

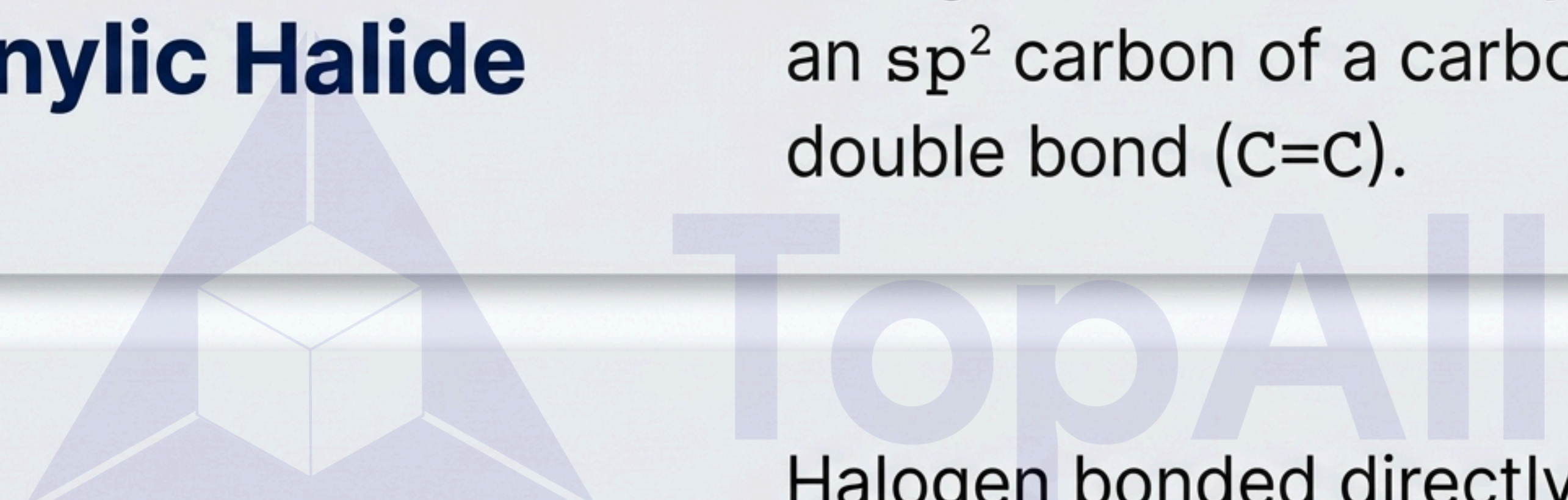
UNIT 6 • HALOALKANES AND HALOARENES

# Compounds Containing $sp^2$ C—X Bond

Mastering Vinylic and Aryl Halide Structures

## Vinylic Halide

Halogen bonded directly to an  $sp^2$  carbon of a carbon-double bond ( $C=C$ ).



## Aryl Halide

Halogen bonded directly to an  $sp^2$  carbon of an aromatic ring.



# You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



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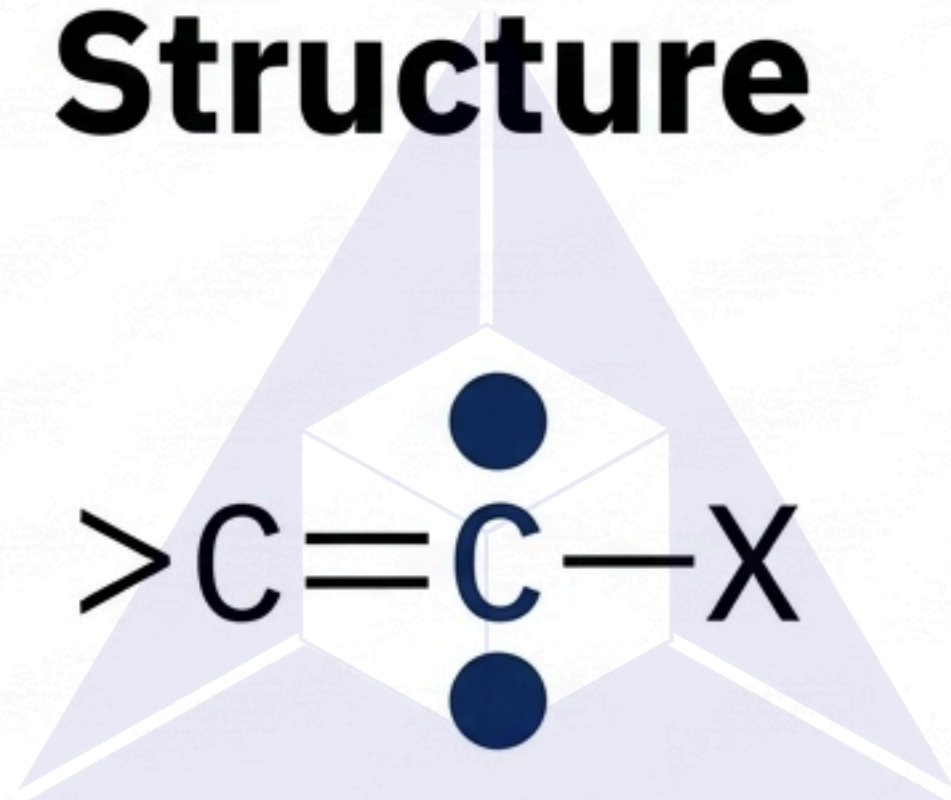
At [prep.topall.app](https://prep.topall.app)

## Key Highlights

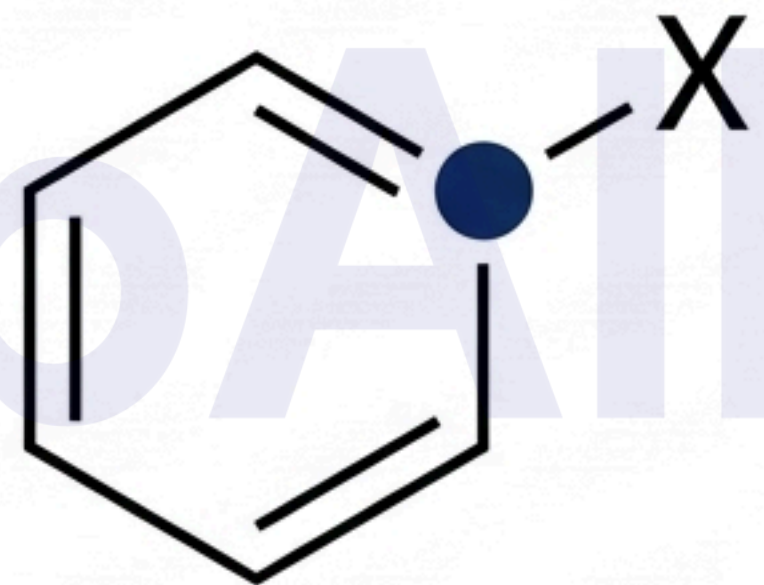
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## Vinylic Structure



## Aryl Structure



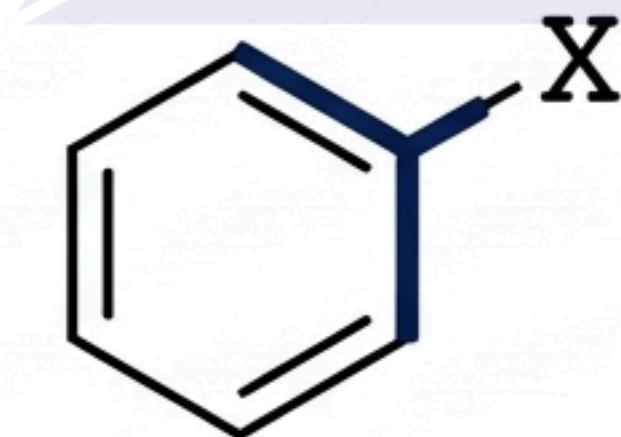
Both feature **direct attachment** to an  $sp^2$ -hybridized carbon.

## Direct Attachment ( $sp^2$ )

Vinylic:



Aryl:

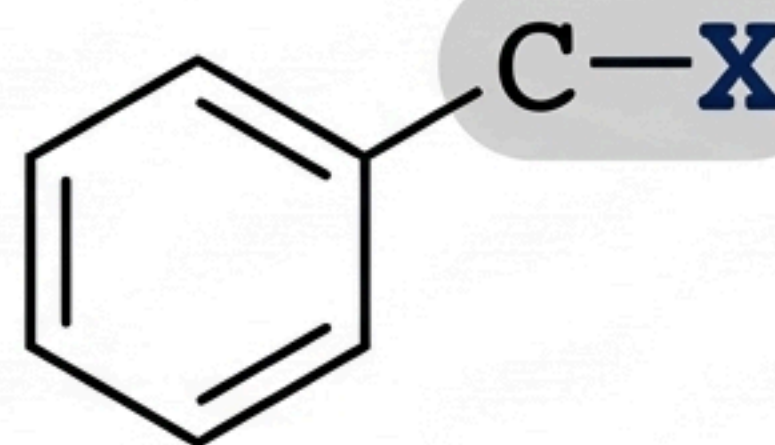


## Adjacent Attachment ( $sp^3$ )

Allylic:



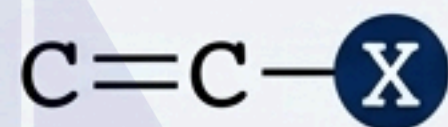
Benzylic:



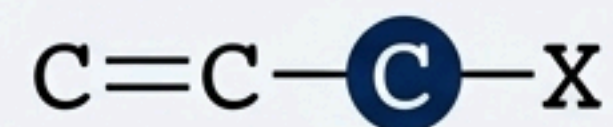
**THE SKELETON: ALIPHATIC  
VS (CHAIN) VS. AROMATIC (RING)**

**THE ATTACHMENT: DIRECT ( $sp^2$ ) VS. OFFSET ( $sp^3$ )**

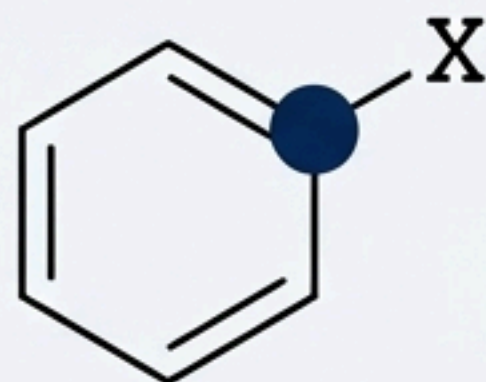
Vinylic



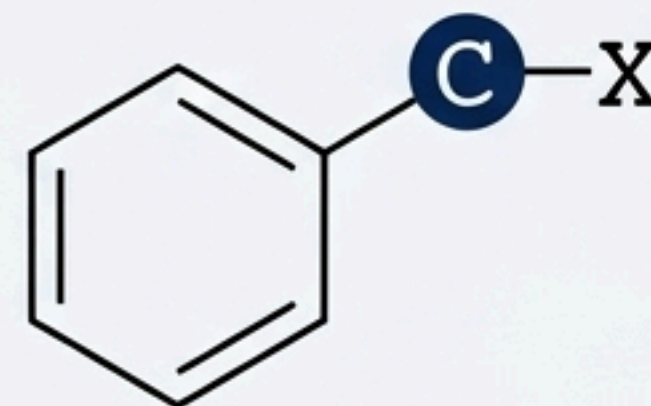
Allylic



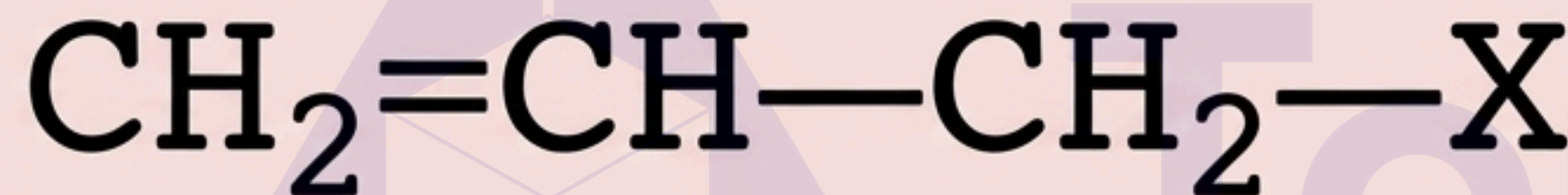
Aryl



Benzylic



# JEE Trap Alert: Watch for this visual trick



Examiners will draw a molecule that looks vinylic at first glance, but features a hidden carbon inserted before the halogen. Always count the carbons!

One-carbon offset = Allylic ( $\text{sp}^3$ )

## Key Takeaways

1. **The Structural Rule:** Vinylic and Aryl halides feature halogens bonded directly to an  $sp^2$  hybridized carbon.
2. **The Exam Application:** Always count the carbons between the double bond or aromatic ring and the halogen. Direct connection =  $sp^2$ ; One-carbon offset =  $sp^3$  (Allylic/Benzylic).



# You've Learned the Theory.

## Now Let's Test It.

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