



Blue Print (As per PU Board)

Topic	1 mark questions	2 marks questions	3 marks questions	5 marks questions	Total Marks
Haloalkanes & Haloarenes	1	-	-	1	6

One mark questions

1. What is the expansion of DDT ?

Answer: Dichlorodiphenyl trichloroethane

2. Arrange the following compounds in order of increasing boiling points. Bromoethane, Bromoform, Chloromethane, Dibromomethane

Answer: chloromethane < Bromomethane < Dibromomethane < Bromoform

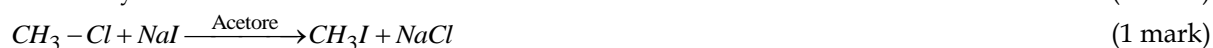
3. Give one example for ambidentate nucleophiles

Answer: Cyanides or Nitriles (CN^{\ominus} and NC)

Two marks questions

4. What is Finkelstein's reaction? Give one example

Answer: Alkyl iodides are often prepared by the reaction of alkyl chlorides or alkyl bromides with NaI in dry acetone. This reaction is known as Finkelstein reaction. (1 mark)



5. What are ambidentate nucleophiles? Give an example

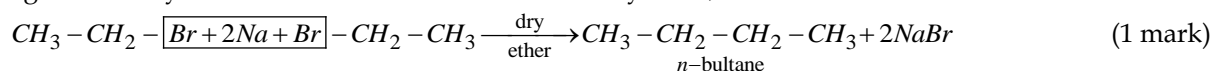
Answer: The nucleophiles which have more than one site through which the reaction can occur are called ambidentate nucleophiles (1 mark)

Eg. NC^{\ominus} , NO_2^{\ominus} (1 mark)

6. Explain wurtz reaction with an example

Answer: When 2 molecules of alkyl halides react with sodium in dry ether, higher alkanes are formed. This is known as wurtz reaction. (1 mark)

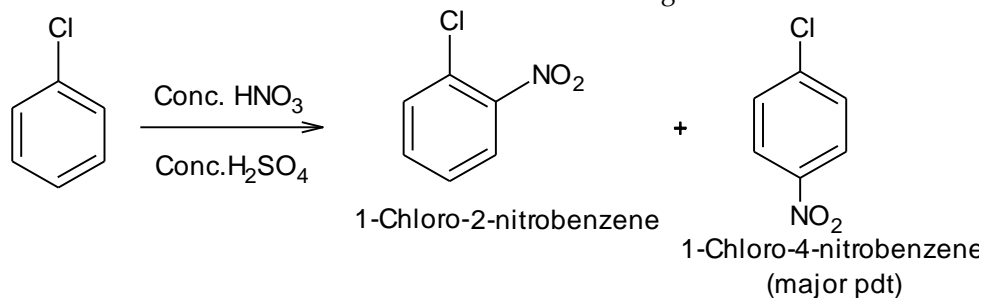
Eg: When ethyl bromide is heated with sodium in dry ether, n -butane is formed.



Three marks questions

7. What happens when chlorobenzene is treated with a mixture of conc. HNO_3 and conc. H_2SO_4

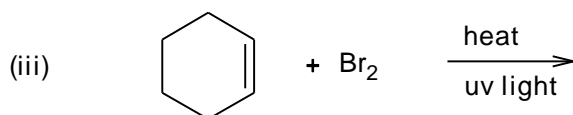
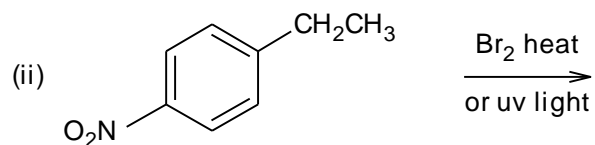
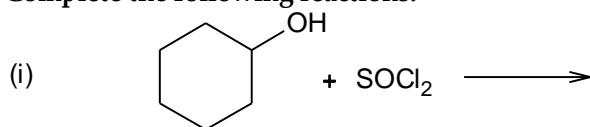
Answer: When chlorobenzene is treated with a mixture of conc. HNO_3 and conc. H_2SO_4 , a mixture of 1-chloro-2-nitrobenzene and 1-chloro-4-nitrobenzene is got. (1 mark)



(2 marks)

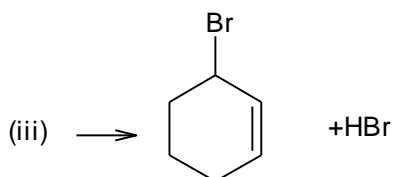
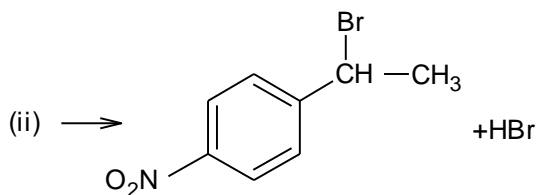
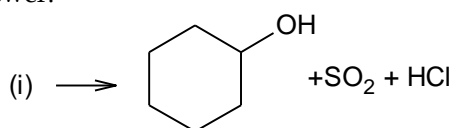


8. Complete the following reactions:



(1+1+1 mark)

Answer:



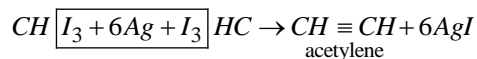
(1+1+1 mark)

9. (a) What happens when iodoform is heated with silver powder? Write chemical equation.

(2 marks)

Answer: When iodoform is heated with silver powder, acetylene (ethyne) is formed.

(1 mark)



(1 mark)

(b) Out of chlorobenzene and chloromethane which is more reactive towards nucleophilic substitution reaction.

(1 mark)

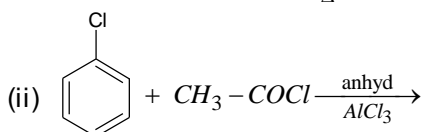
Answer: Chloromethane being an alkyl halide is more reactive than chlorobenzene which is an aryl halide.

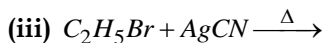
(1 mark)

Five marks questions

10. (a) Mention the major product formed in the following reactions

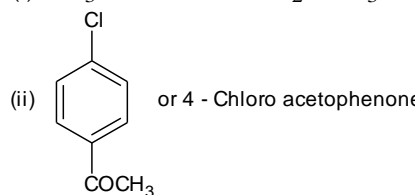
(3 marks)





Answer: (a) (i) $CH_3 - CH = CH - CH_2 - CH_3$ or Pent-2-ene

(1 mark)



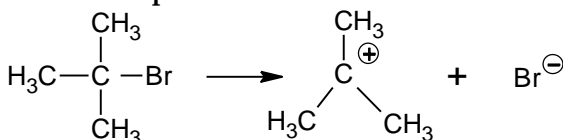
(1 mark)

(iii) C_2H_5NC or ethyl isocyanide or ethyl isonitrile or ethyl carbylamine.

(1 mark)

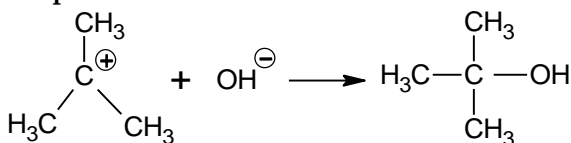
(b) Write the equations for the steps in S_N1 mechanism of the conversion of tert-butyl bromide into tert-butyl alcohol. (2 marks)

Answer: Step-1: Ionisation



(1 mark)

Step-2: Attack of Nu^-



(1 mark)

11. (a) (i) Identify the type of hybridisation of carbon atom bonded to halogen atom in the following: $(\text{CH}_3)_3\text{C}-\text{X}$, $\text{CH}_2=\text{CH}-\text{X}$

(ii) Give reason: Racemic mixture is optically inactive

(b) Mention the reagent used and major product formed in β -elimination reactions 3+2 marks

Answer: (a) (i) sp^3 , sp^2 (2 marks)

(ii) The rotation caused by $d(+)$ isomer is exactly cancelled by $l(-)$ isomer. (1 mark)

(b) Reagent: Alcoholic KOH (1 mark)

Major product: Alkene (1 mark)

12. (a) Explain (i) wurtz-Fittig reaction

(ii) Swartz reaction with an example for each

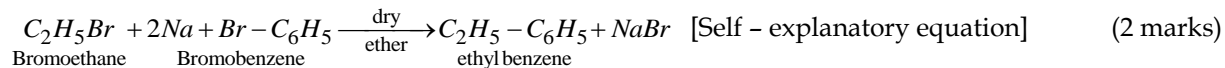
(b) Which one of the following is more reactive towards S_N2 reaction?

CH_3Br , $(\text{CH}_3)_2\text{CHBr}$, $(\text{CH}_3)_3\text{CBr}$ (4+1 marks)

Answer: (a) (i) Aryl halide reacts with alkyl halide in presence of sodium in dry ether to form alkyl benzene (1 mark)



OR



(ii) An alkyl fluoride is obtained by heating an alkyl chloride or bromide in presence of silver fluoride (1 mark)



(b) CH_3Br (1 mark)