

QB365

Important Questions - Haloalkanes and Haloarenes

12th Standard CBSE

Chemistry

Reg.No. :

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Time : 01:00:00 Hrs

Total Marks : 50

**Section - A**

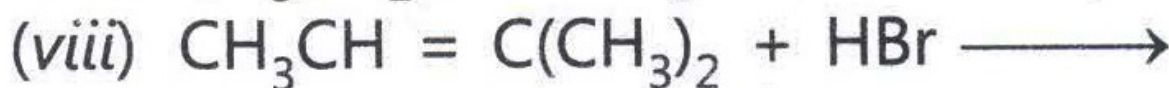
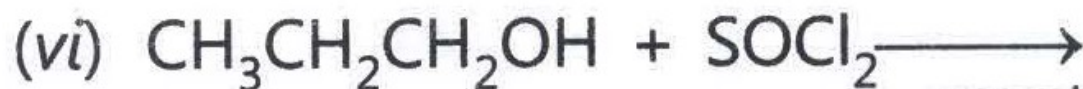
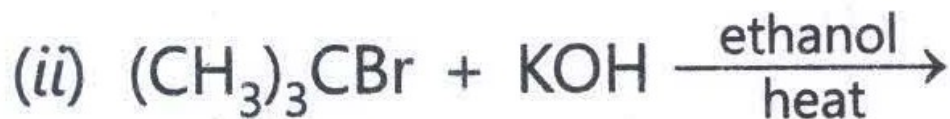
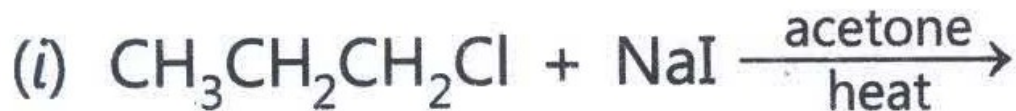
- 1) The intermediate during the addition of HCl to propane in presence of peroxide is 1  
 (a)  $\text{CH}_3\dot{\text{C}}\text{HCH}_2\text{Cl}$  (b)  $\text{CH}_3\text{C}^+\text{CH}_3$  (c)  $\text{CH}_3\text{CH}_2\dot{\text{C}}\text{H}_2$  (d)  $\text{CH}_3\text{CH}_2\text{C}^+\text{H}_2$
- 2) Which of the following sequence of reactions (reagents) can be used for conversion of  $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_3$  into  $\text{C}_6\text{H}_5\text{CH}=\text{CH}_2$ ? 1  
 (a)  $\text{SOCl}_2; \text{H}_2\text{O}$  (b)  $\text{SO}_2\text{Cl}_2; \text{alc. KOH}$  (c)  $\text{Cl}_2/h\nu; \text{H}_2\text{O}$  (d)  $\text{SOCl}_2; \text{alc. KOH}$
- 3) Chlorobenzene is formed by reaction of chlorine with benzene in the presence of  $\text{AlCl}_3$ . Which of the following species attacks the benzene ring in this reaction? 1  
 (a)  $\text{Cl}^-$  (b)  $\text{Cl}^+$  (c)  $\text{AlCl}_3$  (d)  $[\text{AlCl}_4]^-$
- 4) The case of dehydrohalogenation of alkyl halides with alcoholic KOH is 1  
 (a)  $3^\circ < 2^\circ < 1^\circ$  (b)  $3^\circ > 2^\circ > 1^\circ$  (c)  $3^\circ < 2^\circ > 1^\circ$  (d)  $3^\circ > 2^\circ < 1^\circ$
- 5) The reagents which cannot be used to distinguish benzyl chloride from chlorobenzene are 1  
 (a)  $\text{Br}_2/\text{CCl}_4$  (b) Shaking with an aqueous solution of  $\text{AgNO}_3$   
 (c) Boiling with aqueous KOH solution followed by acidification with dil. dil.  $\text{HNO}_3$  and addition of  $\text{AgNO}_3$  solution.  
 (d) Fusion with sodium metal followed by acidification with dil.  $\text{HNO}_3$  and addition of  $\text{AgNO}_3$  solution.
- 6) Write the IUPAC name of the following compound: 1
- $$\begin{array}{c} \text{CH}_3 \\ | \\ \text{H}_3\text{C} - \text{C} - \text{CH}_2\text{Cl} \\ | \\ \text{CH}_3 \end{array}$$
- 7) (i)  $\text{CH}_3\text{CH}_2\text{I} \xrightarrow{\text{NaCN}}$  ?  $\xrightarrow{\text{OH}^-}$ , partial  $\xrightarrow{\text{hydrolysis}}$  ? (ii)  $\text{CH}_3\text{CH}_2\text{Br} \xrightarrow{\text{KCN}}$  ?  $\xrightarrow{\text{LiAlH}_4}$  ? 1
- 8) Sandmeyer reaction (1)  $\text{C}_6\text{H}_5\text{N}_2\text{Cl}$ ,  $\text{CuCl}/\text{HCl}$ , heat 1
- 9)  $\text{CH}_3\text{CH}=\text{CH}_2 \xrightarrow{\text{HBr, RCOOR}}$  (2) Anti - Markovnikov's addition 1
- 10)  $\text{CH}_3\text{CH}=\text{CH}_2 \xrightarrow{\text{HBr}}$  (3) Markovnikov's addition 1

**Section - B**

- 11) What mass of propene is obtained from 34.0 g of 1-iodopropane on treating with ethanolic KOH, if yield is 36%? 2

12) Write the structure of the major organic product in each of the following reactions:

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13) Complete the following reaction.  $\text{CH}_3 - \text{CH} = \text{CH}_2 \xrightarrow[\text{peroxide}]{\text{HBr}} \text{X} \xrightarrow[\text{Acetone}]{\text{NaI}} \text{Y}$

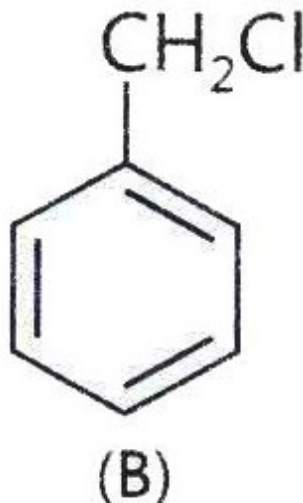
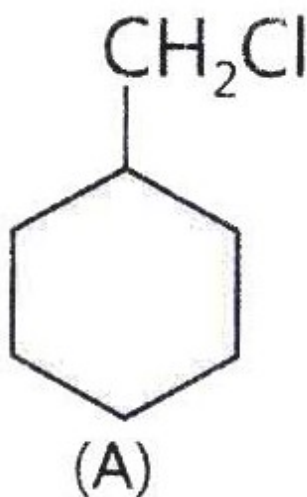
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14) Classify the following compounds as primary, secondary and tertiary halides (i) 1-Bromobut-2-ene (ii) 4-Bromopent-2-ene (iii) 2-Bromo-2-methylpropane

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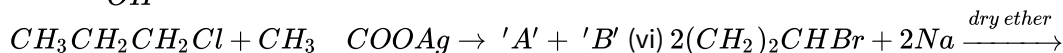
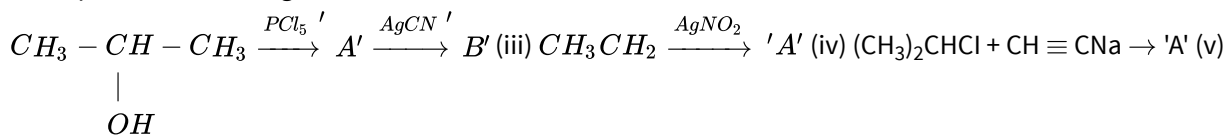
15) Which of the following compounds would undergo  $\text{S}_{\text{N}}1$  reaction faster and why?

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Section - C

16) Complete the following reactions: (i)  $CH_3CH_2OH \xrightarrow{SOCl_2} A' \xrightarrow{KCN} B'$  (ii) 3



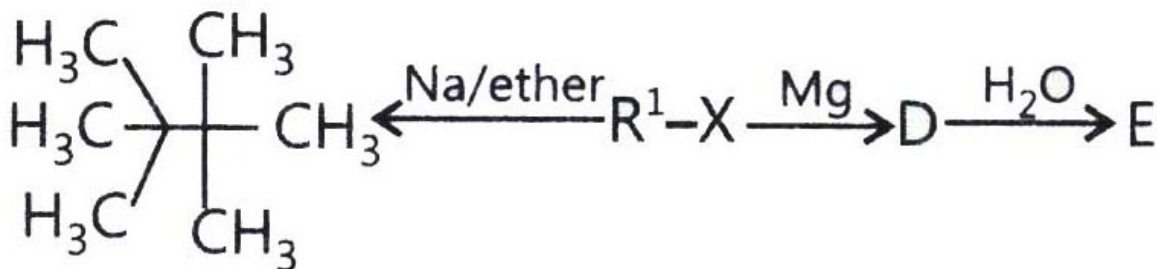
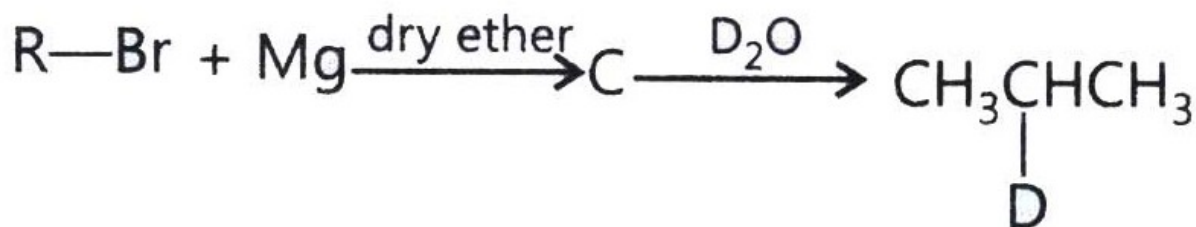
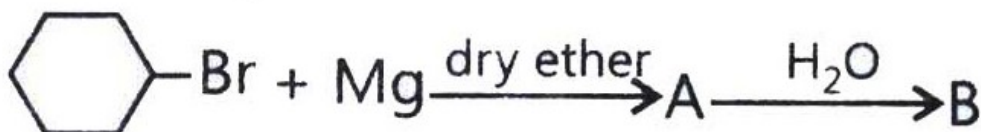
17) Arrange the compounds of each set in order of reactivity towards  $S_N2$  displacement: (a) 2-Bromo-2- 3

methylbutane, 1-Bromopentane, 2-Bromopentane (b) 1-Bromo-3-methylbutane, 2-Bromo-2-methylbutane, 3-Bromo-2-methylbutane (c) 1-Bromobutane, 1-Bromo-2,2-dimethylpropane, 1-Bromo-2-methylbutane, 1-Bromo-3-methylbutane

18) Name the following halides according to IUPAC system and classify them as alkyl, allyl, benzyl (primary, 3

secondary, tertiary), vinyl or aryl halides: (i)  $(CH_3)_2CHCH(Cl)CH_3$  (ii)  $CH_3CH_2CH(CH_3)CH(C_2H_5)Cl$  (iii)  $CH_3CH_2C(CH_3)_2CH_2I$  (iv)  $(CH_3)_3CCH_2CH(Br)C_6H_5$  (v)  $CH_3CH(CH_3)CH(Br)CH_3$  (vi)  $CH_3C(C_2H_5)_2CH_2Br$  (vii)  $CH_3C(Cl)C_2H_5CH_2CH_3$  (viii)  $CH_3CH=C(Cl)CH_2CH(CH_3)_2$  (ix)  $CH_3CH=CHC(Br)(CH_3)_2$  (x) p- $ClC_6H_4CH_2CH(CH_3)_2$  (xi) m- $ClCH_2C_6H_4CH_2C(CH_3)_3$  (xii) o- $BrC_6H_4CH(CH_3)CH_2CH_3$ .

19) Identify A, B, C, D, E, R and  $R^1$  in the following: 3



20) Compound 'A' with molecular formula  $C_4H_9Br$  is treated with aq. KOH solution. The rate of this reaction 3

depends upon the concentration of the compound 'A' only. When another optically active isomer 'B' of this compound was treated with aq. KOH solution, the rate of reaction was found to be dependent on concentration of compound and KOH both. (i) Write down the structural formula of both compounds 'A' and 'B'. (ii) Out of these two compounds, which one will be converted to the product with inverted configuration.

#### Section - D

21) Some halogen containing compounds are useful in daily life. Some compounds of this class are responsible 5

for exposure of flora and fauna to more and more of UV light which causes destruction to a great extent. Name the class of these halo compounds. In your opinion, what should be done to minimise harmful effects of these compounds.

22) Rakesh, Chemistry teacher of class XII asked Rahul to store trichloromethane in dark coloured bottle to protect it from sunlight. But Rahul did not take it seriously and stored it in normal transparent glass bottle.

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(i) Why Rakesh instructed Rahul to store chloroform in dark coloured bottle only ? What other precaution should be taken while its storage?

(ii) Write the chemical reaction involved in the formation of carbonyl chloride.

(iii) Is the act done by Rahul in above para correct? Give reason?

(iv) What values Rakesh lacks in ?

23) Benzene on reaction with HOCl in presence of an acid produces organic compound (A), (A) on treatment with  $\text{NaNH}_2/\text{liq. NH}_3$  furnishes another organic compound (B). (B) on treatment with  $\text{HBF}_4$  affords an organic compound (C) which on heating with  $\text{NaNO}_2$  gives organic compound (D). Identify (A), (B), (C) and (D).

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