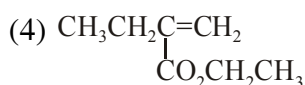
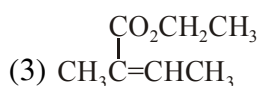
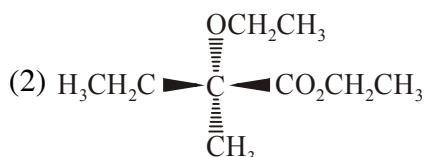
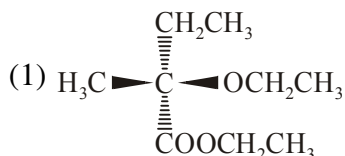
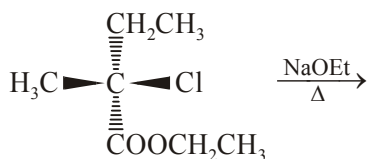
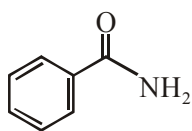


**HALOGEN DERIVATIVE**

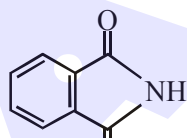
1. The major product of the following reaction is:



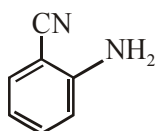
2. The increasing order of reactivity of the following compounds towards reaction with alkyl halides directly is :



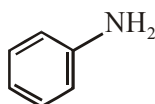
(A)



(B)



(C)



(D)

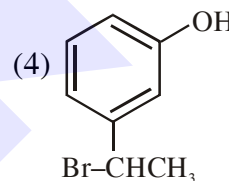
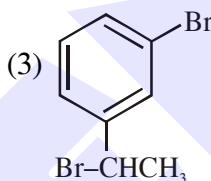
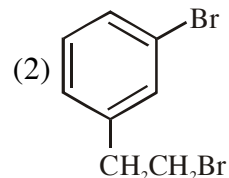
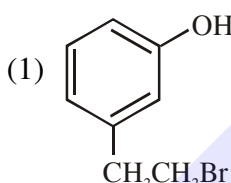
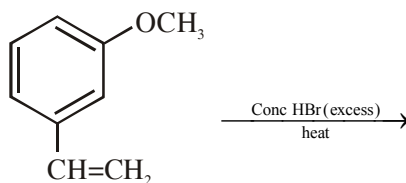
(1) (B) < (A) < (D) < (C)

(2) (B) < (A) < (C) < (D)

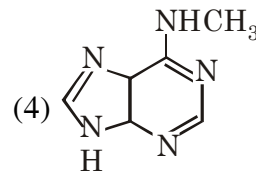
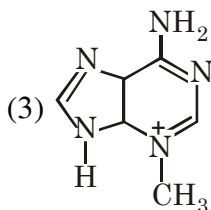
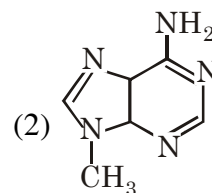
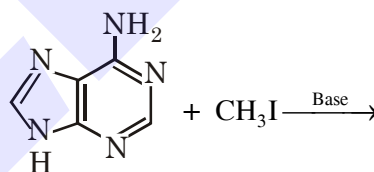
(3) (A) < (C) < (D) < (B)

(4) (A) < (B) < (C) < (D)

3. The major product of the following reactions:

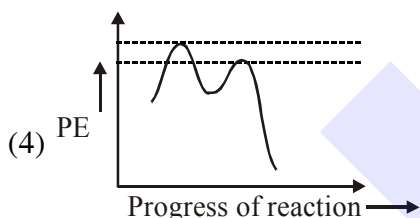
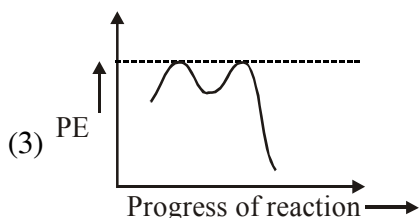
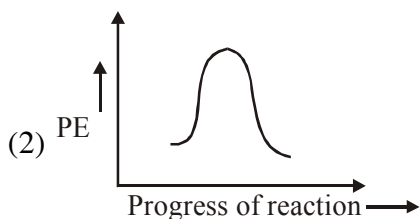
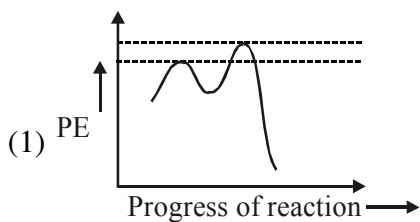


4. The major product in the following reaction is :

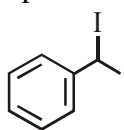




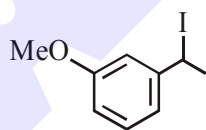
10. Which of the following potential energy (PE) diagrams represents the  $S_N1$  reaction?



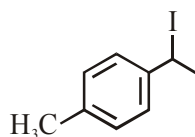
11. Increasing rate of  $S_N1$  reaction in the following compounds is :



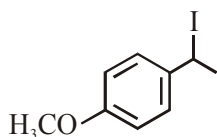
(A)



(B)



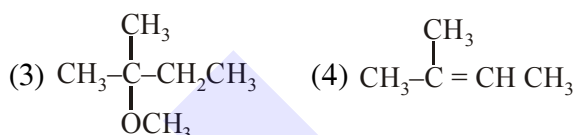
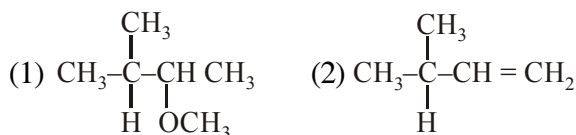
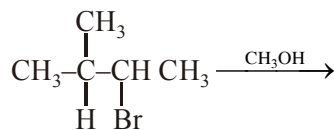
(C)



(D)

- (1) (A) < (B) < (C) < (D)  
 (2) (B) < (A) < (D) < (C)  
 (3) (B) < (A) < (C) < (D)  
 (4) (A) < (B) < (D) < (C)

12. The major product of the following reaction is :-

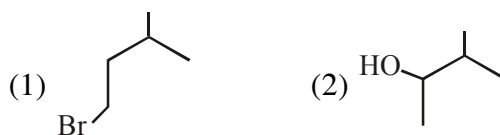
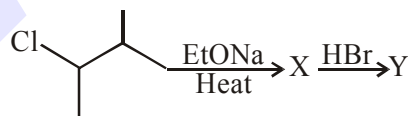


13. The increasing order of nucleophilicity of the following nucleophiles is :

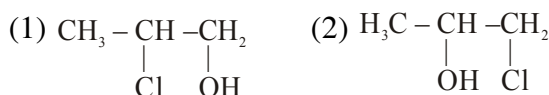


- (1) (b) < (c) < (a) < (d) (2) (a) < (d) < (c) < (b)  
 (3) (d) < (a) < (c) < (b) (4) (b) < (c) < (d) < (a)

14. The major product 'Y' in the following reaction is:



15. The major product of the following addition reaction is :



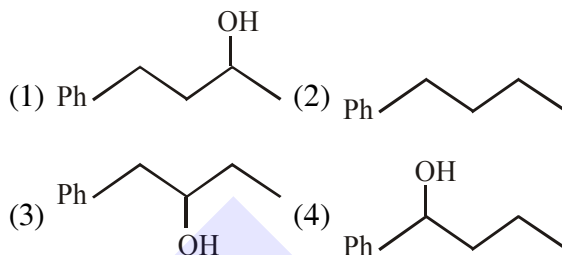
16. An 'Assertion' and a 'Reason' are given below. Choose the correct answer from the following options.

**Assertion (A) :** Vinyl halides do not undergo nucleophilic substitution easily.

**Reason (R) :** Even though the intermediate carbocation is stabilized by loosely held  $\pi$ -electrons, the cleavage is difficult because of strong bonding.

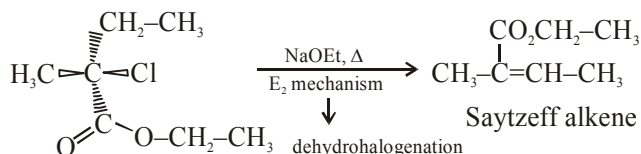
- (1) Both (A) and (R) are wrong statements  
(2) Both (A) and (R) are correct statements and (R) is the correct explanation of (A)  
(3) Both (A) and (R) are correct statements but (R) is not the correct explanation of (A)  
(4) (A) is a correct statement but (R) is a wrong statement.

17. Heating of 2-chloro-1-phenylbutane with EtOK/EtOH gives X as the major product. Reaction of X with  $\text{Hg}(\text{OAc})_2/\text{H}_2\text{O}$  followed by  $\text{NaBH}_4$  gives Y as the major product. Y is :



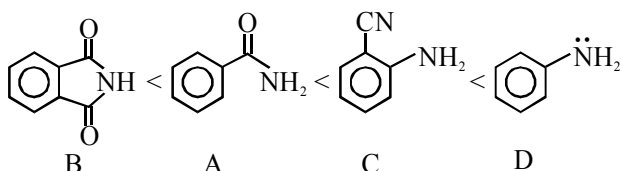
SOLUTION

1. Ans. (3)



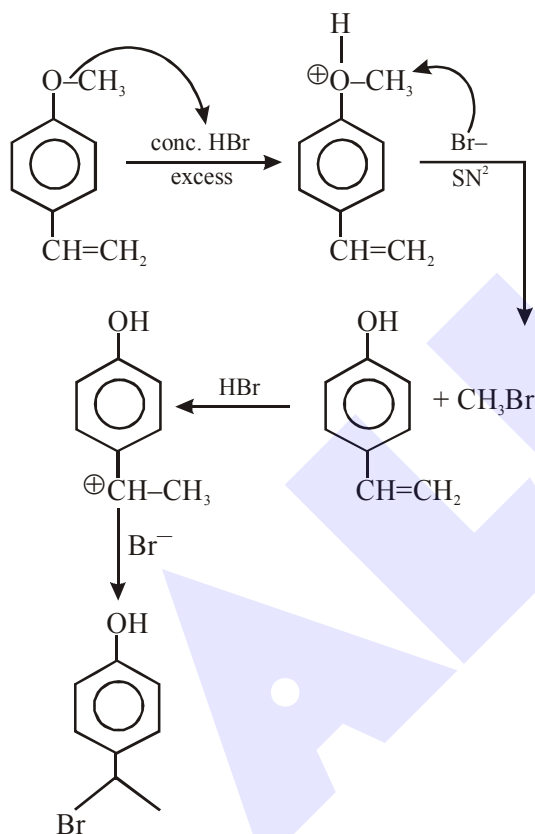
2. Ans. (2)

Nucleophilicity order



3. Ans. (4)

Sol.

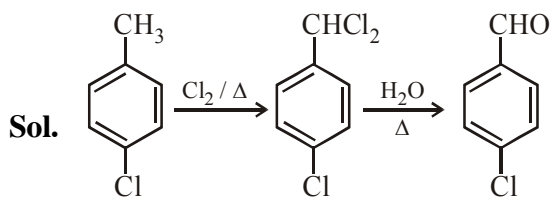


Correct option : (4)

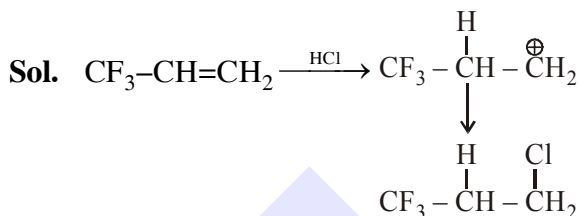
4. Ans. (Bonus)

Sol. because one double bond is missing in all given option. So aromaticity is lost in both the ring.

5. Ans. (4)



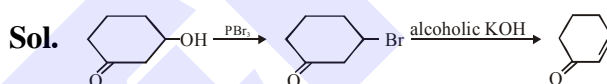
6. Ans. (1)



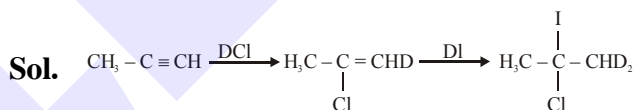
Due to higher  $e^-$  withdrawing nature of  $\text{CF}_3$  group.

It follow anti markovnikoff product

7. Ans. (4)

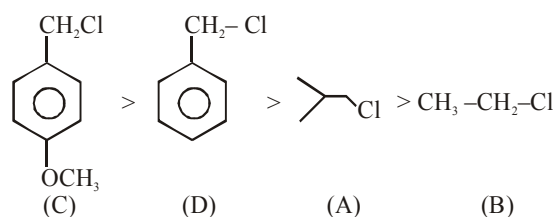


8. Ans. (4)



9. Ans. (3)

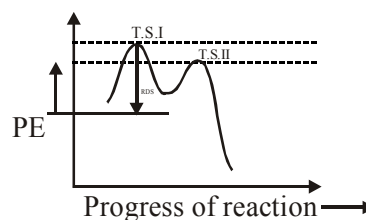
Sol.  $\text{S}_\text{N}1$  Reactivity order



Order  $\text{C} > \text{D} > \text{A} > \text{B}$

10. Ans. (4)

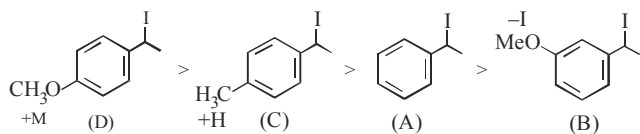
Sol. PE diagram for  $\text{S}_\text{N}1$



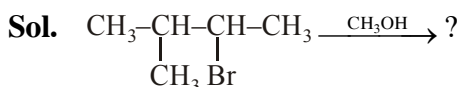
$\text{S}_\text{N}1$  is two step reaction where in step (1) formation of carbocation is RDS

11. Ans. (3)

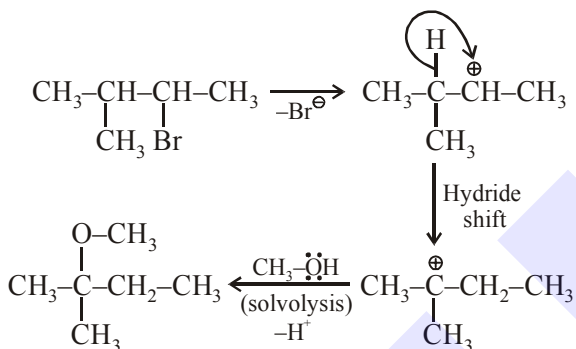
Sol. Rate of  $S_N1$  is directly proportional to stability of first formed carbocation so answer is



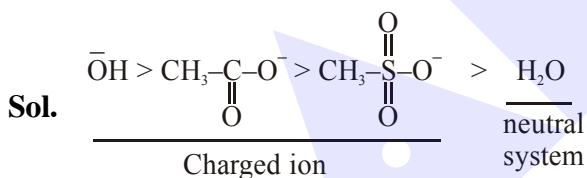
12. Ans. (3)



In polar protic solvent  $S_N1$  mechanism is favourable hence reaction complete via  $S_N1$  mechanism

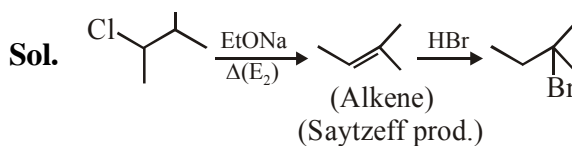


13. Ans. (1)

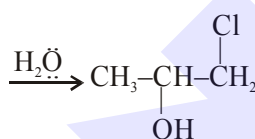
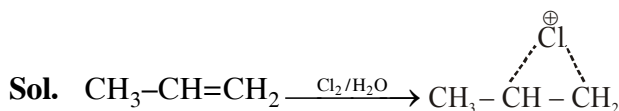


ion pair donating tendency on oxygen is reduced, nucleophilicity reduced  $b < c < a < d$

14. Ans. (3)



15. Ans. (2)



16. Ans. (4)

Sol. Vinyl halide  $\text{CH}_2=\text{CH}-\text{Cl}$  do not undergo  $S_N$  reaction

This is due to formation of highly unstable carbocation ( $\text{CH}_2=\overset{\oplus}{\text{C}}\text{H}$ ); which cannot be delocalised by the  $\pi$ -electron, also C-Cl has double bond character because of resonance

17. Ans. (4)

