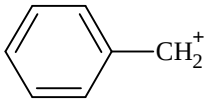
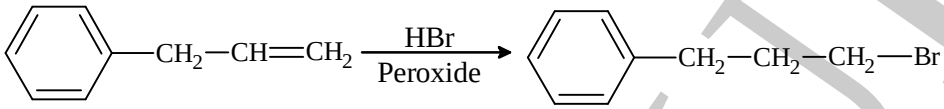
SOLUTION TEST-A

1. The benzyl carbocation  is highly stable due to resonance with benzene.

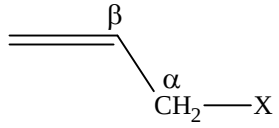
The correct answer is (iv).

2. This is anti-Markovnikov addition of HBr across the double bond



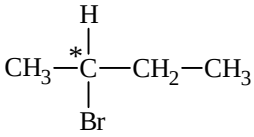
The correct answer is (iv).

3. Allylic halide is one in which the β-carbon is sp^2 hybridised



The correct answer is (i).

4. The sec-butyl bromide contains a chiral carbon



But the sample is resolvable as the sample is a racemic mixture.

The correct answer is (iii).

5. The Cl atom due to +R effect increases the electron density more at ortho and para position than meta position. Hence, on nitration, the NO_2 group attacks at ortho and para position.

The correct answer is (i).

6. (i) 2-bromo-4-methyl hept-3-ene

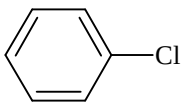
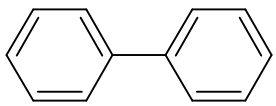
(ii) 1-chloro-3-methyl benzene

7. **Finkelstein** reaction is a method to prepare iodo alkane by reacting haloalkane (X = Cl, Br) with NaI in dry acetone.

$$RX + NaI \xrightarrow{\text{dry acetone}} R - I + NaX$$
$$(X = Cl, Br)$$

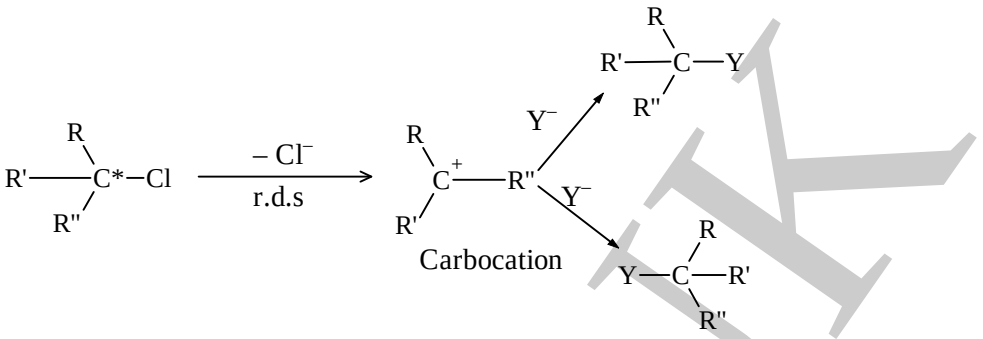
$$CH_3CH_2Br + NaI \xrightarrow{\text{dry acetone}} CH_3CH_2I + NaBr$$

8. (i) $A \rightarrow CH_3 - \underset{\displaystyle Cl}{\underset{|}{CH}} - CH_3$, $B \rightarrow CH_3 - \underset{\displaystyle CN}{\underset{|}{CH}} - CH_3$

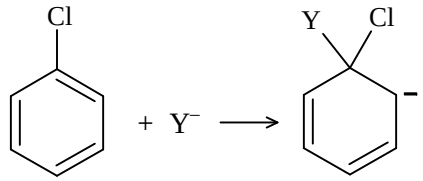
(ii) C →  D → 

© 2020 YOURBUK, All rights reserved

9. (i) S_N1 reaction proceeds via the formation of a carbocation. Carbocation is trigonal planar, flat and the incoming nucleophile attacks at the carbon from either side of the plane so, two products are obtained in equal amount and are the enantiomers. As the effect of the one enantiomer is cancelled by the second enantiomer, hence, the product is a racemic mixture and is resolvable.



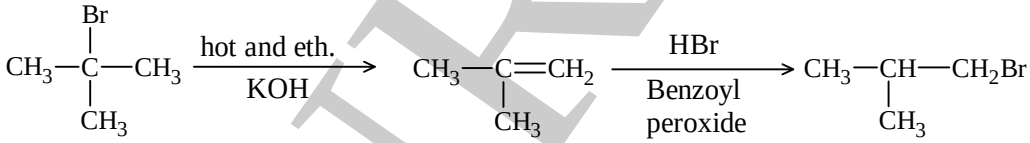
(ii)



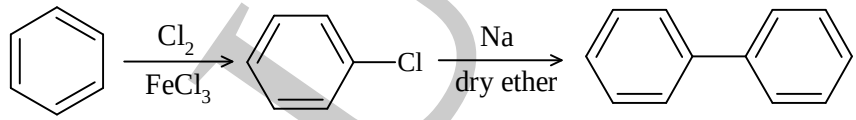
The presence of NO_2 group help in the stabilization of benzene carbanion and increased the reactivity of chlorobenzene towards nucleophilic substitution reaction. NO_2 group exerts –I effect from all three positions but –R form o- and p- position.

Also, NO_2 is electron withdrawing group, decreases the e^- density at α-carbon making it more susceptible to attack by an incoming nucleophile.

10. (i)

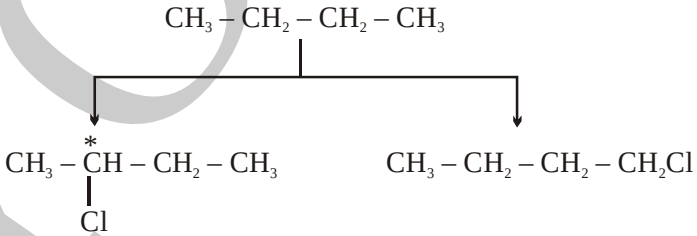


(ii)



11. 'Z' is $CH_3–CH_2–CH_2–CH_3$

Monochlorination of Z gives two products.



It contains a chiral centre,
exist in two enantiomeric
forms (+ and –).
Hence, only enantiomeric pair is formed.

12. (a) (i)

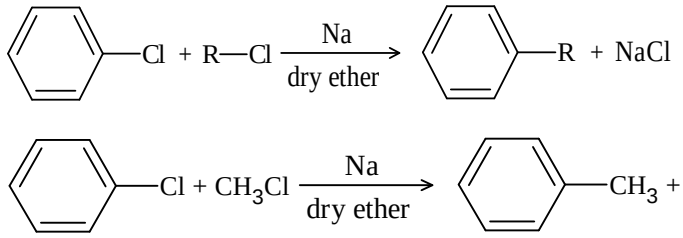


is more reactive than towards S_N2 due to less crowding at alpha-carbon.

(ii) CH_2= CH – CH_2– Cl is more reactive then CH_2 = CH – Cl because the carbocation $CH_2 = CH - \overset{\oplus}{C}H_2$ is resonance stabilised.

 © 2020 YOURBUK, All rights reserved

(b) **Wurtz-Fittig reaction** is a method to prepare alkyl benzene by reacting aryl halides with alkyl halides in the presence of Na/dry ether.



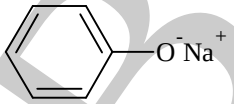
13. (i) Grignard reagent RMgX is prepared under anhydrous conditions otherwise the water will hydrolyse the RMgX to RH

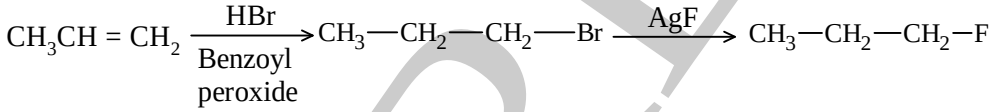
$$RMgX + H_2O \rightarrow RH + MgX(OH)$$

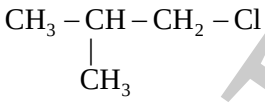
(ii) Chloroform, $CHCl_3$ reacts with O_2 to form poisonous phosgene gas $COCl_2$. This reaction is catalysed by light. To slow down this reaction, we store chloroform in dark coloured bottles.

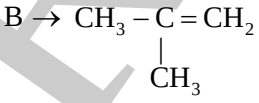
(iii) In Chlorobenzene, α-C is sp^2 hybridised while in chloroethane, α-carbon is sp^3 hybridised. sp^2 C is more electronegative than sp^3C.

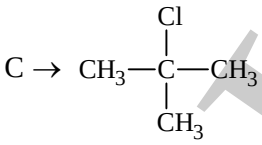
Therefore, $sp^2C–Cl$ bond is less polar and has a shorter bond length due to resonance than $sp^3C–$ Cl bond. Hence, chlorobenzene has a lower value of the dipole moment than chloroethane.

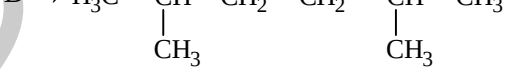
14. (a) (i) $CH_3 – CH_2 – CH = CH_2$ (ii) 

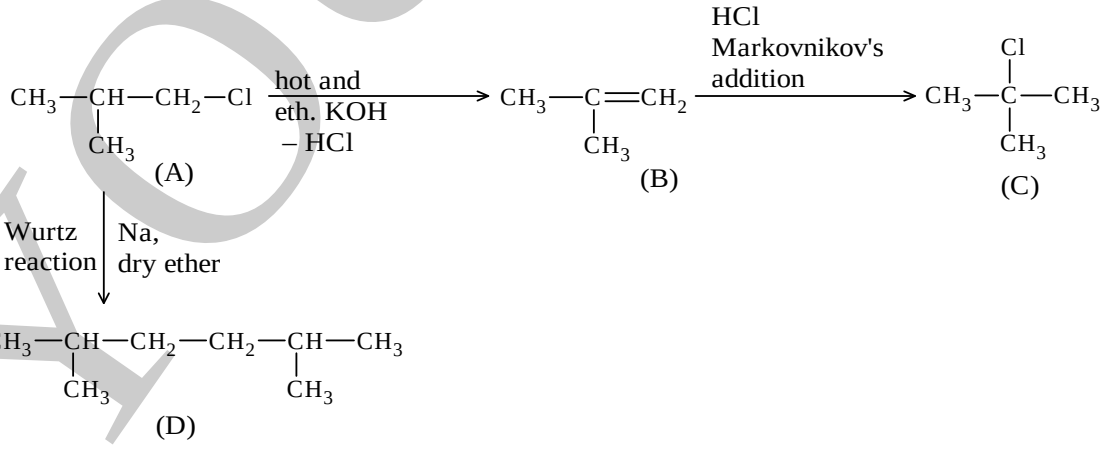
(b) 

15. (a) A → 

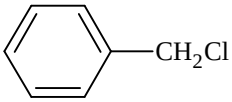
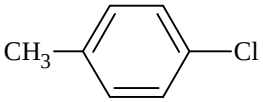
B → 

C → 

D → 



(b)

Test		
Hydrolysis followed by reaction with dil. HNO_3 + $AgNO_3$	It gives a white ppt.of AgCl soluble in NH_4OH	No white ppt. obtained.

(c) CCl_4 → As a solvent, in fire extinguisher.
Chlorofluorocarbon → as a refrigerant

 © 2020 YOURBUK, All rights reserved