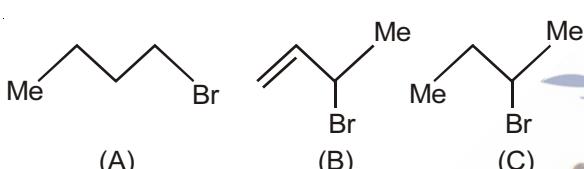
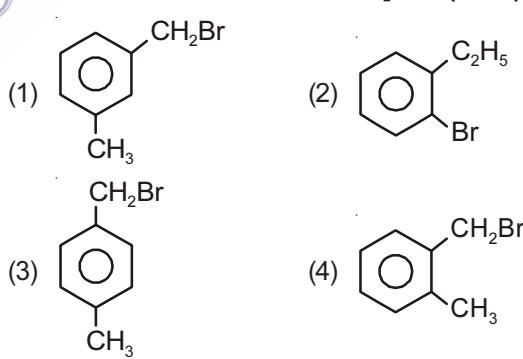


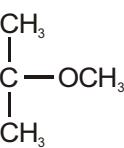
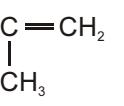
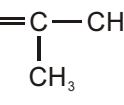
Haloalkanes and Haloarenes

1. The number of stereoisomers possible for a compound of the molecular formula $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH(OH)} - \text{Me}$ is [AIEEE-2009]
- (1) 2 (2) 4
 (3) 6 (4) 3
2. Consider the following bromides
- 
- The correct order of S_N1 reactivity is [AIEEE-2010]
- (1) A > B > C (2) B > C > A
 (3) B > A > C (4) C > B > A
3. Out of the following, the alkene that exhibits optical isomerism is [AIEEE-2010]
- (1) 2-methyl-2-pentene (2) 3-methyl-2-pentene
 (3) 4-methyl-1-pentene (4) 3-methyl-1-pentene
4. The change in the optical rotation of freshly prepared solution of glucose is known as [AIEEE-2011]
- (1) Mutarotation (2) Tautomerism
 (3) Racemisation (4) Specific rotation
5. Consider thiol anion (RS^\ominus) and alkoxy anion (RO^\ominus). Which of the following statement is correct? [AIEEE-2011]
- (1) RS^\ominus is more basic but less nucleophilic than RO^\ominus
 (2) RS^\ominus is less basic and less nucleophilic than RO^\ominus
 (3) RS^\ominus is less basic but more nucleophilic than RO^\ominus
 (4) RS^\ominus is more basic and more nucleophilic than RO^\ominus
6. How many chiral compounds are possible on monochlorination of 2-methyl butane? [AIEEE-2012]
- (1) 2 (2) 4
 (3) 6 (4) 8
7. What is DDT among the following? [AIEEE-2012]
- (1) A fertilizer (2) Biodegradable pollutant
 (3) Non-Biodegradable pollutant (4) Greenhouse gas
8. A solution of (-)-1-chloro-1-phenylethane in toluene racemises slowly in the presence of a small amount of SbCl_5 , due to the formation of [JEE (Main)-2013]
- (1) Carbanion (2) Carbene
 (3) Carbocation (4) Free radical
9. Compound (A), $\text{C}_8\text{H}_9\text{Br}$, gives a white precipitate when warmed with alcoholic AgNO_3 . Oxidation of (A) gives an acid (B), $\text{C}_8\text{H}_6\text{O}_4^-$. (B) easily forms anhydride on heating. Identify the compound (A). [JEE (Main)-2013]
- 
10. In S_N2 reactions, the correct order of reactivity for the following compounds CH_3Cl , $\text{CH}_3\text{CH}_2\text{Cl}$, $(\text{CH}_3)_2\text{CHCl}$ and $(\text{CH}_3)_3\text{CCl}$ is [JEE (Main)-2014]
- (1) $\text{CH}_3\text{Cl} > (\text{CH}_3)_2\text{CHCl} > \text{CH}_3\text{CH}_2\text{Cl} > (\text{CH}_3)_3\text{CCl}$
 (2) $\text{CH}_3\text{Cl} > \text{CH}_3\text{CH}_2\text{Cl} > (\text{CH}_3)_2\text{CHCl} > (\text{CH}_3)_3\text{CCl}$
 (3) $\text{CH}_3\text{CH}_2\text{Cl} > \text{CH}_3\text{Cl} > (\text{CH}_3)_2\text{CHCl} > (\text{CH}_3)_3\text{CCl}$
 (4) $(\text{CH}_3)_2\text{CHCl} > \text{CH}_3\text{CH}_2\text{Cl} > \text{CH}_3\text{Cl} > (\text{CH}_3)_3\text{CCl}$

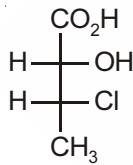
11. The synthesis of alkyl fluorides is best accomplished by [JEE (Main)-2015]

- Free radical fluorination
- Sandmeyer's reaction
- Finkelstein reaction
- Swarts reaction

12. 2-chloro-2-methylpentane on reaction with sodium methoxide in methanol yields: [JEE (Main)-2016]

- (a) 
- (b) 
- (c) 
- (1) (a) and (c) (2) (c) only
 (3) (a) and (b) (4) All of these

13. The absolute configuration of

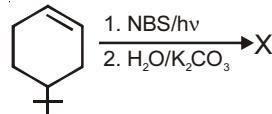


is

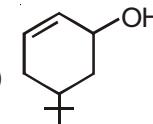
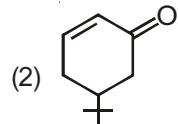
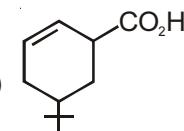
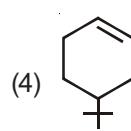
[JEE (Main)-2016]

- (1) (2S, 3R) (2) (2S, 3S)
 (3) (2R, 3R) (4) (2R, 3S)

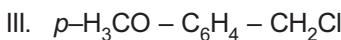
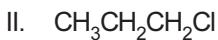
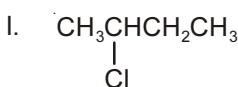
14. The product of the reaction given below is



[JEE (Main)-2016]

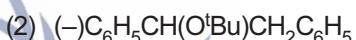
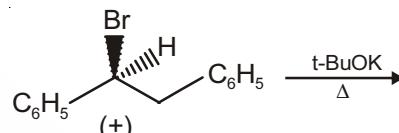
- (1) 
 (2) 
 (3) 
 (4) 

15. The increasing order of the reactivity of the following halides for the S_N1 reaction is [JEE (Main)-2017]



- (1) (I) < (III) < (II) (2) (II) < (III) < (I)
 (3) (III) < (II) < (I) (4) (II) < (I) < (III)

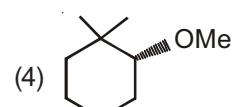
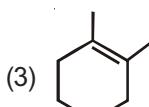
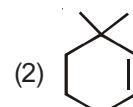
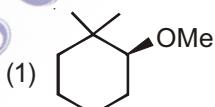
16. The major product obtained in the following reaction is [JEE (Main)-2017]



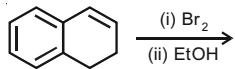
17. The major product of the following reaction is



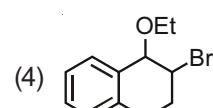
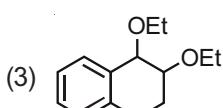
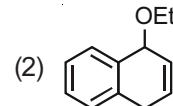
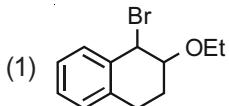
[JEE (Main)-2018]



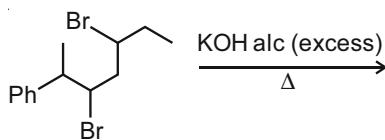
18. The major product of the following reaction is



[JEE (Main)-2019]



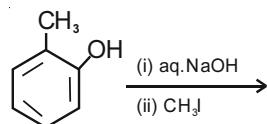
19. The major product of the following reaction is



[JEE (Main)-2019]

- (1) (2)
- (3) (4)

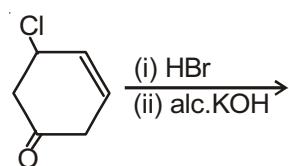
20. The major product of the following reaction is



[JEE (Main)-2019]

- (1) (2)
- (3) (4)

21. The major product of the following reaction is



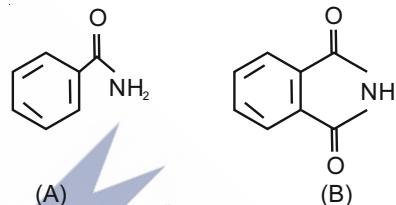
[JEE (Main)-2019]

- (1) (2)
- (3) (4)

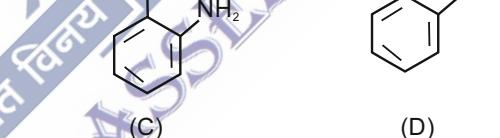
22. Which of the following compounds will produce a precipitate with AgNO_3 ? [JEE (Main)-2019]

- (1) (2)
- (3) (4)

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



(A) (B)

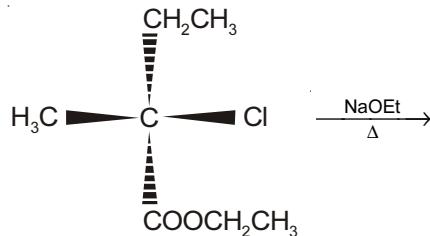


(C) (D)

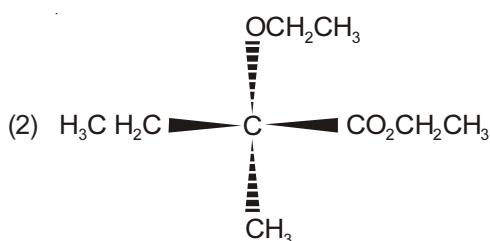
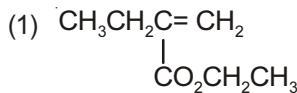
[JEE (Main)-2019]

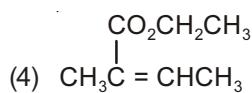
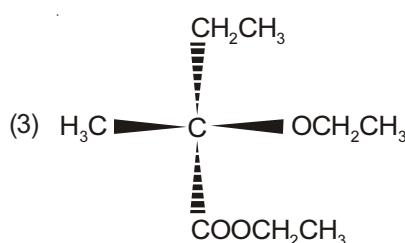
- (1) (A) < (B) < (C) < (D) (2) (B) < (A) < (C) < (D)
(3) (B) < (A) < (D) < (C) (4) (A) < (C) < (D) < (B)

24. The major product of the following reaction is

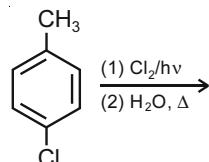


[JEE (Main)-2019]

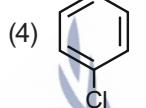
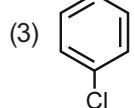
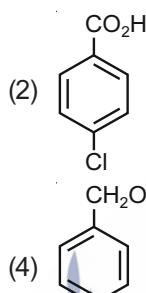
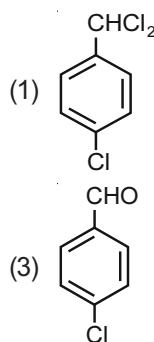




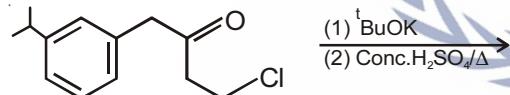
25. The major product of the following reaction is:



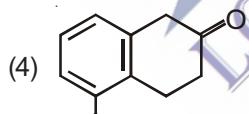
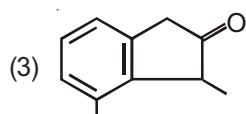
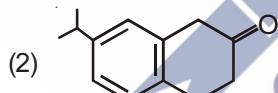
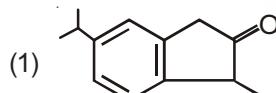
[JEE (Main)-2019]



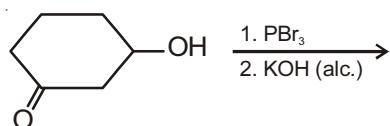
26. The major product of the following reaction is



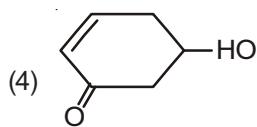
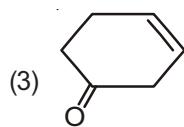
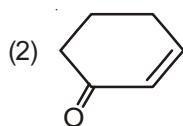
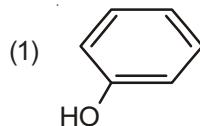
[JEE (Main)-2019]



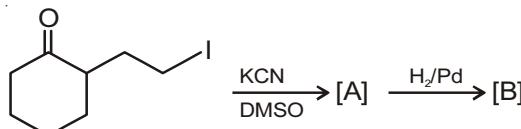
27. The major product of the following reaction is



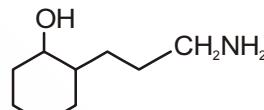
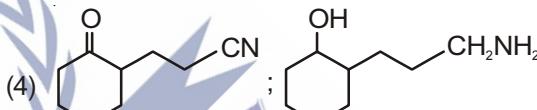
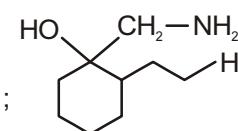
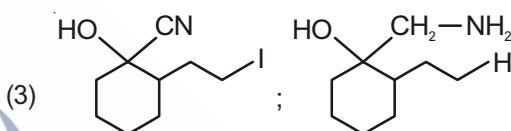
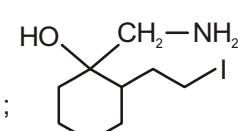
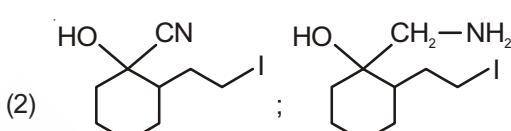
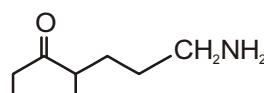
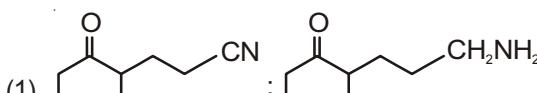
[JEE (Main)-2019]



28. The major products A and B for the following reactions are, respectively

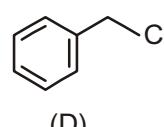
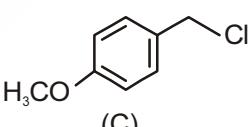
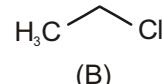
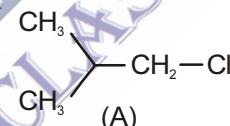


[JEE (Main)-2019]



29. Increasing order of reactivity of the following compounds for S_N1 substitution is

[JEE (Main)-2019]



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

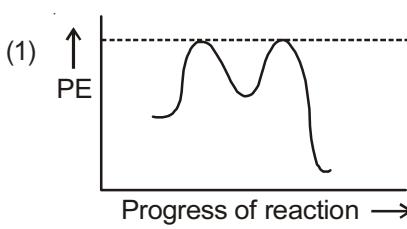
(2) (B) < (C) < (D) < (A)

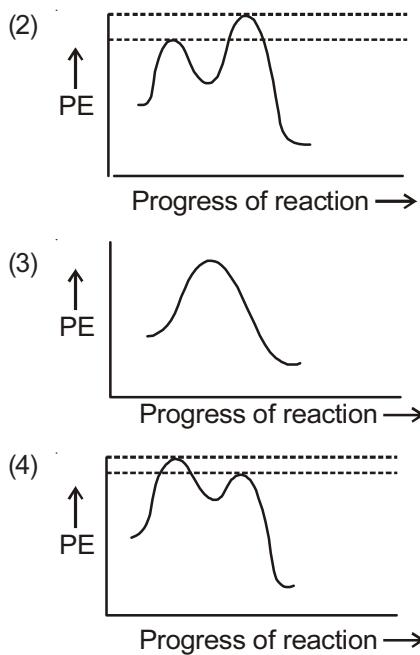
(3) (B) < (A) < (D) < (C)

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

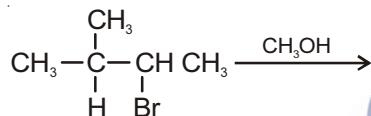
30. Which of the following potential energy (PE) diagrams represents the S_N1 reaction?

[JEE (Main)-2019]





31. The major product of the following reaction is :



- (1) $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{C}-\text{CH}_2\text{CH}_3 \\ | \\ \text{OCH}_3 \end{array}$
- (2) $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{C}-\text{CH}(\text{OCH}_3)\text{CH}_3 \\ | \\ \text{H} \end{array}$
- (3) $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{C}-\text{CH}=\text{CH}_2 \\ | \\ \text{H} \end{array}$
- (4) $\text{CH}_3-\overset{\text{CH}_3}{\text{C}}=\text{CH CH}_3$

32. Consider the statements S1 and S2 :

S1 : Conductivity always increases with decrease in the concentration of electrolyte.

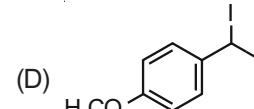
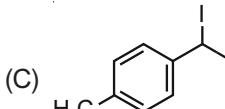
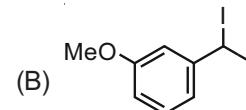
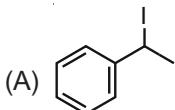
S2 : Molar conductivity always increases with decrease in the concentration of electrolyte.

The correct option among the following is

[JEE (Main)-2019]

- (1) S1 is wrong and S2 is correct
 (2) S1 is correct and S2 is wrong
 (3) Both S1 and S2 are wrong
 (4) Both S1 and S2 are correct

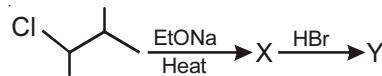
33. Increasing rate of $\text{S}_{\text{N}}1$ reaction in the following compounds is :



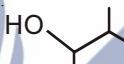
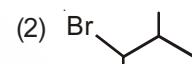
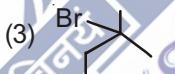
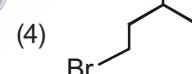
[JEE (Main)-2019]

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

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



[JEE (Main)-2019]

- (1) 
 (2) 
 (3) 
 (4) 

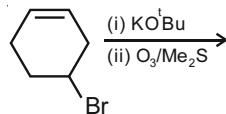
35. The increasing order of nucleophilicity of the following nucleophiles is :

- (a) CH_3CO_2^- (b) H_2O
 (c) CH_3SO_3^- (d) HO^-

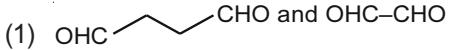
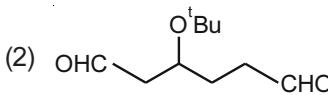
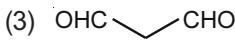
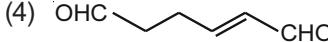
[JEE (Main)-2019]

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

36. The major product(s) obtained in the following reaction is/are



[JEE (Main)-2019]

- (1) 
 (2) 
 (3) 
 (4) 

37. 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 π -electrons, the cleavage is difficult because of strong bonding. [JEE (Main)-2019]

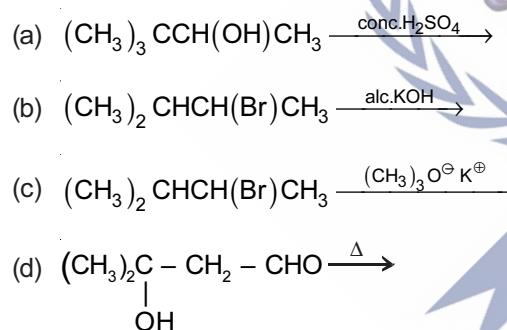
- (1) Both (A) and (R) are correct statements and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are correct statements but (R) is not the correct explanation of (A).
- (3) Both (A) and (R) are wrong statements.
- (4) (A) is a correct statement but (R) is a wrong statement.

38. Which one of the following is likely to give a precipitate with AgNO_3 solution?

[JEE (Main)-2019]

- (1) $\text{CH}_2 = \text{CH} - \text{Cl}$
- (2) CHCl_3
- (3) CCl_4
- (4) $(\text{CH}_3)_3\text{CCl}$

39. Consider the following reactions :

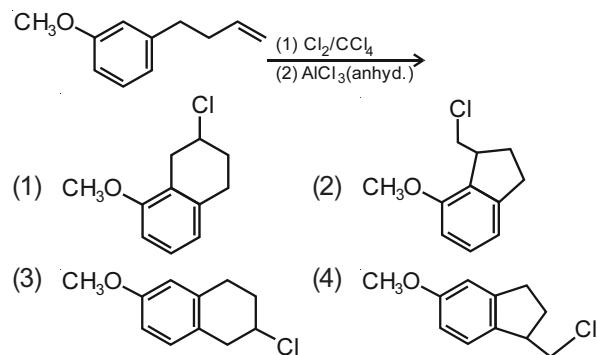


Which of these reaction(s) will not produce Saytzeff product ?

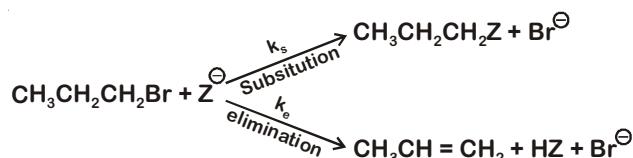
[JEE (Main)-2020]

- (1) (a), (c) and (d)
- (2) (c) only
- (3) (b) and (d)
- (4) (d) only

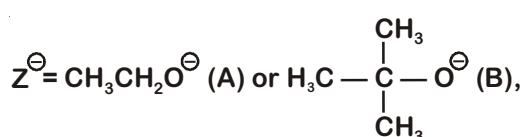
40. The major product of the following reaction is



41. For the following reactions



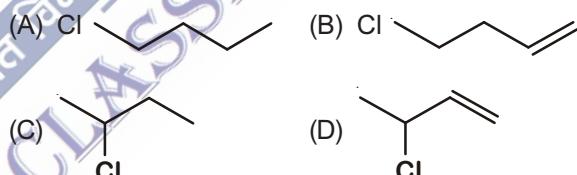
where,



k_s and k_e , are, respectively, the rate constants for substitution and elimination, and $\mu = \frac{k_s}{k_e}$, the correct option is _____ . [JEE (Main)-2020]

- (1) $\mu_B > \mu_A$ and $k_e(A) > k_e(B)$
- (2) $\mu_A > \mu_B$ and $k_e(A) > k_e(B)$
- (3) $\mu_B > \mu_A$ and $k_e(B) > k_e(A)$
- (4) $\mu_A > \mu_B$ and $k_e(B) > k_e(A)$

42. The decreasing order of reactivity towards dehydrohalogenation (E_1) reaction of the following compounds is

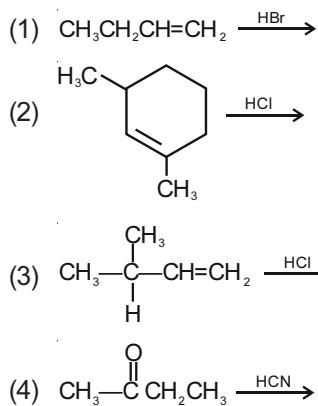


[JEE (Main)-2020]

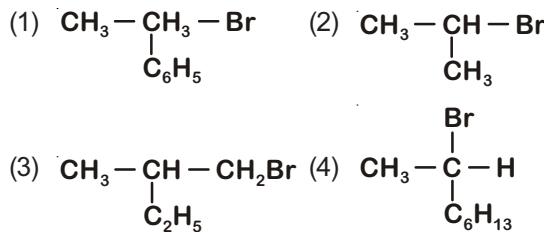
- (1) B > A > D > C
- (2) B > D > A > C
- (3) B > D > C > A
- (4) D > B > C > A

43. Which of the following reactions will not produce a racemic product?

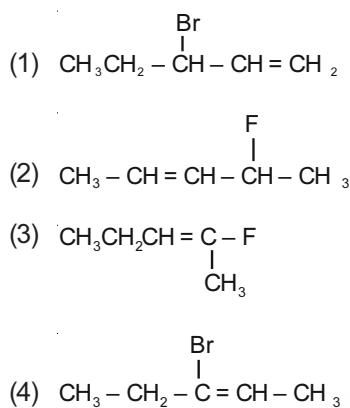
[JEE (Main)-2020]



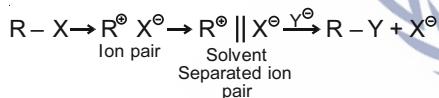
44. Which of the following compounds will show retention in configuration on nucleophilic substitution by OH^- ion?
[JEE (Main)-2020]



45. The major product obtained from E_2 – elimination of 3-bromo-2-fluoropentane is
[JEE (Main)-2020]



46. The mechanism of S_N1 reaction is given as



A student writes general characteristics based on the given mechanism as

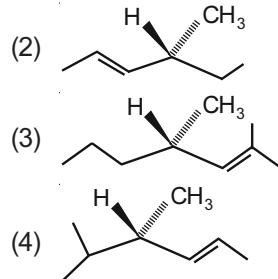
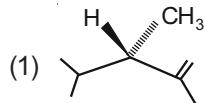
- (a) The reaction is favoured by weak nucleophiles.
(b) R^\oplus would be easily formed if the substituents are bulky.
(c) The reaction is accompanied by racemization.
(d) The reaction is favoured by non-polar solvents.

Which observations are correct?

[JEE (Main)-2020]

- (1) (b) and (d) (2) (a) and (c)
(3) (a) and (b) (4) (a), (b) and (c)

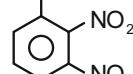
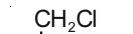
47. Which of the following compounds produces an optically inactive compound on hydrogenation?
[JEE (Main)-2020]



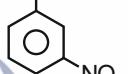
48. The decreasing order of reactivity of the following compounds towards nucleophilic substitution (S_N2) is



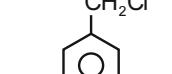
(I)



(II)



(III)

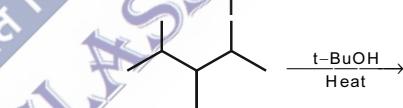


(IV)

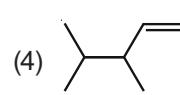
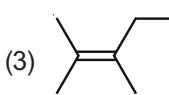
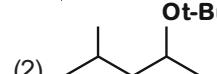
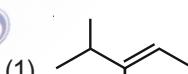
[JEE (Main)-2020]

- (1) (II) > (III) > (IV) > (I) (2) (II) > (III) > (I) > (IV)
(3) (III) > (II) > (IV) > (I) (4) (IV) > (II) > (III) > (I)

49. The major product in the following reaction is



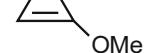
[JEE (Main)-2020]



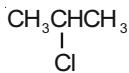
50. The decreasing order of reactivity of the following organic molecules towards AgNO_3 solution is



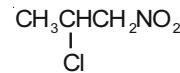
(A)



(B)



(C)



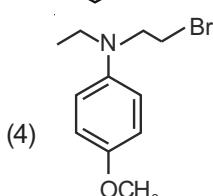
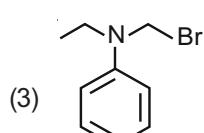
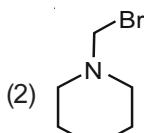
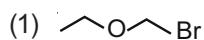
(D)

[JEE (Main)-2020]

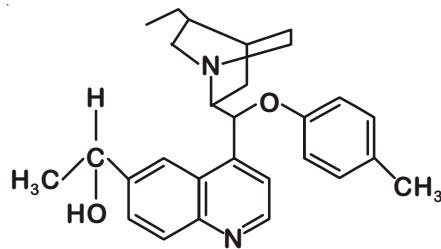
- (1) (B) > (A) > (C) > (D) (2) (A) > (B) > (D) > (C)
(3) (A) > (B) > (C) > (D) (4) (C) > (D) > (A) > (B)

51. Which of the following compounds will form the precipitate with aq. AgNO_3 solution most readily?

[JEE (Main)-2020]



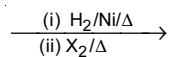
52. The number of chiral carbons present in the molecule given below is _____.



[JEE (Main)-2020]

53. The total number of monohalogenated organic products in the following (including stereoisomers) reaction is _____.

A



(Simplest optically active alkene)

[JEE (Main)-2020]

