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REVISION PAPER CHEMISTRY

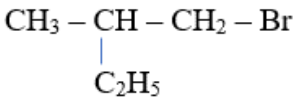
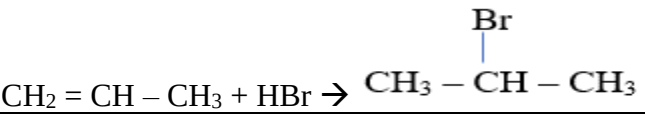
UNIT- X (HALOALKANES AND HALOARENES)

Subject: Chemistry **Class: XII**

Time: 1 Hour

Max. Marks: 20

Note: There are **09** questions in this question paper with internal choice. Q. No. 1-2 consist of multiple-choice questions carrying 1 mark each. Q. No. 3-4 consist of Assertion and Reason questions carrying 1 mark each. Q. No. 5-6 consist of very short answer questions carrying 2 marks each. Q. No. 7 consists of short answer questions carrying 3 marks each. Q. No. 8 consists of case-based questions carrying 4 (1+1+2) marks. Q. No. 9 consists of long answer questions carrying 5 marks each.

S.No.	Questions	Marks
1.	Which of the following is the correct IUPAC name for 	1
2.	The following reaction is an example of (a) Nucleophilic addition (b) Free radical addition (c) Electrophilic addition (d) Electrophilic substitution 	1
	In the following questions one mark each (Q. No. 3-4) a statement of **Assertion (A)** followed by a statement of **Reason (R)** is given. Choose the correct answer out of the following choices. (i) A and R both are correct statements and R is the correct explanation for A. (ii) A and R both are correct statements and R is not correct explanation for A. (iii) A is correct statement but R is wrong statement. (iv) A is wrong statement but R is correct statement.	
3.	**Assertion (A):** Tertiary haloalkanes are more reactive than primary haloalkanes towards elimination reactions. **Reason (R):** The +I effect of the alkyl groups stabilises the tertiary carbocation.	1
4.	**Assertion (A):**n-butyl bromide has higher boiling point than isopropyl bromide. **Reason (R):** The branching of the chain makes the molecule more compact and therefore decreases the surface area.	1
5.	Give reason for the following: (a) Grignard reagents are prepared strictly under anhydrous conditions. (b) Alkyl halides, though polar, are immiscible with water OR Write chemical equations when (a) Methyl chloride is treated with $AgNO_2$. (b) Bromobenzene is treated with CH_3Cl in the presence of anhydrous $AlCl_3$.	2
6.	(a) Write the product formed when p-nitro-chlorobenzene is heated with aqueous NaOH at 443K followed by acidification. (b)Why is (+) – butan-2-ol optically inactive?	2

7.	Answer the following questions: (a) Which alkyl halide from the following pairs would you expect to react more rapidly by an S_N2 mechanism and why? 2-bromobutane or 1-bromobutane (b) Racemisation occurs in S_N1 reactions. Why? OR Give reasons for any three of the following observations: (a) The C – Cl bond length in chlorobenzene is shorter than that in CH_3 – Cl. (b) Chloroform is stored in closed dark brown bottles. (c) Ethyl iodide undergoes S_N2 reaction faster than ethyl bromide. (d) Which is more easily hydrolysed by aqueous KOH among $C_6H_5CH_2Cl$ and $C_6H_5CHClC_6H_5$.	3
8.	**The following questions are case-based questions. Each question has an internal choice and carries 4(1+1+2) marks each. Read the passage carefully and answer the following questions that follow.** The substitution reaction of alkyl halide mainly occurs by S_N1 or S_N2 mechanism. Whatever mechanism alkyl halides follow for the substitution reaction to occcur, the polarity of the carbon halogen bond is responsible for these substitution reactions. The rate of S_N1 reactions are governed by the stability of carbocation whereas for S_N2 reactions steric factor is the deciding factor. If the starting material is a chiral compound, we may end up with an inverted product or racemic mixture depending upon the type of mechanism followed by alkyl halide. Cleavage of ethers with HI is also governed by steric factor and stability of carbocation, which indicates that in organic chemistry, these two major factors help us in deciding the kind of product formed. Answer the following questions: (a) Predict the steriochemistry of the product formed if an optically active alkyl halide undergoes substitution reaction by S_N1 mechanism. (b) Name the instrument used for measuring the angle by which the plane polorised light is rotated. (c) Predict the major product formed when 2-bromopentane reacts with alcoholic KOH. OR Write the mechanism of the following S_N1 reaction: $(CH_3)_3$ C – Br + NaOH (aq) $\rightarrow$ $(CH_3)_3$ C – OH + NaBr	4
9.	(a) Preidct the major product formed when HCl is added to isobutylene. Explain the mechanism involved. (b) Cyanide ion acts as an ambident nucleophile. From which end it acts as a stronger nucleophile in aqueous medium? Give reason for your answer. (c) Why are alkyl halides generally not prepared in the laboratory by free radical halogenation of alkanes? OR Give chemical reactions for the following: (i) Nitration of chlorobenzene (ii) Sulphonation of chlorobenzene (iii) Alkylation of chlorobenzene (iv) Acylation of chlorobenzene (v) Chlorination of chlorobenzene	5