

PAPER- CHEMISTRY
Time :- 3 Hrs

Max. Marks :- 70

General Instructions:-

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1).	There are a total of 28 questions and four sections in the question paper. All questions are compulsory.
2).	Section (A) contains question no. 1 to 7, very short answer questions of one mark each.
3).	Section (B) contains question no. 8 to 13, short answer questions of two mark each.
4).	Section (C) contains question no. 14 to 25, also short answer questions of three mark each.
5).	Section (D) contains question no. 26 to 28, long answer questions of five mark each.
6).	There is no overall choice. However an internal choice has been provided in two questions of two marks, four questions of three marks and all the three questions of five marks weightage. You have to attempt only one of the choices in such questions.
7).	Use log tables, if necessary. Use of calculators is not allowed.

SECTION-A	7 X 1 mark = 7 marks	
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- SECTION-A**
- Q 1 'Crystalline solids are anisotropic in nature'. What does the statement mean?
- Q 2 If both adsorption and absorption takes place simultaneously, the process is called _____
- Q 3 What is IUPAC name of $[Co(NH_3)_5Cl]Cl_2$
- Q 4 Phenol is less acidic than:-
a) Ethanol
b) O- nitrophenol
c) O-methylphenol
d) O-methoxyphenol
- Q 5 The IUPAC name of
- $\begin{array}{ccccccc} CH_3 & ---CH--- & C & ---CH--- & CH_3 \\ & | & || & | & \\ & NO_2 & O & CH_3 & \end{array}$
- is 4-Methylpent-3-en-2-one (True/False)
- Q 6 Ammonolysis of alkyl halides to give amines is an example of _____ reactions.
- Q 7 Vitamin A is :-
a) Ascorbic acid
b) Retinol
c) Calciferol
d) Thiamine

SECTION- B	6 X 2 mark = 12 marks	
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- Q 8 Describe any two of the techniques used for preventing corrosion of metals.
- Q 9 Derive integrated rate equation for first order reaction.

- Q 10 Write the electronic configuration of the elements with atomic number 61, 91, 101 and 109

OR

What are inner transition elements ? Write which of the given atomic numbers are the numbers of the inner transition elements :- 29, 59, 74, 95, 102.

- Q 11 Explain why some square planar complexes of Ni(II) are diamagnetic while some others are paramagnetic.

OR

Give main postulates of Valence Bond (VB) theory.

- Q 12 Explain nature of C-X Bond in case of haloalkanes.
Q 13 Explain Hofmann ammonolysis by giving one example.

SECTION- C	12 X 3 marks = 36 marks	
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- Q 14 Calculate the number of atoms in a unit cell of simple cubic lattice, body centered cubic lattice and face centered cubic lattice.
- Q 15 Define the following and write the formula and unit of each:-
(i) Conductivity
(ii) Molar conductivity
(iii) Cell constant
- Q 16 Give any three differences between order of reaction and its molecularity.
- Q 17 Explain electrophoresis OR cataphoresis with the help of diagram.
- Q 18 Explain the use of the following:-
(i) NaCN in froth floatation method.
(ii) Carbon monoxide in Mond process.
(iii) Cryolite in metallurgy of aluminium.
- Q 19 Draw labelled diagram of Haber process for the manufacture of NH_3 . what is the importance of Le- Chatlier's principle in this process?
- Q 20 Explain the following:-
(i) Lanthanoid contraction.
(ii) Interstitial compounds.
(iii) Oxidation states of actinoids.
- Q 21 Give three methods of preparation of alcohols.
- Q 22 (i) Why aromatic primary amines cannot be prepared by Gabriel Phthalimide reaction.
(ii) Give one point of difference between aniline and benzyl amine.

- (iii) Carry out the conversion :-
Ethanoic acid into methanamine.

OR

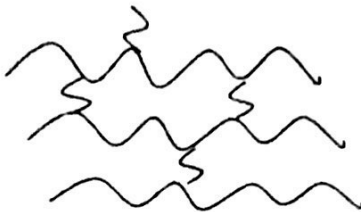
- (i) Define diazonium salts.
(ii) Write diazotisation reaction.
(iii) What are amines?

- Q 23 Give three points of difference between DNA and RNA.

OR

Give sources and deficiency disease of Vitamin A, Vitamin C and Vitamin D.

- Q 24 a) Identify the type of polymer given in the following figure:-



- b) Write the structure of Nylon 6,6.
c) Define biodegradable polymers.

OR

- a) Classify polymers on the basis of structure.

- Q 25 a) Define a tranquilizer. Give one example.
b) Pickles have a long shelf life and do not get spoiled for months, why?
c) Why aspirin is used in prevention of heart attacks ?

OR

- a) Give three advantages of using detergents over soap.

SECTION- D	3 x 5 marks = 15 marks	
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- Q 26 The boiling point of Benzene is 353.23 K. When 1.80 g of a non-volatile solute was dissolved in 90 g of Benzene, the boiling point is raised to 354.11 K. Calculate the molar mass of the solute. K_b for Benzene is $2.53 \text{ K Kg mol}^{-1}$.

OR

What is colligative property? Illustrate elevation in boiling point with the help of vapour pressure - temperature curve of a solution. Show that elevation in boiling point is colligative property.

- Q 27 Discuss the general characteristics of group 15 elements with reference to their electronic configuration, oxidation state, atomic size, ionization enthalpy and electronegativity.

OR

What are interhalogen compounds ? How are they classified ? Discuss the structure of IF_7 .

Q 28 Explain the following reactions by giving one example. -

- a) Rosenmund Reduction. (1)
- b) Cross-Aldol condensation. (2)
- c) Cross-Cannizaro reaction (2)

OR

Give five methods of preparation of caboxylic acids . (5)

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S.No.	Name of Chapters	Questions			
		1 mark	2 marks	3 marks	5 marks
1	Solid State	1	-	1	-
2	Solutions	-	-	-	1
3	Electrochemistry	-	1	1	-
4	Chemical Kinetics	-	1	1	-
5	Surface Chemistry	1	-	1	-
6	General principles of isolation of elements	-	-	1	-
7	P- Block elements	-	-	1	1
8	d- & f- Block elements	-	1	1	-
9	Coordination compels	1	1	-	-
10	Haloalkanes & haloarenes	-	2	-	-
11	Alcohols, Phenols & Ethers	1	-	1	-
12	Aldehydes, Ketones, Carboxylic acid	1	-	-	1
13	Organic compounds containing Nitrogen	1	-	1	-
14	Biomolecules	1	-	1	-
15	Polymers	-	-	1	-
16	Chemistry in everyday life	-	-	1	-