

Class XII

MM: 60

II: All Questions are compulsory however internal choices have been given.

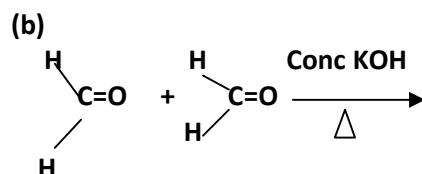
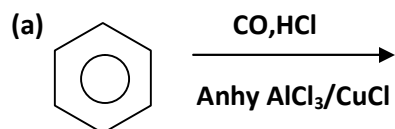
(c) Methoxymethane, Ethanol, propane (d) Ethanol, propane, Methoxymethane

- Q9.** The P_{K_a} values of 4 different carboxylic acid is given below:
 (I) Benzoic acid (4.19) (II) Acetic Acid (4.76)
 (III) Trifluoroacetic Acid (0.23) (IV) 4-NitroBenzoic Acid (3.41)
 Which of the carboxylic acid is strongest.
 a) Benzoic acid b) Acetic Acid c) Trifluoroacetic Acid d) 4-NitroBenzoic Acid
- Q10.** The correct IUPAC name of $CH_3COCH_2CH_2CH_3$.
 a) Pentan-2-one b) Pentan-4-one c) Pentanone d) Methyl,n-propyl Ketone.
- Q11.** The order of basicity of amines in gaseous phase:
 (a) Tertiary Amines > Secondary amines > primary amines > Ammonia.
 (b) Secondary amines > Primary amines > Ammonia > Tertiary amines .
 (c) Primary amines > Ammonia > Tertiary amines > Secondary amines
 (d) Ammonia > Tertiary amines > Secondary amines > Primary amines
- Q12.** When haloalkane reacts with following reagent ,products formed are:
 Haloalkane + Reagent Products
 A. $RX + NaOH$ (i) RCN
 B. $RX + AgCN$ (ii) RNC
 C. $RX + KCN$ (iii) ROH
 D. $RX + LiAlH_4$ (iv) RH
 (a) A(i),B(ii),C(iii),D(iv) (b) A(ii),B(i),C(iii),D(iv) (c) A(iii),B(ii),C(i),D(iv) (d) A(iv),B(i),C(ii),D(iv)

Section B (Very short answers) (7 x 2 =14)

- Q13.** The Resistance of a Conductivity cell filled with 1.00 mol L^{-1} KCl solution is 200 ohms. If the resistance of same cell when filled with 0.01 mol L^{-1} KCl solution is 320 ohms . Calculate the conductivity and molar conductivity of 0.02 mol L^{-1} KCl solution (The Conductivity of 1.00 mol L^{-1} KCl solution is 11.13 Sm^{-1})?
- Q14.** For the reaction
 $2NO + Cl_2 \rightarrow 2NOCl$
 Experimental rate law is
 $\text{Rate} = k[NO]^2[Cl_2]$
 (a) What is the order of the reaction ?
 (b) Is this reaction takes place in one step?
- Q15.** Explain the Hybridisation, of $[Co(NH_3)_6]^{+3}$, geometry and magnetic behavior as per Valence Bond Theory.
- Q16.** **(a) Assertion:** The boiling points of alcohols and phenols are higher in comparison to haloalkanes, Ethers, hydrocarbons, of comparable molecular mass.
Reasons: The high boiling points in alcohols and phenols are due to presence of intermolecular Hydrogen bonding which is absent in ethers and Hydrocarbons.
 (a) Both Assertion and Reason are true & Reason is correct explanation of Assertion.
 (b) Both Assertion and Reason are true & Reason is not correct explanation of Assertion.
 (c) Assertion is true & Reason is False.
 (d) Assertion is false but Reason is true
- (b) Assertion:** The bond angles in alcohols is (108.9°) slightly less than tetrahedral angle ($109^\circ.28'$) Whereas in ethers it is 111.7° .
Reason: Bond angles in alcohols is due to repulsion between shared electron pair of oxygen and in ethers it is due to repulsive interaction of O-R group.
 (a) Both Assertion and Reason are true & Reason is correct explanation of Assertion.
 (b) Both Assertion and Reason are true & Reason is not correct explanation of Assertion.
 (c) Assertion is true & Reason is false.
 (d) Assertion is false but Reason is true

Q17. Complete the following reactions



Q18. Compound Ethanoic Acid (CH_3COOH) react with Ethanol ($\text{C}_2\text{H}_5\text{OH}$) in presence of Conc H_2SO_4 to form a compound A.

(a) Identify the compound A.

(b) Name the Reaction .

Q19

(a)Assertion: Secondary structure of protein found to exist in two different structure viz. α -helix and β -pleated sheets structure.

Reason: These (α and β structure) arise due to regular folding of the back bone of the polypeptide

Chain due to hydrogen bonding between $-\text{NH}-$ and $>\text{C}=\text{O}-$ groups of peptide bond.

(a) Both Assertion and Reason are true & Reason is correct explanation of Assertion.

(b) Both Assertion and Reason are true & Reason is not correct explanation of Assertion.

(c) Assertion is true & Reason is False.

(d) Assertion is false but Reason is true

(b)Assertion : Amino acids shows amphoteric behavior as they react with both acids and bases.

Reason : In aqueous solution, carboxylic group can loose a proton and amino group can accept that proton which gives rise to tripolar ion .

(a) Both Assertion and Reason are true & Reason is correct explanation of Assertion.

(b) Both Assertion and Reason are true & Reason is not correct explanation of Assertion.

(c) Assertion is true & Reason is False.

(d) Assertion is false but Reason is true

Section C(Short Answers Questions) (5 x 3 = 15)

Q20. Alka Mam Chemistry teacher told Raj to arrange these metals in order in which they displace each other.

$\text{Al}^{+3}/\text{Al} = -1.66\text{V}$, $\text{Cu}^{+2}/\text{Cu} = -0.34\text{V}$, $\text{Fe}^{+2}/\text{Fe} = -0.44\text{V}$, $\text{Mg}^{+2}/\text{Mg} = -2.36\text{V}$, $\text{Zn}^{+2}/\text{Zn} = -0.76\text{V}$, $\text{Ag}^{+}/\text{Ag} = +0.80\text{V}$

(a) Write down the correct order .

(b) She further directed him to store copper sulphate solution in a pot . out of these metals Al, Cu, Fe, Mg, Ag, Zn which metal pot is safe to store the solution and Why?

Q21. (a) Rate constant of a reaction at 300K and 500K are 0.02 Sec^{-1} and 0.07 Sec^{-1} respectively. Calculate the values of E_a and A. ($R=8.314 \text{ J/K/mol}$, $\log_{10}(3.5)=0.544$, $\log_{10}(0.02)=-1.699$, $\text{antilog} -0.339=0.458$)

(b) A reaction is of 2nd order with respect to a reactant .How is the rate of reaction affected if concentration is doubled?

Q22. (a) Using IUPAC norms write the systematic name of $\text{K}_4[\text{Fe}(\text{CN})_6]$.

(b) Draw the geometrical isomers of $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$.

(c) What are unidentate ligands ,give an example.

Q23. How will you convert the following? (Write the chemical equations)

- (a) Ethyl Alcohol $\longrightarrow$ Ethylene.
(b) Phenol $\longrightarrow$ Picric acid.
(c) n-Propyl Alcohol $\longrightarrow$ Dipropyl Ether.

Q24 (a) Why vitamin C cannot be stored in our body?
(b) Which Nitrogenous base is present in RNA but not in DNA?
(c) How many peptide linkages are present in Tripeptide?

SECTION C(Case Study Questions) (4 Marks)

Q25. A student of class XII (Science) conducted different experiments in his school chemistry Lab with 2- Bromobutane in different conditions:

(a) In 1st Experiment he treated 2-bromobutane with aqueous KOH in which he gets partially racemized alcohol as product.

(b) In 2nd experiment he treated the Reactant (2-bromobutane) with water and found that the reaction is slow and Racemic in nature.

On the basis of above observation answer the following questions:

(a) Why partial racemization takes place in Experiment 1, instead of complete racemization?

(b) Why the reaction rate is slow in Experiment 2?

(c) Assertion : Experiment 2nd Give a racemic mixture .

Reason : The reaction proceeds via a planar carbocation intermediate.

(i) Both Assertion and Reason are true & Reason is correct explanation of Assertion.

(ii) Both Assertion and Reason are true & Reason is not correct explanation of Assertion.

(iii) Assertion is true & Reason is False.

(iv) Assertion is false but Reason is true.

SECTION-E(Long Answer Questions) (3 x 5 = 15)

Q26. A NGO checked the sample of drinking water of village Byrnihat and found that it is contaminated with mercury . the level of contamination was 2ppm(by Mass).

(a) What is the full form of ppm and where is it used ?

(b) Express the percent of Mercury in Water Sample by mass.

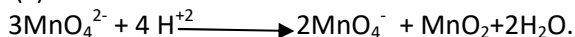
(c) Determine the molality of mercury in water sample.

Q27. Explain with reasons :

(a) Out of V^{+2} and Cr^{+2} which is more paramagnetic in behavior & why?

(b) Why Cu^{+2} is blue in colour whereas Zn^{+2} is colourless ?

(c) In this reaction :



Manganese shows disproportionation of oxidation state . What is meant by disproportionation of oxidation state?

OR

The d-block of the periodic table contains the elements of the groups 3 to 12 and are known as transition elements. In general, the electronic configuration of these elements is $(n-1)d^{1-10}ns^{1-2}$.

The d-orbitals of the penultimate energy level in these atoms receive electrons giving rise to three rows of transition metals i.e 3d, 4d and 5d series . However the last member of these series Zn, Cd, and Hg are not regarded as transition elements . Transition elements show certain characteristics properties like variable oxidation states, complex formation , formation of coloured ions, alloys, catalytic activity etc. Transitional metals are hard except Zn , Cd and Hg and have a high melting point.

On basis of this information answer the following Questions:

- (a) Name the first member of 3d series.
- (b) Why Zn, Cd and Hg are not regarded as transition elements?
- (c) How atomic radii varies in 3d series ?
- (d) Electronic configuration of transition element X in +3 oxidation state is $[\text{Ar}]3d^3$. what is its atomic no?
(i) 25 (ii) 26 (iii) 27 (iv) 24

Q28. A student perform experiment with 3 solutions: A(Ethyl Amine), B(Di Ethylamine) and C(Tri Ethyl Amine) with Benzene Sulphonyl Chloride ($\text{C}_6\text{H}_5\text{SO}_2\text{Cl}$). On Addition of NaOH in the product of A,B,C the results are :

- (i) Sol A (Ethyl Amine + Benzene sulphonyl chloride) + NaOH $\longrightarrow$ Soluble Sulphonamide
- (ii) Sol B (Diethyl amine + Benzene Sulphonyl Chloride) + NaOH $\longrightarrow$ Insoluble Sulphonamide
- (iii) Sol C (Triethyl amine + Benzene Sulphonyl Chloride) + NaOH $\longrightarrow$ No Reaction.

On basis of following information answer the following questions

- (a) Classify solutions A, B, C as 1° , 2° and 3° Amines.
- (b) Name the distinguishing test performed by student.
- (c) Why Solution A dissolves in NaOH?
- (d) Write chemical reaction of Ethyl Amine and Di Ethyl Amine with Benzene Sulphonyl Chloride.

Chapter wise Marks Distribution

Blue print of Model Question Paper class XII CHEMISTRY session 2026-2027

There will be 28 questions in all .

Q.N1 to 12 are Multiple Choice Questions and Carry 1 mark each.

Q.N13 to 19 are Very Short Questions and carry 2 Marks each.

Q.N.20 to 24 are Short Answer Questions and carry 3 Marks each.

Q.N 25 is a Case Study Based Question And carries 4 Marks.

Q.N 26 to 28 Long Answer Questions and carry 5 Marks each.

Sr.no	Name of Chapter	1Marks (Objective)	2Marks (VSA)	3Marks (SA)	4Marks (CBQ)	5Marks (LSA)	Total Marks
1	Solutions	1				1	6
2	Electrochemistry	3	1	1			8
3	Chemical Kinetics	1	1	1			6
4	Transition Elements	1				1LSA/CBQ	6
5	Coordination Compounds		1	1			5
6	Halo Alkanes and Halo Arenes	1			1		5
7	Alcohols, Phenols, Ethers.	1	1	1			6
8	Aldehydes, Ketones, Carboxylic Acids	3	2				7
9	Amines	1				1	6
10	Biomolecules		1	1			5
11	Total	12x1=12	7x2=14	5x3=15	1x4=4	3x5=15	60

Format of Design
Question Paper/Test

Subject: CHEMISTRY
Unit/Paper: THEORY
Class: 12th
Time: 3 HRS.
Marks: 60

Weightage to Objective

Objective	Knowledge	Understand	Application	Analyses	Evaluation	Creation	Total
Percentage	43%	22%	17%	18%	-	-	100%
Marks							
Marks	26	13	10	11	-	-	60

Weightage to form of question:

Forms of Questions	E/LA	CBQ	SA	VSA	O(MCQ)	Total
No. Of Questions	3	1	5	7	12	28
Marks allotted	15	4	15	14	12	60
Estimated Time	45	30	55	35	15	180

Weightage to Major Content Areas:

S.No.	Unit/Sub-Units	Marks
1.	Solution + Electro Chemistry	14 (8+6)
2.	Chemical Kinetics + Transition Elem.	12 (6+6)
3.	Coordination Compounds	5
4.	Haloalkanes & Haloarenes	5
5.	alcohols, Phenol, Ethers	6
6.	Aldehydes, Ketones, Carboxylic acid	7
7.	Amines	6
8.	Biomolecules	5
Total		60

Schemes of Sections	(A, B, C, D, E)
Pattern of Options	INTERNAL & EXTERNAL

Index of Abbreviations:

(E/LA: Essay/Long Answer; SA: Short Answer; VSA: Very Short Answer; O: Objective)

FORMAT OF BLUE PRINT SESSION 2026-27

SUBJECT : CHEMISTRY PAPER : 1 MAX MARKS: 60 CLASS : XII TIME: 3 HRS OPTION IN QUESTIONS: INTERNAL

SCHEMES OF SECTIONS: YES (A,B,C,D,E)

S. n o	OBJECTIVE →	KNOWLEDGE				UNDERSTANDING				APPLICATION				ANALYSIS				EVALUATION				CREATION				
	Question form	E/LA	S A	V S A	O	E/LA	S A	V S A	O	E / L A	S A	V S A	O	E/LA	S A	V S A	O	E / L A	S A	V S A	O	E / L A	S A	V S A	O	Total Marks ↓
	Unit /Sub unit																									TOTAL
1	Solutions	1a										1		1b,c,d,e												6
2	Electrochemistry				1		1		1			1					1									8
3	Chemical Kinetics			1					1		1															6
4	Transition Metals	1a			1									1b,c,d,e												6
5	Coordination Compounds		1					1																		5
6	Haloalkanes and Haloarenes								1					1/CBQ												5
7	Alcohols, Phenols and Ethers			1			1					1														6
8	Aldehydes, Ketones and Carboxylic acids				1			1a	2							1b										7
9	Organic Compounds Containing Nitrogen													1			1									6
10	Biomolecules		1					1																		5
	Total Questions →		2	2	3		2		5		1	1	2				2									60 marks

OBJECTIVE QUESTIONS : 12(12 MARKS)

VERY SHORT ANSWERS: 7 (14 MARKS)

SHORT ANSWER QUESTIONS: 5 QUESTIONS(15 MARKS) , CBQ: 1 (4 MARKS) Essay/ LSA (E): 3 (15 MARKS),