DPP-06

SOLUTION
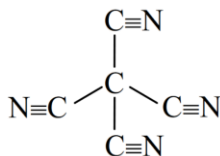
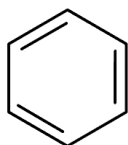Link to View Video Solution: 👉 Click Here

1. (A)

    $\Rightarrow \sigma = 8, \pi = 8$

    $\Rightarrow \dfrac{\sigma}{\pi} = \dfrac{8}{8} = 1$

    (B) $O = C = O \Rightarrow \sigma = 2, \pi = 2$

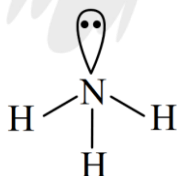 $\dfrac{\sigma}{\pi} = \dfrac{2}{2} = 1$

    (C)

    $\Rightarrow \sigma = 12, \pi = 3$

    $\Rightarrow \dfrac{\sigma}{\pi} = \dfrac{12}{3} = 4$

    (D) $H_2C = CH - CH = CH_2$

    $\Rightarrow \sigma = 9, \pi = 2$

    $\Rightarrow \dfrac{\sigma}{\pi} = \dfrac{9}{2} = 4.5$
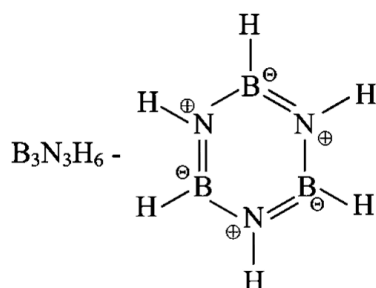
2. NH_3 -

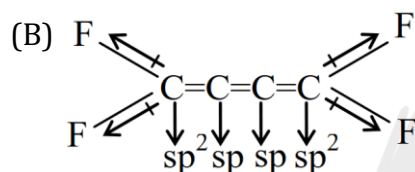 $\Rightarrow sp^3$

    $\Rightarrow$ Tetrahedral geometry

    $\Rightarrow$ Shape : Pyramidal

3.   (A)

$B_3N_3H_6$ -

Planar & Non polar ($\mu = 0$)

(B)

⇒ Number of π bond = 3

⇒ Planar

⇒ Non polar ($\mu = 0$)

(C)

BrF_2Cl -

⇒ Planar

⇒ Polar ($\mu \neq 0$)

(D)

⇒ Number of π bond = 2

⇒ Non planar ($\mu = 0$)

⇒ Non polar

4.

o-dichloro   p-dichloro
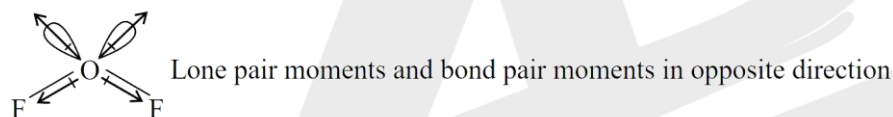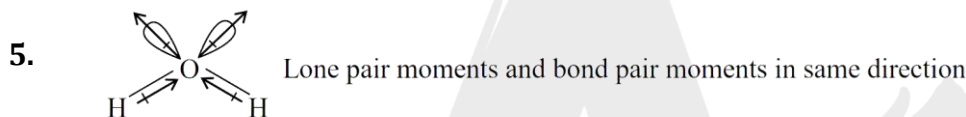
Benzene   Benzene
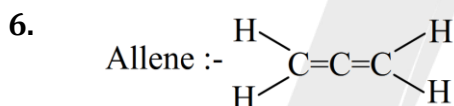
$$\Rightarrow \mu_{net} = \sqrt{\mu_1^2 + \mu_2^2 + 2\mu_1\mu_2 \cos\theta}$$

as value of θ increases, μ_{net} decreases.

5.

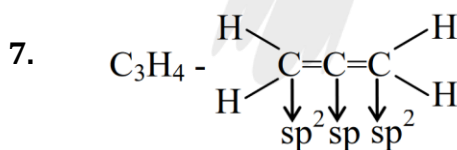Lone pair moments and bond pair moments in same direction

Lone pair moments and bond pair moments in opposite direction

$\Rightarrow$ Hence resultant dipole moment in H_2O is more.

6.

Allene :-
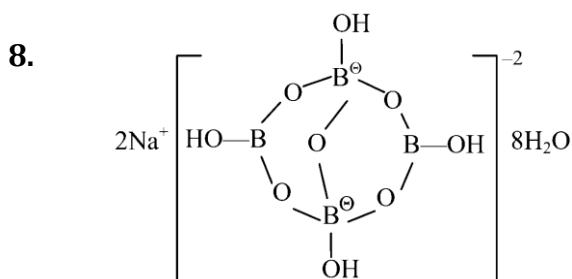
$\rightarrow$ If number of π bond is even $\Rightarrow$ molecule will be non planar
$\rightarrow$ Due to symmetry molecule is non polar

7.

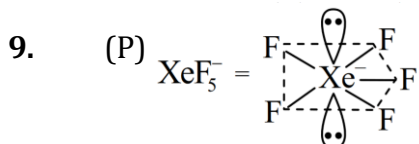C_3H_4 -

$\Rightarrow$ number of π bonds = 2 (even)
$\Rightarrow$ molecule is non planar

8.

⇒ Total 5 B-O-B linkage
→ ' 2 ' Triangular and ' 2 ' tetrahedron unit of Boron is present
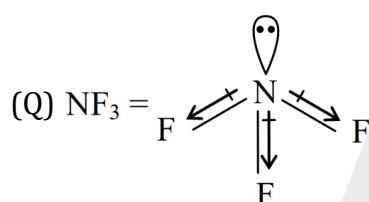
9.   (P) XeF_5^- =

→ Pentagonal planar
→ $\mu = 0$
→ Number of lone pair = 2
→ All adjacent angles are equal
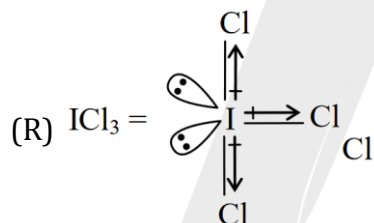
(Q) NF_3 =

⇒ Number of lone pairs = 1
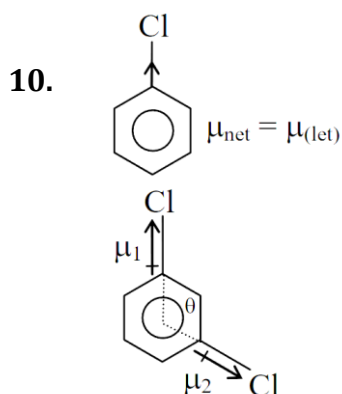⇒ $\mu_{net} \neq 0$
⇒ Pyramidal (non planar)
⇒ All adjacent angles are equal

(R) ICl_3 =

⇒ $\mu_{net} \neq 0$

⇒ T-shape (planar)

⇒ Number of of lone pair = 2

10.

$\mu_{net} = \mu_{(let)}$

$\mu_1 = \mu_2 = \mu$

$$\mu_{net} = \sqrt{\mu_1^2 + \mu_2^2 + 2\mu_1\mu_2 \cos 120°}$$

$$= \sqrt{\mu^2 + \mu^2 + 2\mu^2 \times \left(-\frac{1}{2}\right)}$$

$$= \sqrt{\mu^2}$$

$$= \mu$$