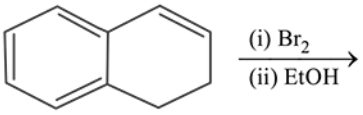
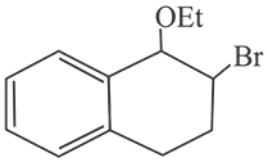
JEE Mains 2019 Chapter wise Question Bank

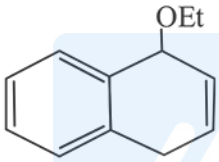
Haloalkanes and Haloarenes - Questions

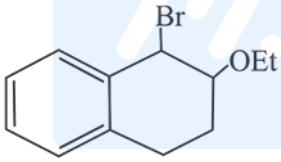
Q1

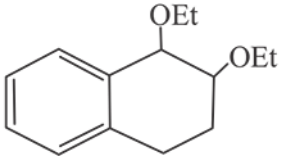
The major product of the following reaction is:



(1) 

(2) 

(3) 

(4) 

9 Jan Morning

Q2

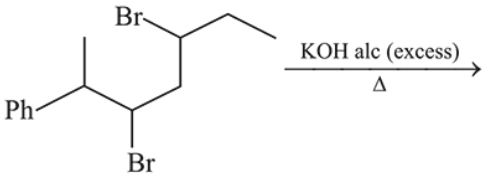
Which amongst the following is the strongest acid?

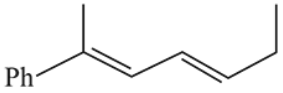
(1) $CHBr_3$ (2) CHI_3
(3) $CH(CN)_3$ (4) $CHCl_3$

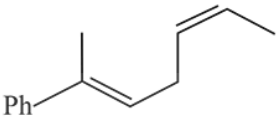
9 Jan Morning

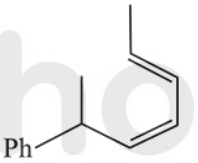
Q3

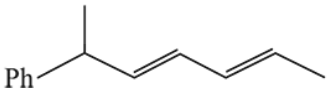
The major product of the following reaction is:



(1) 

(2) 

(3) 

(4) 

10 Jan Morning

Q4

Which hydrogen in compound (E) is easily replaceable during bromination reaction in presence of light?

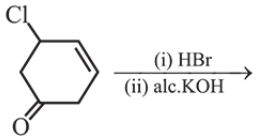
$CH_3 - CH_2 - CH = CH_2$
δ γ β α

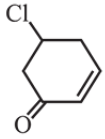
(1) α - hydrogen (2) γ - hydrogen
(3) δ - hydrogen (4) β - hydrogen

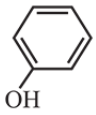
10 Jan Morning

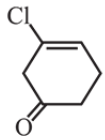
Q5

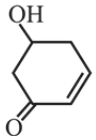
The major product of the following reaction is :



(1) 

(2) 

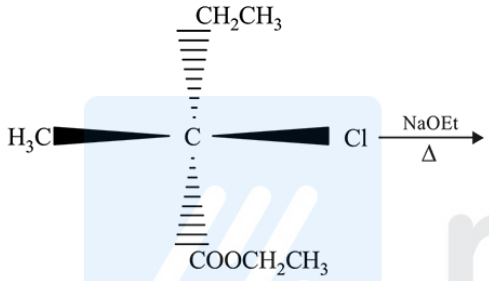
(3) 

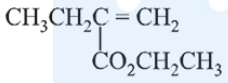
(4) 

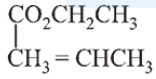
11 Jan Morning

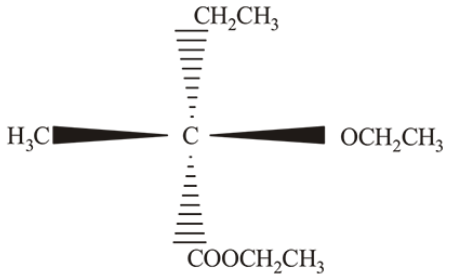
Q6

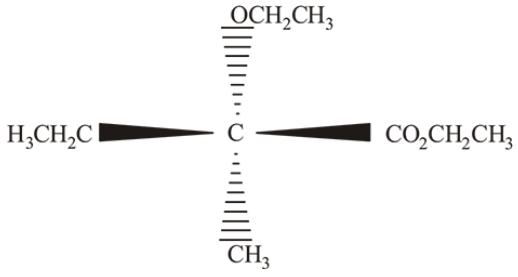
The major product of the following reaction is :



(1) 

(2) 

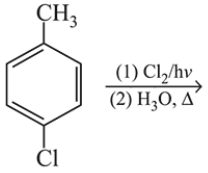
(3) 

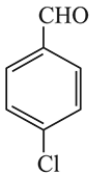
(4) 

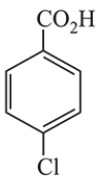
12 Jan Evening

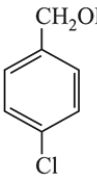
Q7

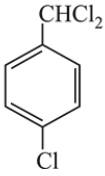
The major product of the following reaction is:



(1) 

(2) 

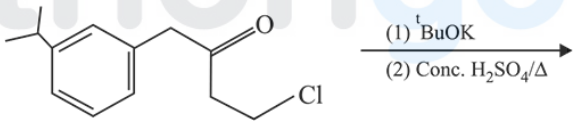
(3) 

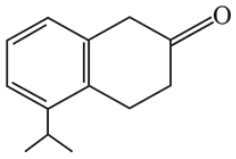
(4) 

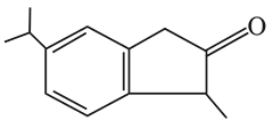
8 April Evening

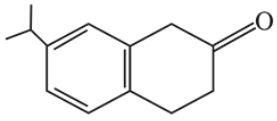
Q8

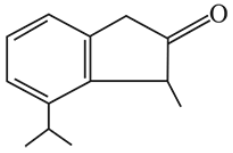
The major product of the following reaction is:



(1) 

(2) 

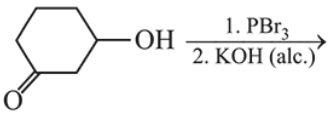
(3) 

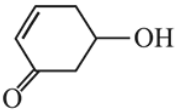
(4) 

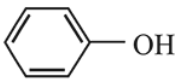
8 April Evening

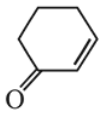
Q9

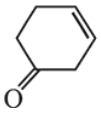
The major product of the following reaction is:



(1) 

(2) 

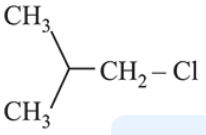
(3) 

(4) 

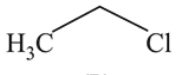
9 April Morning

Q10

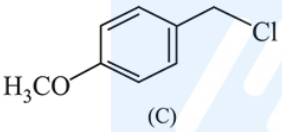
Increasing order of reactivity of the following compounds for S_N1 substitution is:



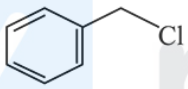
(A)



(B)



(C)



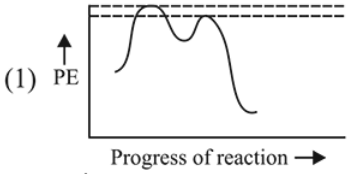
(D)

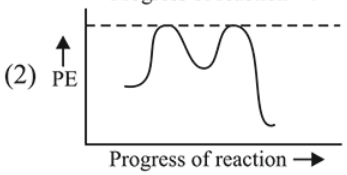
(1) (B) < (C) < (D) < (A) (2) (B) < (C) < (A) < (D)
(3) (B) < (A) < (D) < (C) (4) (A) < (B) < (D) < (C)

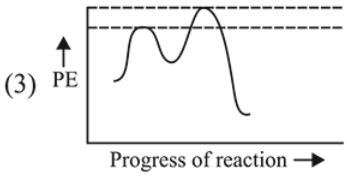
9 April Evening

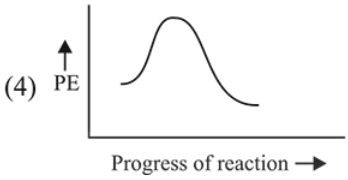
Q11

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

(1) 

(2) 

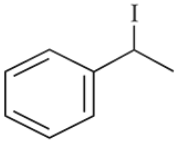
(3) 

(4) 

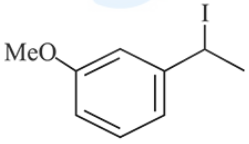
9 April Evening

Q12

Increasing rate of S_N1 reaction in the following compounds is :



(A)



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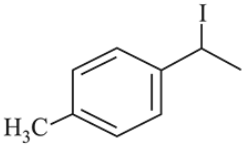
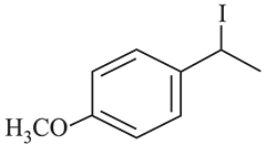


(C)



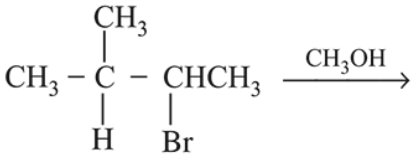
(D)

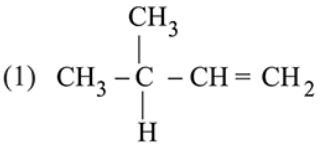
(1) (A) < (B) < (C) < (4) (2) (B) < (A) < (C) < (D)
(3) (B) < (A) < (D) < (3) (4) (A) < (B) < (D) < (C)

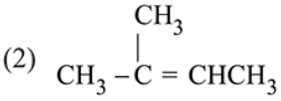
10 April Morning

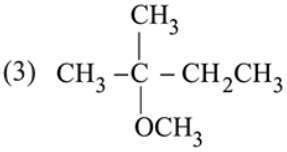
Q13

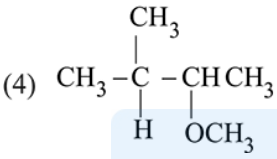
The major product of the following reaction is



(1) 

(2) 

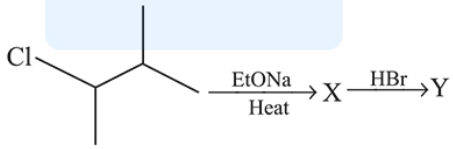
(3) 

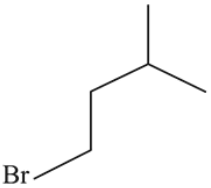
(4) 

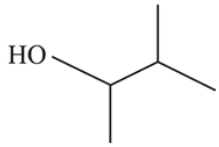
10 April Morning

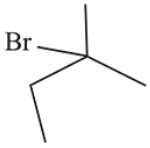
Q14

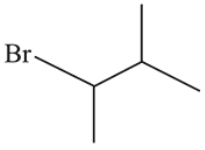
The major product 'Y' in the following reaction is :



(1) 

(2) 

(3) 

(4) 

10 April Evening

Q15

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

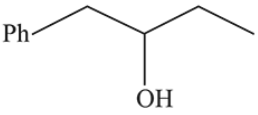
(1) $CH_2 = CH - Cl$ (2) CCl_4

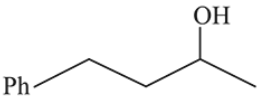
(3) $CHCl_3$ (4) $(CH_3)_3CCl$

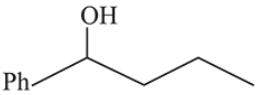
12 April Evening

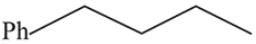
Q16

Heating of 2-chloro-1-phenylbutane with EtOK/EtOH gives X as the major product. Reaction of X with $Hg(OAc)_2/H_2O$ followed by $NaBH_4$ gives Y as the major product. Y is :

(1) 

(2) 

(3) 

(4) 

12 April Evening

Q17

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.

(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.

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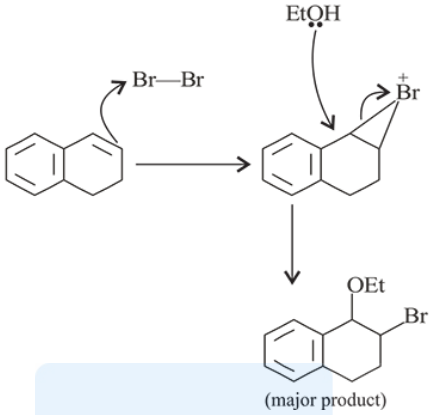
JEE Mains 2019 Chapter wise Question Bank

Haloalkanes and Haloarenes - Questions

Q1

(1) Mechanism involved for the given reaction is:



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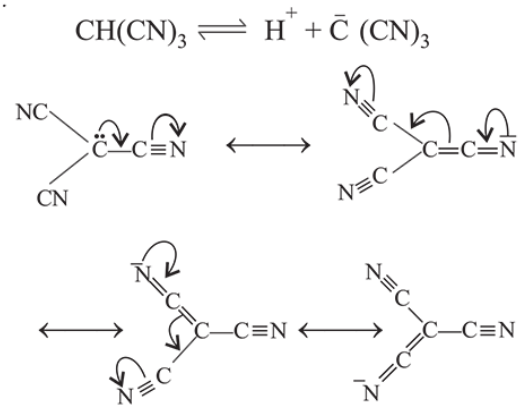
Q2

(3) Due to the resonance stabilisation of the conjugate base, $CH(CN)_3$ is the strongest acid amongst the given compounds.

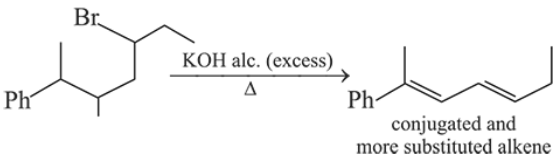


The conjugate bases of $CHBr_3$ and CHI_3 are stabilised by inductive effect of halogens. This is why, they are less stable. Also, the conjugate base of $CHCl_3$ involves back-bonding between $2p$ and $3p$ orbitals

9 Jan Morning

Q3

(1) Dehydrohalogenation (β–elimination) occurs as:



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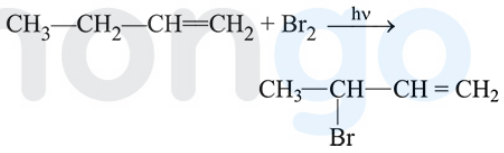
Q4

(2) Allylic H is replaced due to the greater stability of allylic free radical.



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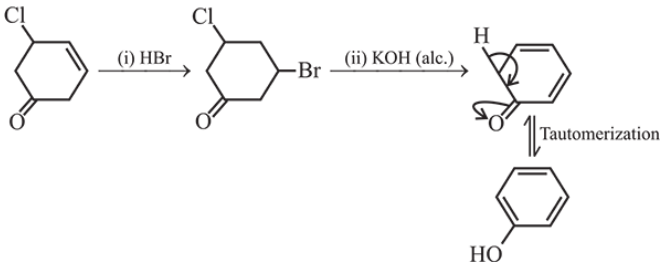
Q5

(2)



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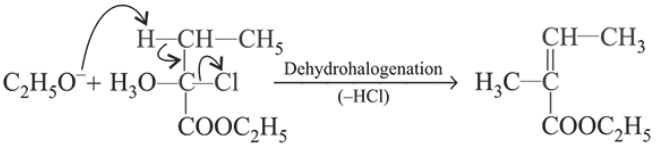
Q6

(2) Heating of the given compound in presence of strong base is favoured for elimination reaction resulting in more stable alkene.



Saytzeff product

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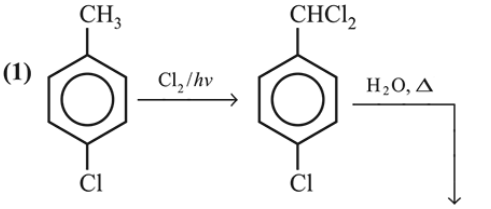
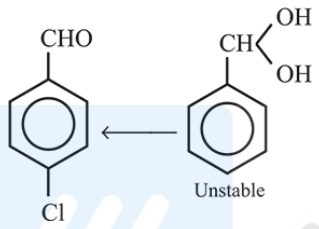
Q7

(1)





Unstable

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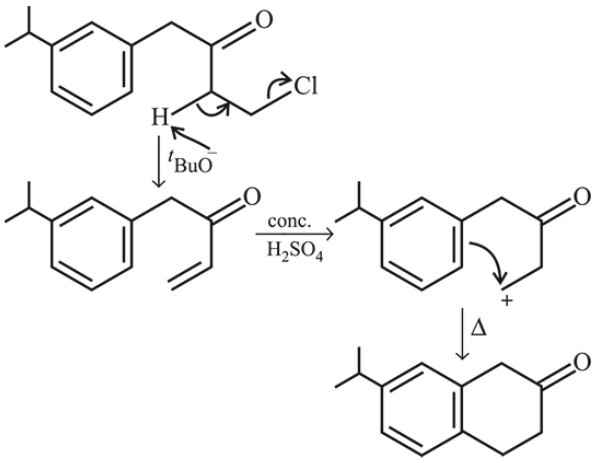
Q8

(3)



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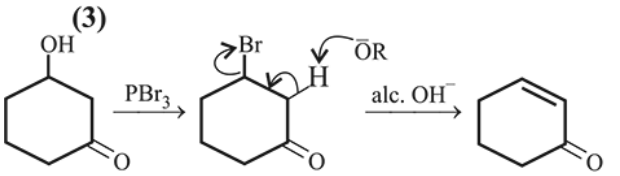
Q9

(3)

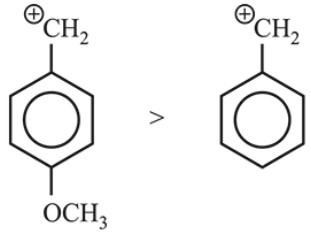


more stable due to conjugation

9 April Morning

Q10

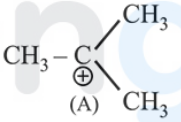
(3) In S_N1 reaction carbocation acts as an intermediate.



(C) (D)

Carbocation produced by (C) is more stable than carbocation produced by (D) due to + I effect of $-OCH_3$ group.

Further in (A) there is formation of tertiary carbocation after rearrangement while (B) is primary carbocation.



(A)

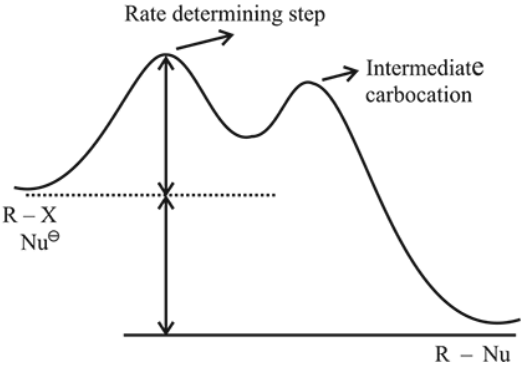
So, the correct order is (C) > (D) > (A) > (B).

9 April Evening

Q11

(1) The S_N1 reaction energy diagram illustrates the dominant part of the substrate with respect to the reaction rate.

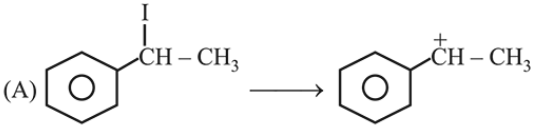
The rate determining step is the formation of the intermediate carbocation.

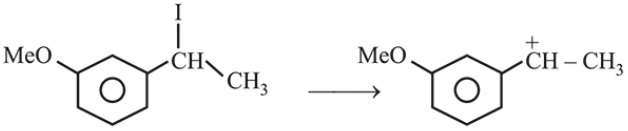


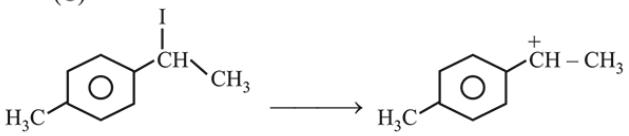
9 April Evening

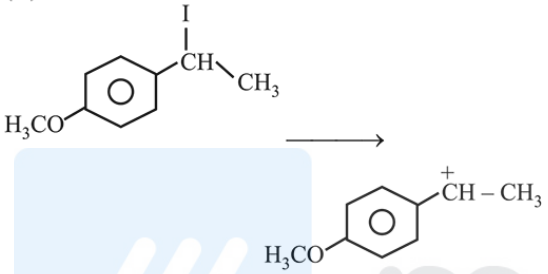
Q12

(2) The rate of S_N1 is decided by the stability of carbocation formed in the rate determining step.

(A) 

(B) 

(C) 

(D) 

Carbocation(D) is most stable due to +R effect of CH_3O group, (C) is stabilised by +I and +H effects of the CH_3 group; (B) is least stable due to –I effect of MeO group. So increasing order of rate of S_N1 is (B) < (A) < (C) < (D)

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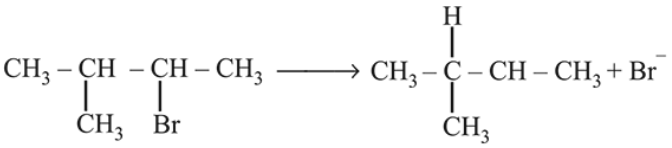
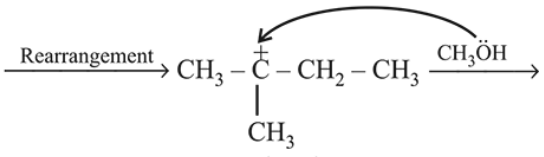
Q13

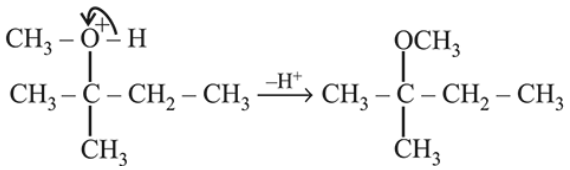
(3)



2° carbocation



3° carbocation



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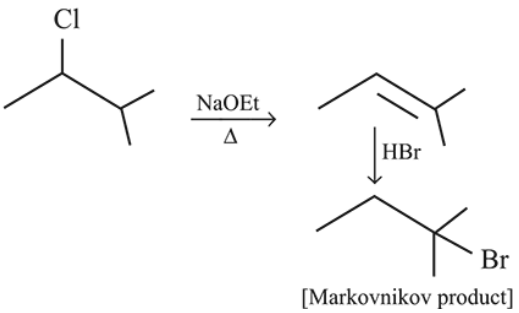
Q14

(3)

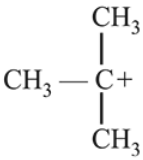


[Markovnikov product]

10 April Evening

Q15

(4) Carbocation is formed on reaction with Ag^+

 is most stable carbocation compared to other carbocation i.e.

$CH_2 = \overset{+}{C}H, \overset{+}{C}HCl_2, \overset{+}{C}Cl_3.$

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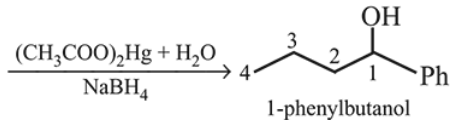
Q16

(3) 

(X)



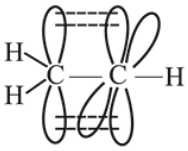
1-phenylbutanol

12 April Evening

Q17

(4) $CH_2 = CH - \ddot{Cl} \longleftrightarrow \overset{\ominus}{C}H_2 - CH = Cl^+$

Due to partial double bond character of C–halogen bond, halogen leaves with great difficulty, if at all it does. Hence, vinyl halides do not undergo nucleophilic substitution easily. So, assertion is correct.

$CH_2 = CH - Cl \rightarrow CH_2 = \overset{+}{C} - H$ or 

Intermediate carbocation is not stabilised by loosely held-π electrons because empty orbital, being at 90°, cannot overlap with *p*-orbitals of π bond. So, reason is wrong.

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