

Haloalkanes and Haloarenes

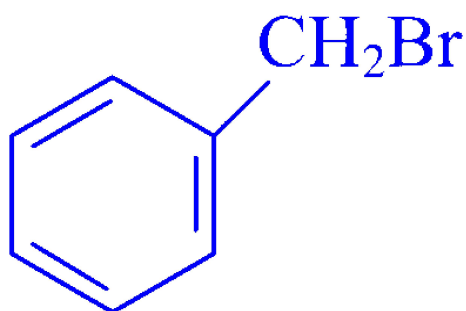
Question1

Which of the following is the most reactive towards S_N1 mechanism?

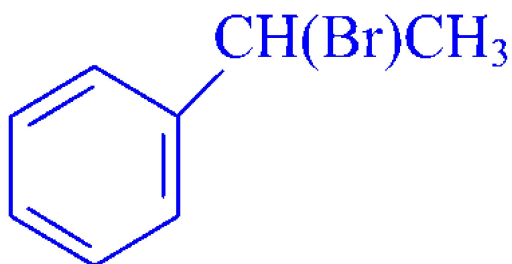
TG EAPCET 2025 (Online) 2nd May Morning Shift

Options:

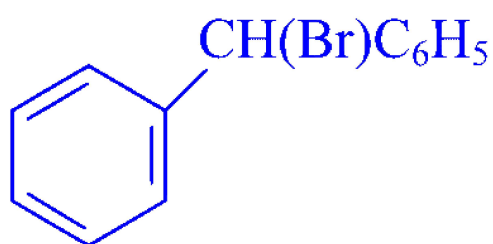
A.



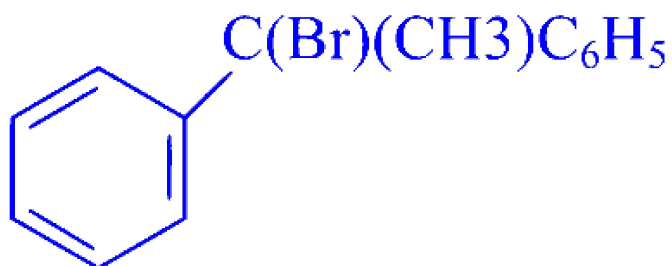
B.



C.



D.

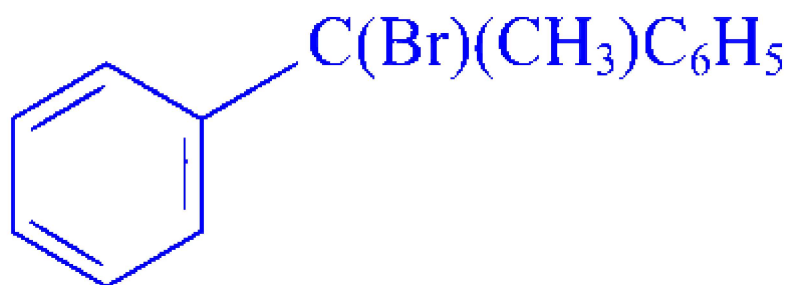


Answer: D

Solution:

$\text{S}_{\text{N}}1$ mechanism depends on carbocation stability. The more stable the carbocation formed after the leaving group departs, the faster is the $\text{S}_{\text{N}}1$ reaction.

In



tertiary benzylic carbocation is stabilised by $+I$ effect of CH_3 and 2 phenyl group, which is most stable among the given options.

Question2

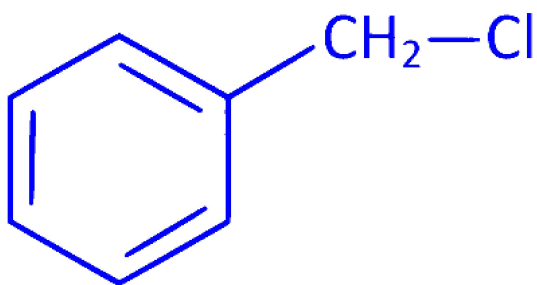
The organic halide, which does not undergo hydrolysis by $\text{S}_{\text{N}}1$ mechanism is

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Options:

A.



B. $\text{CH}_2 = \text{CH} - \text{CH}_2\text{Cl}$

C. $(\text{CH}_3)_3\text{C} - \text{Cl}$

D. $\text{CH}_3 - \text{CH} = \text{CH} - \text{Cl}$

Answer: D

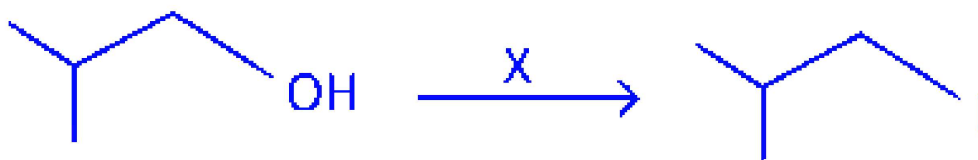
Solution:

Among the given options $\text{CH}_3 - \text{CH} = \text{CH} - \text{Cl}$ does not undergo $\text{S}_{\text{N}}1$ mechanism. It is because the carbocation (vinylic)

$\text{CH}_3 - \text{CH} = \overset{\oplus}{\text{C}}\text{H}$ is very unstable.

Question3

The reagent 'X' used in the following reaction to obtain good yield of the product is



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Options:

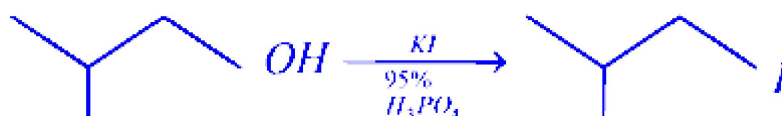


- A. KI, H₂SO₄
- B. KI, 95% H₃PO₄
- C. NaI, ZnCl₂
- D. HI

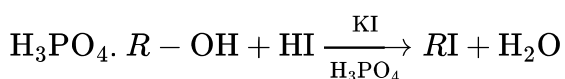
Answer: B

Solution:

The reagent used to obtain good yield of product is KI, 95% H₃PO₄.

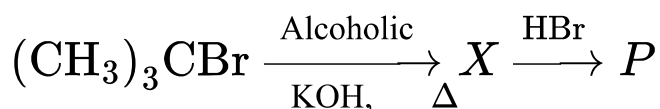


Alcohol can be converted to alkyl halides using KI in presence of



Question4

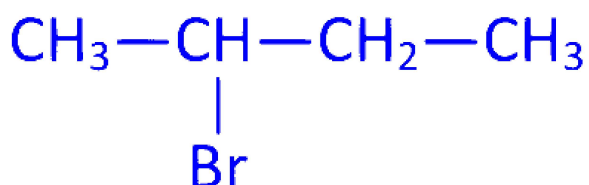
Identify the major product (*P*) in the following reaction sequence.

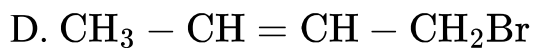


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Options:

- A. (CH₃)₃CBr
- B. (CH₃)₂CHCH₂Br
- C.

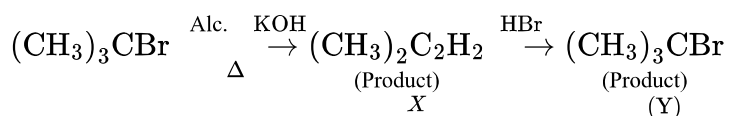




Answer: A

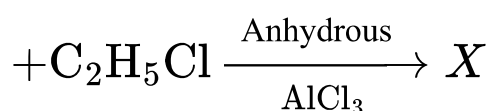
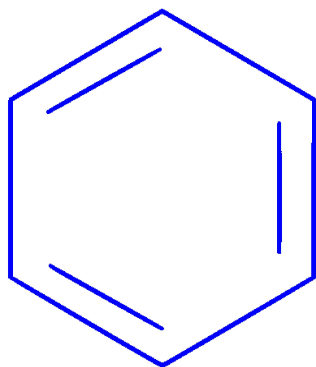
Solution:

The complete reaction is as follows,



Question5

What is the percentage of carbon in the product ' X ' formed in the given reaction?



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Options:

A. 85.6

B. 80.6

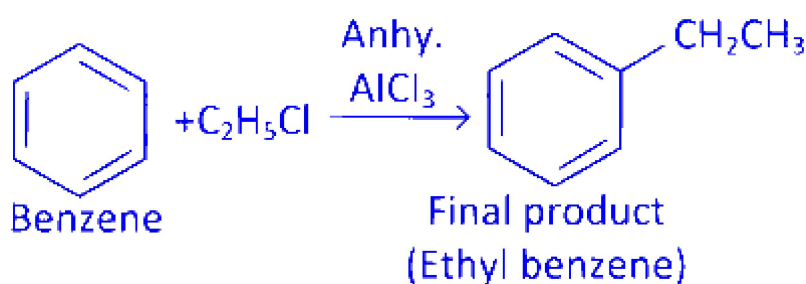
C. 90.6

D. 70.6

Answer: C

Solution:

The reaction mentioned is Friedel-Crafts reaction.



Ethyl benzene = C₆H₅CH₂CH₃

Total mass = 8 × 12 + 10 × 1 = 106 g

Percentage of carbon = $\frac{96}{106} \times 100$

= 90.6%

Question6

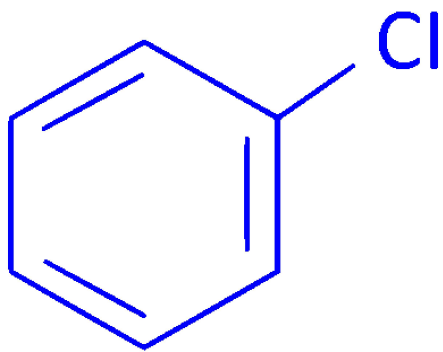
Which of the following is an example of allylic halide?

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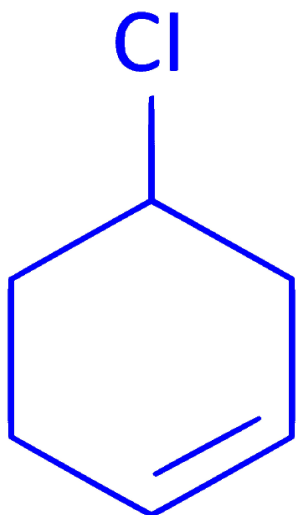
Options:



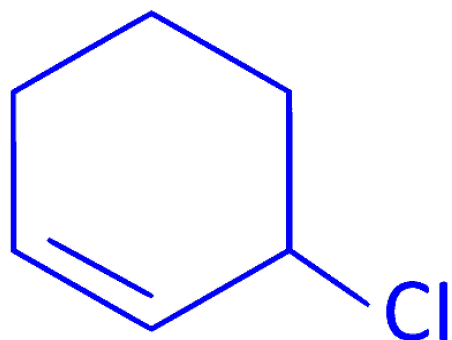
A.



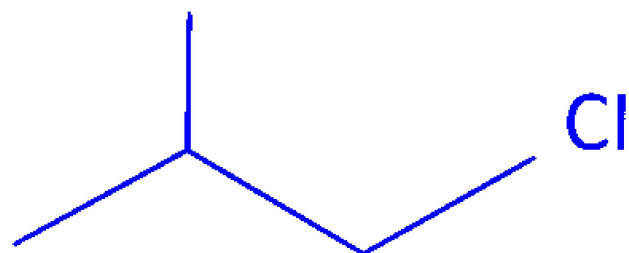
B.



C.



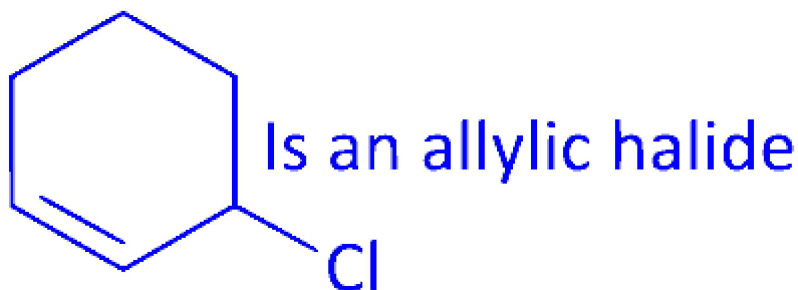
D.



Answer: C

Solution:

Allylic halides are the compounds in which the halogen group is attached to a hybridised carbon (sp^3) atom next to the carbon which is already in double bond with another carbon.



Question 7

A halogen compound X (C_4H_9Br) on hydrolysis gave alcohol Y . The alcohol Y undergoes dehydration with $20\%H_3PO_4$ at 358 K . What is X ?

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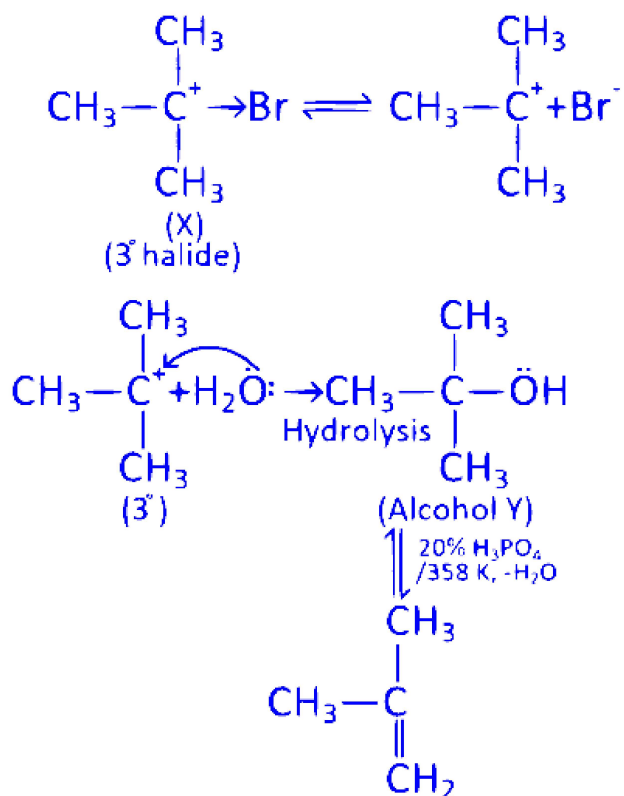
Options:

- A. $(CH_3)_3CBr$
- B. $(CH_3)_2CHCH_2Br$
- C. $CH_3CH_2CH_2CH_2Br$
- D. $CH_3CH(Br)CH_2CH_3$

Answer: A

Solution:

This is an example of S_N1 reaction. The complete reaction is as follows.



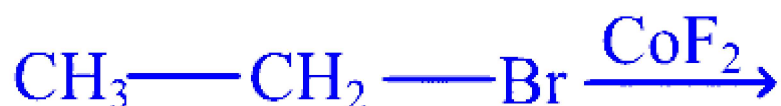
Question 8

Which of the following reaction represents swarts reaction?

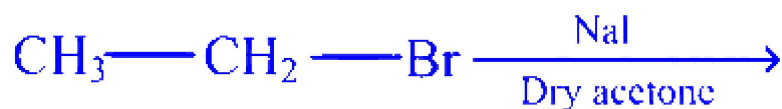
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Options:

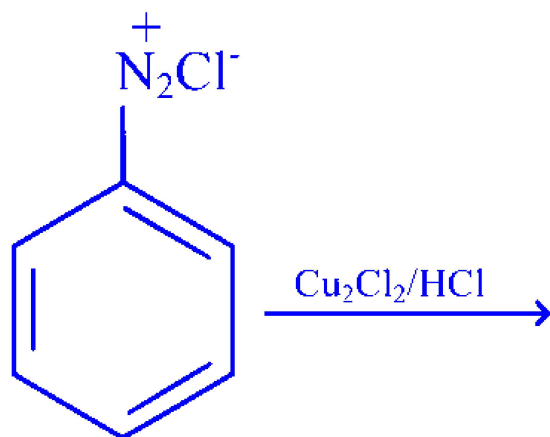
A.



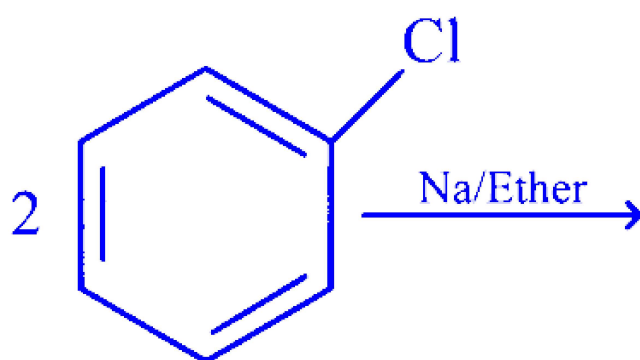
B.



C.



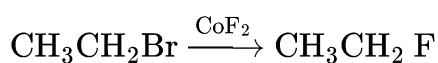
D.



Answer: A

Solution:

Swart's reaction is used for synthesis of alkyl fluorides from alkyl bromides.



Question9

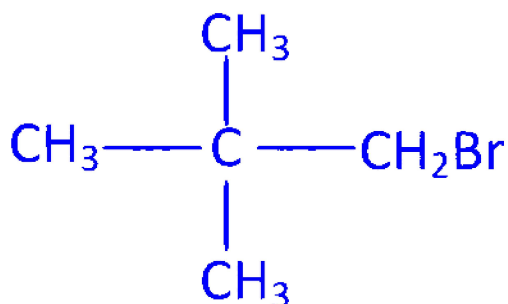
Which of the following is least reactive towards $\text{S}_{\text{N}}2$ reaction?

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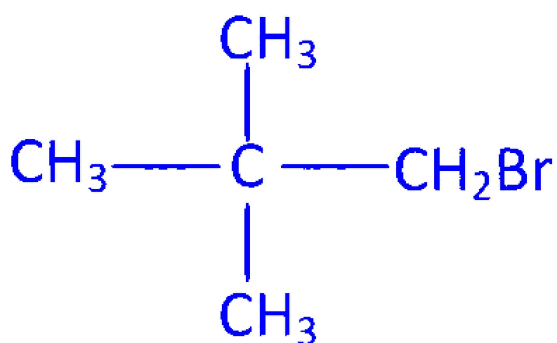


Options:

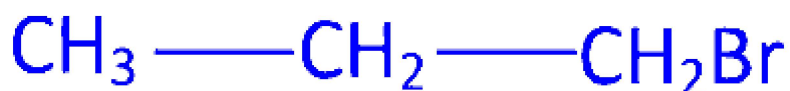
A.



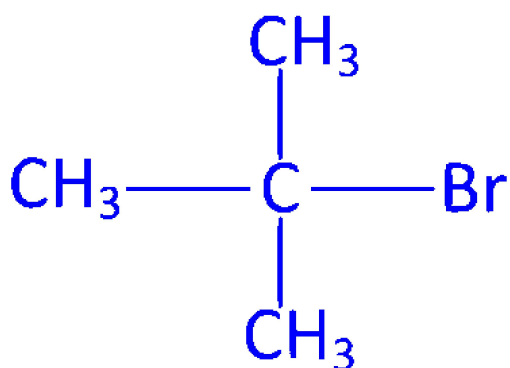
B.



C.



D.



Answer: D

Solution:

The order of reactivity towards S_N2 reaction for alkyl halide is methyl > primary halide (1°) > secondary halide (2°) > tertiary halide (3°).

Thus, option (d) is least reactive towards S_N2 reaction as it is a 3° halide.

