XII-B
Roll no : 16

RYAN GROUP OF SCHOOLS
ACADEMIC YEAR 2025-26
CBSE, UNIT TEST-1

STD : XII
SUB : CHEMISTRY (SET-B)

MARKS : 50
TIME : 2 HRS.

General Instructions :

1. *Q. No. 1 to 11 are for one mark each.*
2. *Q.No. 12 to 18 are for two marks each.*
3. *Q.No. 19 to 23 are for three marks each.*
4. *Q.No. 24 and 25 are for five marks each.*
5. *All questions are compulsory.*
6. *Use of log tables and calculators is not allowed.*

SECTION - A

The following questions are multiple-choice questions with one correct answer. Each question carries 1 mark. There is no internal choice in this section.

Q.1 The C–Cℓ bond in chlorobenzene as compared with C–Cℓ bond in methyl chloride is

(a) Longer and weaker (b) Shorter and weaker
(c) Shorter and stronger (d) Longer and stronger

Q.2 Which of the following has highest dipole moment:

(a) CH_3Cl (b) CH_3F
(c) CH_3Br (d) CH_3I

Q.3 Compared to haloalkanes, the reactivity of haloarenes towards nucleophilic substitution reactions is _____

(a) low (b) high
(c) very high (d) equal

Q.4 CH_3CH_2OH can be converted into CH_3CHO by :

(a) catalytic hydrogenation (b) treatment with $LiAlH_4$
(c) treatment with PCC (d) treatment with $KMnO_4$

Q.5 Which of the following has the lowest boiling point ?

(a) Butan-1-ol (b) Butan-2-ol
(c) 2-Methylpropan-1-ol (d) 2-Methylpropan-2-ol

Q.6 Which of the following is used as fire extinguisher
(a) $CHCl_3$ (b) CCl_4
(c) CH_2Cl_2 (d) CH_3Cl

Q.7 Which of the following contains SP^2 hybridised carbon bonded to X ?
(a) $CH_2 = CH - CH_2 - X$ (b) $C_6H_5CH_2 - X$
(c) $CH_2 = CH - X$ (d) $CH_3 - CH_2 - X$

Q.8 The antiseptic action of Iodoform is due to
(a) CHI_3 itself
(b) liberation of I_2
(c) partially due to CHI_3 and partially due to I_2
(d) None of the above

Q.9 Propene on hydroboration oxidation produces
(a) Propan-1-ol (b) Propan-2-ol
(c) Propane-1,3-diol (d) Propane-1,2-diol

SECTION - B

In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices:

(A) Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).

(B) Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).

(C) Assertion (A) is correct, but Reason (R) is incorrect statement.

(D) Assertion (A) is incorrect, but Reason (R) is correct statement.

(E) Assertion (A) and Reason (R) both are incorrect statements.

Q.10 **Assertion(A)**: Nucleophilic substitution of Iodoethane is easier than Chloroethane.
Reason(R): Bond enthalpy of C-I is less than C-Cl bond.

Q.11 **Assertion(A)**: Ortho-nitrophenol is more acidic than phenol.

Reason(R): Nitro group is electron donating group and therefore stabilises ortho-nitrophenoxide ion

SECTION - C

The following questions are very short answer type and carry 2 marks each.

Q.12 A hydrocarbon C_5H_{10} does not react with chlorine in dark but gives a single monochloro compound C_5H_9Cl in bright sunlight. Identify the hydrocarbon.

Q.13 What are ambident nucleophiles? Explain with an example.

Q.14 How will you distinguish between?

(i) Chlorobenzene and Benzyl chloride

(ii) Chloromethane and Bromomethane

Q.15 Explain the following with an example:

(i) Friedel Craft alkylation of Anisole

(ii) Reimer Tiemann reaction

Q.16 Give equations of the following reactions:

(i) Oxidation of Propan-2-ol with alkaline $KMnO_4$ solution

(ii) Bromine in CS_2 with phenol

Q.17 Write the mechanism of acid catalysed dehydration of Ethanol to yield Ethoxyethane.

Q.18 Name the factors responsible for the solubility of alcohols in water.

SECTION - D

The following questions are short answer type and carry 3 marks each.

Q.19 How will you bring about the following conversions ?

(i) Benzene to Biphenyl

(ii) But-1-ene to But-2-ene

(iii) 2-Chlorobutane to 3,4-Dimethylhexane

Q.20 Account for the following: **(3)**

(i) the dipole moment of Chlorobenzene is lower than that of cyclohexyl chloride.

(ii) alkyl halides , though polar are immiscible with water.

(iii) Grignard reagents should be prepared under anhydrous conditions

Q.21 Various isomeric haloalkanes with general formula C_4H_9Cl undergo hydrolysis reaction. Among them, compound "A" is the most reactive through S_N^2 mechanism. Identify "A" citing reason for your choice. Write the mechanism for the reaction.

Q.22 Name the reagents used in the following reactions : (3)

(i) Oxidation of primary alcohol to carboxylic acid

(ii) Bromination of phenol to 2,4,6-tribromophenol

(iii) Dehydration of Propan-2-ol to Propene

Q.23 (i) Give two reactions that show the acidic nature of Phenol. Compare its acidic strength with that of Ethanol.

(ii) While separating a mixture of ortho and para nitrophenol by steam distillation, name the isomer which will be steam volatile? Give reason.

SECTION - E

The following questions carry 5 marks each.

Q.24 (i) p-Dichlorobenzene has higher melting point and lower solubility than o- and m- isomers. Discuss. **(2)**

(ii) What happens when: **(3)**

(a) Ethyl chloride is treated with aq. KOH

(b) Methyl bromide is treated with sodium in the presence of dry ether

(c) Methyl chloride is treated with KCN.

Q.25 (i) Write the chemical reaction for the preparation of phenol from chlorobenzene. **(2)**

(ii) Give the structures and IUPAC names of monohydric phenols of molecular formula C_7H_8O. **(3)**

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