d^{0-1}\ 6s^2$ c) $(Xe)\ 5d^{0-1}$ d) $(Xe)\ 4f^{0-14}\ 5d^{1-10}\ 6s^2$
8. In a solid atom M occupies ccp lattice and (1/3) of tetrahedral voids are occupied atom N, Find the formula of solid formed by M and N.
   a) M_3N_2 b) M_3N c) MN_3 d) MN
9. In a first order reaction $X \rightarrow Y$, if k is the rate constant and the initial concentration of the reactant x is 0.1m then half life is
   a) $\left(\frac{\log 2}{k}\right)$ b) $\frac{0.693}{(0.1)\,k}$ c) $\left(\frac{\ell n 2}{k}\right)$ d) None of these
10. Predict the rate law of the following reaction $2A + 2B \rightarrow C + 2D$, if the concentration 'A' is doubled when 'B' is does not change the rate of reaction increased 4 times, and also when the contraction of 'B' is increases 2 times and concentration of 'A' is does not change, then the rate of reaction increased 2 times.
    a) rate = k[A] $[B]^2$ b) rate = $k[A]^2$ [B] c) rate = k [A] [B] d) rate = k $[A]^{½}$ [B]2
11. Conjugate base for Bronsted acids H_2O and HF are
    a) OH^- and H_2FH^+ respectively b) H_3O^+ and F^-, respectively c) OH^- and F^-, respectively
    d) H_3O^+ and H_2F^+, respectively
12. The relationship between the solubility product and molar solubility for $Ag_2(CrO_4)$ is
    a) Ksp = s3 b) Ksp = 4s3 c) ksp = s2 d) ksp = 3s2
13. In presence of diluted acids, when isopropyl benzene is oxidised by air, it gives
    a) C_6H_5–COOH b) C_6H_5 – $COCH_3$ c) C_6H_5–CO –C_6H_5 d) C_6H_5OH
14. Ethanoic acid $\xrightarrow{P/Br_2}$ 2- bromoethanoic aci. This reaction is called as.....
    a) Finkelstein reaction b) Haloform reaction c) Hell-Volhard-Zelinsky reaction d) none of these
15. Tollen's reagent is a) acidified $AgNO_3$ b) Ammonical $AgNO_3$(or) Ammonia with silver nitrate
    c) aqueous $AgNO_3$ d) Solid $AgNO_3$

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PART - II

Answer any six questions. Question number 24 is compulsory **6 x 2 = 12**

16. Write a note on gravity separation method. (or) hydraulic wash?
17. How is aluminium chloride prepared by MCAfee process?
18. Explain the bleaching action of chlorine.
19. Cu^{+2} ion compounds are coloured, but Zn^{+2} ion compounds are not coloured. why?
20. Differentiate octahedral voids from tetrahedral voids.
21. Identify the order of the following reaction.
    (i) Rusting of iron. (ii) Radioactive disintegration $_{92}U^{235}$
22. What is Bayer's reagent? By using this how will you convert ethene to Ethan-1, 2-diol.
23. Write a note on Haloform reaction.
24. Calculate the pH of 10^{-7}m HCℓ.

PART - III

Answer any six questions. Question number 33 is compulsory **6 x 3 = 18**

25. What is picric acid? How is it prepared?
26. Write the differences between Lewis and Lewis base.
27. (i) What is bragg equation? (ii) Classify the molecular crystal with suitable example.
28. Define half-life period of reaction. The half-life period of first order reaction is independent of initial concentration.
29. Explain magnetic separation method.
30. What is catenation? Write the catenation property of carbon.
31. (i) Why fluorine always exhibit - 1 oxidation state? Explain.
    (ii) Why HF cannot be stored in glass bottle? Explain.
32. What is lanthanide contraction? Write their consequences.
33. Compound 'A' of molecular formula C_3H_4, is react with H_2O, in present of Hg^{+2}/H_2SO_4 gives 'B'. 'B' undergoes haloform reaction. Compound 'B' also react with NH_2NH_2/C_2H_5 ONa give hydrocarbon of compound 'C; Identify compound A, B & C. Explain the reaction.

PART - IV

Answer all the following questions. **5 x 5 = 25**

34. a) (i) What are the differences between minerals and ores?
    (ii) What is role of silica on the extraction of copper?
    (iii) What is calcination? **(OR)**
    b) (i) Write the differences between graphite and diamond. (3)
    (ii) What is the action of heat on Borax. Write the equations.
35. a) (i) Explain the structure of Ammonia. (ii) Mention the uses of Argon. **(OR)**
    b) (i) Write the preparation of potassium di-chromate.
    (ii) Write a note on Zeigler - Natta catalyst. Give its use.
36. a) (i) What is packing efficiency? Calculate the packing efficiency of body centred cubic crystal. **(OR)**
    b) (i) Derive integrated rate law for a first order reaction. A → product.
37. a) (i) Derive an expression for Ostwald's dilution law. **(OR)**
    b) Write a note on (i) Schatten-Baumann reaction (1½) (ii) Riemer - Tiemann reaction (2)
    (iii) Swern Oxidation (1½)
38. a) (i) Explain the mechanism of Cannizzaro reaction (3)
    (ii) What is transesterification? Give example. (2) **(OR)**
    b) (i) Explain common ion-effect with suitable example. (2) (ii) Compare lanthanides and actinides.

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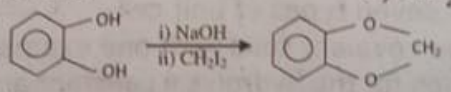
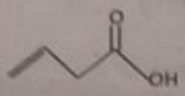
Standard 12
CHEMISTRY
PART - I

Time: 3.00 Hours | Marks: 70

Answer all the questions **15x1=15**

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 geometry at which carbon atom in diamond are bonded to each other is
   a) Tetrahedral b) Hexagonal c) Octahedral d) None of these
3) Solid (A) reacts with strong aqueous NaOH liberating a foul smelling gas (B) Which spontaneously burn in air giving smoky rings. A and B are respectively
   a) P_4(red) and PH_3 b) P_4(white) and PH_3 c) S_8 and H_2S d) P_4(white) and H_2S
4) Which of the following is weakest acid among all?
   a) HI b) HF c) HBr d) HCl
5) Which of the following lanthanoid ions is diamagnetic?
   a) Eu^{2+} b) Yb^{2+} c) Ce^{2+} d) Sm^{2+}
6) Potassium has a bcc structure with nearest neighbour distance 4.52 Å. Its atomic weight is 39, its density will be
   a) 915 kgm^{-3} b) 2142 kgm^{-3} c) 452 kgm^{-3} d) 390 kgm^{-3}
7) 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
8) What is the order of the Isomerisation of propene
   a) one b) zero c) three d) two
9) The aqueous solutions of sodium formate, anilinium chloride and Potassium cyanide are respectively
   a) acidic, acidic, basic b) basic, acidic, basic
   c) basic, neutral, basic d) none of these
10) What is the value of Inoic product of water at room temperature?
   a) 1×10^{-7} b) 1×10^{-14} c) 1×10^{-10} d) none of these
11) Calculate the pH of 0.001 M HCl solution
   a) 10^{-3} b) −3 c) 3 d) 3.3
12) Which one of the following will react with phenol to give salicylaldehyde after hydrolysis
   a) Dichloro methane b) trichloromethane
   c) trichloro methane d) CO_2
13) The reactions 

   a) Wurtz reaction b) cyclic reaction
   c) williamson reaction d) Kolbe reaction
14) Reaction of acetone with one of the following reagents involves nucleophilic addition followed by elimination of water. The reagent is
   a) Grignard reagent b) Sn/HCl
   c) Hydrazine in presence of slightly acidic solution d) Hydrocyanic acid
15) The IUPAC name of 

   a) but-3-enoic acid b) but-1-1-ene-4-oicacid
   c) but-3-ene-1-oic acid d) but-3-ene-1-oicacid

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PART - II

Answer 6 six questions. Q.No. 24 is compulsory. 6x2=12

16) Give two limitations of Ellingham diagram
17) How will you convert boric acid to boron nitride?
18) What happens when PCl_5 is heated?
19) Why do Zirconium and Hafnium exhibit similar properties?
20) Why ionic crystals are hard and brittle?
21) Define pH
22) How will you convert cumene to phenol?
23) Explain Benzoin condensation reaction
24) The rate constant for a first order reaction is $1.54 \times 10^{-3} s^{-1}$. Calculate its half life period

PART - III

Answer 6 six questions. Q.No. 33 is compulsory. 6x3=18

25) Explain the principle of electrolytic refining with an example
26) Preparation of Borazole (or) Borazine from diborane
27) What is the hybridisation of iodine in IF_7? Give its structure
28) What is Hume - Rothery rule about alloy formation of transition metals?
29) What are point defects? Give the classification flow chart.
30) Give the differences between rate of a reaction and rate constant of a reaction
31) Explain common ion effect with an example
32) Preparation of Picric acid from phenol
33) What is Urotropine? Give the preparation, structure and uses

PART - IV

Answer all the questions. 5x5=25

34) a) Explain Froth Flotation process with example and diagram

(OR)

b) i) Preparation of Aluminium chloride by McAfee Process
ii) Give the uses of silicones

35) a) What is lanthanoid contraction and what are the effects of lanthanoid contraction?

(OR)

b) i) What is inert pair effect?
ii) Deduce the oxidation number of oxygen in hypofluorous acid - HOF

36) a) Derive integrated rate low for a first order reaction

(OR)

b) i) Explain briefly seven types of unit cell
ii) Write a note on covalent solid with one example

37) a) Derive an expression for the hydrolysin constant and degree of hydrolysis of salt of strong acid and weak base

(OR)

b) i) What are Lewis acids and bases? Give two examples for each
ii) What is Packing fraction (or) Packing efficiency?

38) a) Write the mechanism of Aldol condensation reaction.

(OR)

b) Write short notes on the following
i) Swern oxidation reaction
ii) Schotten - Baumann reaction
iii) Rosenmund reduction reaction

12th chemistry public exam question and answer book contact
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Class : 12

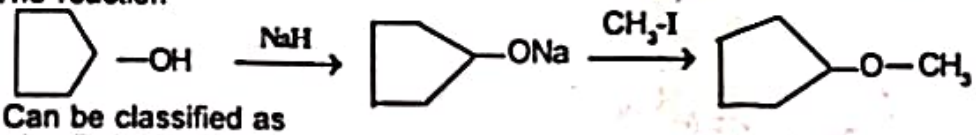
COMMON QUARTERLY EXAMINATION 2025-26

Time Allowed : 3.00 Hours] **CHEMISTRY** [Max. Marks : 70

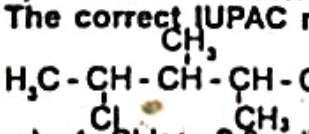
PART – A

I. Choose the correct answer. 15x1=15

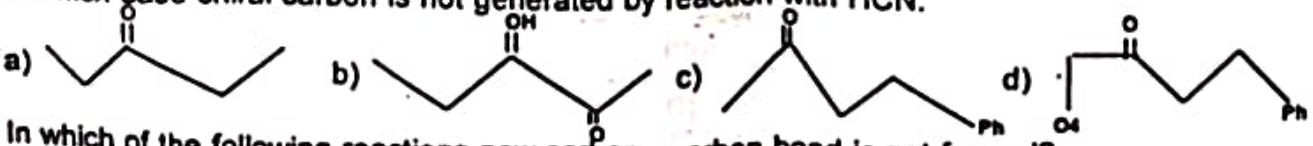
1. Which of the metal is extracted by HALL - HEROULT PROCESS?
   a) Al b) Ni c) Cu d) Zn
2. Duralumin is an alloy of
   a) Cu, zn b) Cu, Al , Mg c) Al , Mn d) Al , Cu, Mn, Mg
3. When Copper is heated with conc HNO_3 it produces.
   a) $Cu(NO_3)_2$, NO and NO_2 b) Cu $(NO_3)_2$ and N_2O
   c) Cu $(NO_3)_2$ and NO_2 d) Cu $(NO_3)_2$ and NO
4. How many moles of I_2 are liberated when 1 mole of potassium dichromate react with potassium iodide?
   a) 1 b) 2 c) 3 d) 4
5. Among the following diamagnetic and colourless ions are
   a) Ni^{2+}, co^{2+} b) cu^{+}, zn^{2+} c) Ti^{3+}, V^{4+} d) sc^{3+}, Mn^{2+}
6. The Yellow colour in Nacl crystal is due to
   a) Excitation of electrons in F centers b) Reflection of light from cl^- ion on the surface
   c) Refraction of light from Na^+ ion d) All of the above
7. The rate constant of a reaction is $5.8x10^{-2}s^{-1}$ the order of the reaction
   a) First order b) Zero order c) Second order d) Third order
8. For a reaction rate = K [Acetone]$^{3/2}$ then unit of rate constant and rate of reaction respectively.
   a) $(mol\ L^{-1}s^{-1})$, $(mol^{-1/2}L^{1/2}s^{-1})$ b) $(mol^{1/2}L^{1/2}s^{-1})$, $(molL^{-1}s^{-1})$
   c) $(mol^{1/2}L^{1/2}s^{-1})$, $(molL^{-1}s^{-1})$ d) $(mol\ Ls^{-1})$, $(mol^{1/2}L^{1/2}s)$
9. The aqueous solutions of sodium formate, anilinium chloride and potassium cyanide are respectively
   a) acidic, acidic, basic b) basic, acidic, basic
   c) basic, neutral, basic d) none of these
10. Which of the following relation is correct for degree of hydrolysis of ammonium acetate?
    a) $h=\sqrt{\frac{kh}{c}}$ b) $h=\sqrt{\frac{Ka}{kb}}$ c) $h=\sqrt{\frac{kw}{ka.\ kb}}$ d) $h=\sqrt{\frac{ka.kb}{kw}}$
11. The reaction



Can be classified as
   a) Dehydration b) Williamson alcohol synthesis
   c) Willaimson ether synthesis d) Dehydrogention of Alcohol
12. The correct IUPAC name of the compound,



   a) 4- Chlor - 2,3 - dimethyl pentan - 1- ol
   b) 2,3 - dimethyl -4- Chloropentan - 1- ol
   c) 2,3,4 - trimethyl - 4- Chlorobutan - 1- ol
   d) 4- Chloro - 2, 3, 4 - trimethyl pentan-1- ol
13. GLYCEROSE is a mixture of
   a) Glyceradehyde and dihydroxy acetone b) Glyceric acid and dihydroxy acetone
   c) Glyceraldehyde and Mesooxalic acid d) Tartronic acid and oxalic acid
14. In which case chiral carbon is not generated by reaction with HCN.



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

KK/12/Che/1

PART - II

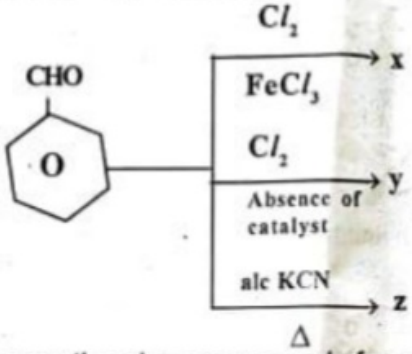
II. Note: Answer any Six questions. Question No.24 is compulsory. **6x2=12**

16. Give the basic requirement for vapour phase refining?
17. Why HF cannot be stored in glass bottles?
18. Complete the following reactions.
    a) $MnO_4^- + Fe^{2+} \longrightarrow$ b) $KMnO_4 \xrightarrow[\text{Red hot}]{\Delta}$
19. Write bragg's equation and explain the terms involved.
20. Define Buffer Index?
21. What is metamerism. Give examples?
22. Write a note on Riemer Tiemann reaction?
23. What is Claisen ester condensation?
24. Calculate the P^H of 0.04 M HNO_3 Solution?

PART - III

III. Note: Answer any Six questions. Question No.33 is compulsory. **6x3=18**

25. Write the uses of Silicones?
26. Give the oxidation state of halogen in the following compounds.
    a) OF_2 b) O_2F_2 c) Cl_2O_3 d) I_2O_4
27. Why do transition metals and their compounds act as Good catalysts?
28. Explain the Frenkel defect with example?
29. Give any three examples for the first order reaction.
30. Write the expression for the soluability product of $Ca_3(PO_4)_2$.
31. Convert Glycerol into a) Acrolein b) TNG or GTN
32. Find x,y and z.



33. How will you prepare the given compounds from acetic acid.
    i) Mono chloro acetic acid ii) Ethane iii) Acetamide

PART - IV

IV. Note: Answer ALL the questions. **5x5=25**

34. a) Explain Zone refining process with an example. (5)

    (OR)

    b) i) What is catenation? write the condition for catenation property? (3)
    ii) What is the action of heat on boric acid? (2)

35. a) i) Write a short note on Holmes Signal. (3)
    ii) How is bleaching powder prepared? (2)

    (OR)

    b) i) Explain why Cr^{3+} is strongly reducing agent while Mn^{3+} is strongly oxidizing. (3)
    ii) What are actinides? Give three examples. (2)

36. a) Differentiate between crystallinc and amorphous solids. (5)

    (OR)

    b) i) Explain Pseudo first order reaction with an example. (3)
    ii) Write Arrhenius equations and explains the terms involved. (2)

37. a) i) Derive the ostwald's dilution law? (3)
    ii) Define ionic product of Water. Give its value at room temperature. (2)

    (OR)

    b) How to distinguish 1°, 2°, and 3° alcohols by Victor meyer's Test. (5)

38. a) **Bring out the following conversions.**
    i) Glycol ⟶ Acetaldehyde (2)
    ii) Phenol ⟶ 2,4,6 - Trinitro phenol (2)
    iii) Phenol ⟶ Anisole (1)

    (OR)

    b) **Bring out the Following Conversion.**
    i) HCHO ⟶ Urotrophine. (1)
    ii) CH_3COCH_3 ⟶ $CHCl_3$ (Chloroform) (2)
    iii) Benzene ⟶ Benzoic Acid (2)

YOUR HINTS