UNIT 10

RX and ArX

Unit 10

- *Haloalkanes and Haloarenes*

Q.1 Which chlorine containing compound is used for treatment of typhoid fever?
Answer: Chloramphenicol is used for treatment of typhoid fever.
Q.2 Name the hormone, deficiency of which causes goitre.
Answer: Thyroxin deficiency causes goitre.
Q.3 In which disease chloroquine is used?
Answer: Chloroquine is used in malaria.
Q.4 What is the use of halothane?
Answer: Halothane is used as anesthetic during surgery.
Q.5 Which type of halo compounds are used as blood substitute in surgery?
Answer: Fully fluorinated compounds are used as blood substitute.
Q.6 Name the hybridisation of carbon atom with which halogen atom is bonded in the following compounds. (i) Alkyl halide (ii) Allylic halide (in) Vinylic halide (iv) Aryl halide (v) Benzylic halides.
Answer: (i) sp3 (ii) sp3 (ii) sp2 (iv) sp2 (v) sp3
Q.7 Arrange the 1°, 2°, 3° alcohols in the order of reactivity towards given halo acids.
Answer: Increasing reactivity towards haloacids : 3° > 2° > 1°.
Q.8 What is the effect of branching on the boiling point of isomeric haloalkanes?
Answer: With increasing branching, boiling point decreases.
Q.9 Which class of organic reactions are common for alkyl halides?
Answer: Nucleophilic substitution is common for alkyl halides.
Q.10 What is ambient nucleophile?
Answer: Molecules or ions having two nucleophilic centres are called ambident nucleophiles.
Q.11 What is inversion of configuration?
Answer: Inversion of configuration means reversal of configuration of compound.
Q.12 What do you mean by chiral molecule?
Answer: The molecule which is non-super imposable on its mirror image is called chiral molecule.
Q.13 What is chirality?
Answer: The property of a molecule due to which it is non- super imposable on its mirror image is called chirality.
Q.14 What is asymmetric carbon?
Answer: The carbon which has all the four substituent's different are called asymmetric carbon.
Q.15 Define the term racemisation.
Answer: The equimolar mixture of d-form and l-form, which is optically inactive is known as racemic mixture and the process of its formation is called

racemisation.

Q.16 What are enantiomers?

Answer: Optically active compounds which are mirror images of each other are called enantiomers.

Q.17 What are organometallic compounds?

Answer: Compounds containing carbon-metal bond are called organ metallic compounds e.g. RMgX.

Q.18 What is Grignard's reagent?

Answer: Alkyl magnesium halide is known as Grignard's reagen (RMgX).

Q.19 Write the full form of D.D.T.

Answer: Dichlorodiphenyltrichloro ethane.

Q.20 Name two haloalkanes responsible for depletion of ozone layer.

Answer: Freon and tetrachloromethane are responsible for depletion of ozone layer.

Q.21 Name two haloalkanes used as refrigerants.

Answer: Freon and chloroform are used as refrigerants.

Q.22 What is halo form?

Answer: Trihalogen derivatives of methane are called haloform. e.g. CHCl chloroform.

Q.23 Which is better nucleophile, a bromide ion or an iodide ion?

Answer: An iodide ion.

Q.24 What is the hybridisation of carbon of benzne bonded to halogen in aryl halide?

Answer: sp2.

Q.25 How are ortho and para isomers of aryl halides separated from each other?

Answer: Due to large difference in their melting points they are separated by fractional distillation method.

Q.26 The boiling point of alkyl halides are higher than those, the hydrocarbons of comparable molecular mass. Explain.

Answer: Molecules of organic halogen compounds are generally polar. Due to greater polarity as well as higher molecular mass as compared to parent hydrocarbon, the intermolecular forces of attraction (dipole-dipole interaction and Van der Waals force) are stronger and have higher boiling point than hydrocarbons of comparable molecular masses.

Q.27 Why the boiling points of isomeric halo alkanes decrease with increasing branching?

Answer: As the branching increases molecule tends to acquire spherical shape i.e. its surface area decreases, correspondingly the magnitude of van der Waals force also decreases. So, boiling point also decreases.

Q.28 Haloalkanes are only slightly soluble in water. Why?

Answer: Alkyl halides though polar due to presence of electronegative halogen atom are insoluble in water since they do not form hydrogen bonds. The energy required to break intermolecular H-bonds of water is much higher than the

energy released by interaction between water and halide molecules.

Q.29 Haloalkanes are more soluble in organic solvents. Why ?

Answer: Haloalkanes tend to dissolve in organic solvent because new intermolecular attraction between haloalkanes and solvent molecules have much the same strength as the ones being broken in separating haloalkane and solvent molecules.

Q.30 The use of DDT is banned in some countries, why?

Answer: Many countries banned the use of DDT due to following reasons: (i) Many insects developed resistance to DDT and it was also found to have high toxicity towards fish. (ii) DDT is not metabolised very rapidly by animals, instead it is deposited and stored in fatty tissues.