

SUBJECT: CHEMISTRY
TIME:3hours

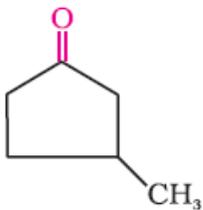
CLASS XII
MAXIMUM MARKS: 70

SAMPLE PAPER-10

General instructions:

- 1) All questions are compulsory.
- 2) Q NO.1 to 5 are very short answer questions and carry 1 mark each.
- 3) Q NO.6 to 10 are short answer questions and carry 2 marks each.
- 4) Q NO.11 to 22 are also short answer questions and carry 3 marks each.
- 5) Q NO.23 is value based question and carries 4 mark.
- 6) Q NO.24 to 26 are long answer questions and carry 5 marks each
- 7) Use of log tables only if necessary is permitted. Calculators are not allowed.

- 1 Why is glass considered as a supercooled liquid? 1
- 2 Write the IUPAC name of 1



- 3 Give examples of homopolymer and copolymer . 1
- 4 What is meant by Chelate effect? Give an example. 1
- 5 Why is ferric chloride preferred over Potassium chloride in case of cut leading to bleeding? 1
- 6 a)What is the significance of leaching in the extraction of aluminium? 2
b)what is the role of depressant in froth flotation process
- 7 a)How do you explain the amphoteric behaviour of amino acids? 2
b)distinguish between DNA & RNA
- OR**
- a)write reaction of glucose with nitric acid & acetic anhydride.
- 8 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 K kg mol⁻¹ 2
- 9 Silver forms *ccp* lattice and X-ray studies of its crystals show that the edge length of its unit cell is 408.6 pm. Calculate the density of silver (Atomic mass = 107.9 u). 2
- 10 Explain Zone refining and column chromatography. 2

- 11 Explain the following with an example a) Kolbes's reaction b) Riemer-Tiemann reaction c)Williamsons synthesis 3
- 12 a)An optically active compound having molecular formula $C_7H_{15}Br$ reacts with aqueous KOH to give a racemic mixture of products. Write the mechanism involved in the reaction 3
b) Give the chemical tests to distinguish between compounds in the following pairs: chlorobenzene & ethyl chloride
- 13 Write the chemistry of recharging the lead storage battery, highlighting all the materials that are involved during recharging. 3

OR

If a current of 0.5 ampere flows through a metallic wire for 2 hours, then how many electrons would flow through the wire?

- 14 :a) Write the names and structure of the monomers of the following polymers 3
(a) Nylon 6,6 (b)Bakelite (c) Dacron (d) Neoprene.
b)what are biodegradable polymer,give example
- 15 Draw figure to show the splitting of d - orbitals in an octahedral crystal field 3
- 16 Describe the preparation of potassium dichromate from iron chromite ore. 3
What is the effect of increasing pH on a solution of potassium dichromate?
- 17 How can the following conversions be carried out? 3
(a) Benzene to 4- Bromonitrobenzene (b) Ethyl chloride to propanoic acid
(c) Aniline to Phenylisocyanide
- 18 State Raoult's law. What is meant by positive and negative deviations from Raoult's law and how is the sign of $\Delta_{mix} H$ related to positive and negative deviations from Raoult's law? 3
- 19 Calculate the emf of the cell in which the following reaction takes place 3
 $Ni(s) + 2Ag^+(0.002 M) \rightarrow Ni^{2+}(0.160 M) + 2Ag(s)$ Given that (cell) $E^\circ = 1.05 V$
- 20 What do you mean by the activity and selectivity of the catalysts? Give suitable examples 3
- 21 How would you account for the following: 3
(a) Of the d^4 species, Cr^{2+} is strongly reducing while $Mn(III)$ is strongly oxidizing
(b) Cobalt(II) is stable in aqueous solution but in the presence of complexing reagents it is easily oxidized.
(c) The d^1 configuration is very unstable in ions.

OR

Explain giving reasons:

- (a) The enthalpies of atomization of the transition metals are high
(b) Transition metals generally form coloured compounds
(c) Transition and their many compounds act as good catalysts

- 22 Explain the following terms with suitable examples 3
 (i) cationic detergents
 (ii) anionic detergents and
 (iii) non-ionic detergents.

- 23 An old professor of Chemistry went to a medical store and asked for tablets of acetyl salicylic acid. There is no such medicine in our store, told the salesman. The professor insisted that, last month he got the medicine from the same store. The salesman equated his ailment. The professor replied head ache. The salesman offered him the medicine based on the episode mentioned answer the following questions:- 4

- (a) Name the medicine the professor wanted
- (b) What are the functional groups in the molecule of the medicine?
- (c) Draw the structure of the molecule.
- (d) Give the value possessed by the professor.

- 24 The experimental data for decomposition of N_2O_5 5
 $[2N_2O_5 \rightarrow 4NO_2 + O_2]$ in gas phase at 318 K is given below

t/s	0	400	800	1200	1600	2000	2400	2800	3200
$100x[N_2O_5]$ mol/ltr	1.63	1.36	1.14	0.93	0.78	0.64	0.53	0.43	0.35

- (a) Plot $[N_2O_5]$ against t
- (b) Find the half life period of the reaction
- (c) Draw a graph between $\log[N_2O_5]$ and t
- (d) What is the rate law
- (e) Calculate the rate constant

OR

For a certain chemical reaction

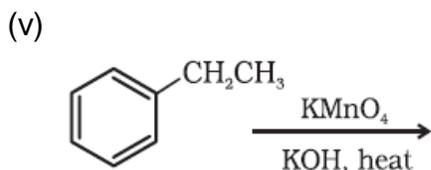
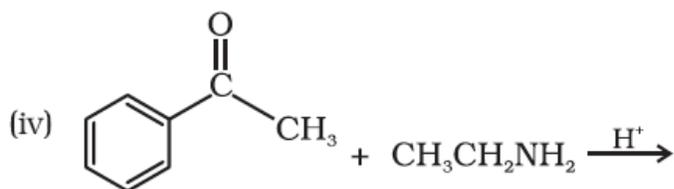
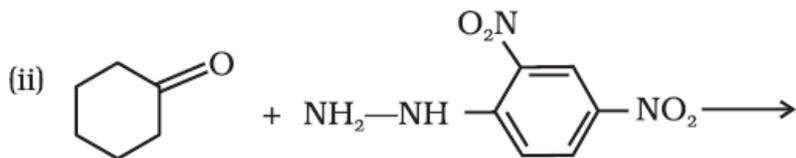
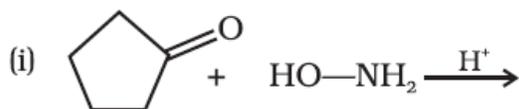
$A + 2B \rightarrow 2C + D$, the experimentally obtained information is tabulated below

Experiment	$[A]_0$	$[B]_0$	Initial rate of reaction
1	0.30	0.30	0.096
2	0.60	0.30	0.384
3	0.30	0.60	0.192
4	0.60	0.60	0.768

For this reaction

- Derive the order of reaction wrt both the reactants A & B.
- Write the rate law.
- Calculate the value of rate constant K
- Write the expression for the rate of the reaction in terms of A & C.

Predict the products of the following reactions:



OR

An organic compound (A) (molecular formula $C_8H_{16}O_2$) was hydrolysed with dilute sulphuric acid to give a carboxylic acid (B) and an alcohol (C). Oxidation of (C) with chromic acid produced (B). (C) on dehydration gives but-1-ene. Write equations for the reactions involved.

Account for the following

- Why is ICl more reactive than I_2
- Why is k_{a2} less than k_{a1} for H_2SO_4 in water
- Why does O_3 act as a powerful oxidizing agent
- H_2S is less acidic than H_2Te why?
- Bond angle in PH_4^+ is higher than PH_3 why?

OR

- How are XeO_3 and $XeOF_4$ prepared? Draw their structures.
- Does the hydrolysis of XeF_6 lead to a redox reaction?

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