

Topic : General Organic Chemistry (electronic effect)
Type of Questions
M.M., Min.

Fill in the Blanks ('-1' negative marking) Q.1 (1 to 7)

(3 marks, 3 min.)

[21, 21]

Short Subjective Questions ('-1' negative marking) Q.2(1 to 6)

(3 marks, 3 min.)

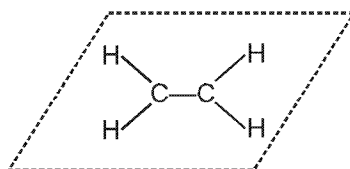
[18, 18]

1. Fill up the hybridisation & the ideal bond angles for the respective atoms in blank space.		
Hyb. : 1. $\text{CH}_3 - \text{CH}_2 - \text{CH}_3$ B. A :	No. of $\text{sp}^2 - \text{sp}^2$ σ -bonds	No. of $\text{sp}^2 - \text{sp}$ σ -bonds
Hyb.: 2. $\text{CH}_3 - \text{CH} = \text{CH}_2$ B. A :		
Hyb.: 3. $\text{CH}_3 - \text{C} \equiv \text{CH}_2$ B. A :		
Hyb. : 4. $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH}_2$ B. A :		
Hyb. : 5. $\text{CH}_2 = \text{CH} - \text{CH} \equiv \text{CH}$ B. A :		
Hyb. : 6. $\text{CH}_2 = \text{C} = \text{CH}_2$ B. A :		
Hyb. : 7. $\text{CH}_2 = \text{CH} - \text{CH}_2 - \text{HC} = \text{C} = \text{CH}_2$ B. A :		
Hyb.:		

2. Draw the orbital diagrams for the following important structures.

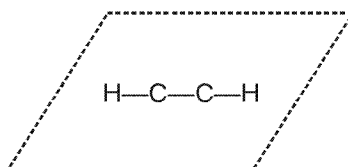
1. $\text{CH}_2 = \text{CH}_2$

Ethylene



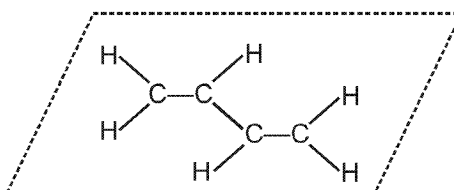
2. $\text{HC} \equiv \text{CH}$

Ethyne



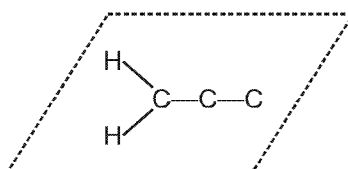
3. $\text{H}_2\text{C} = \text{CH}-\text{CH} = \text{CH}_2$

Buta-1,3-diene



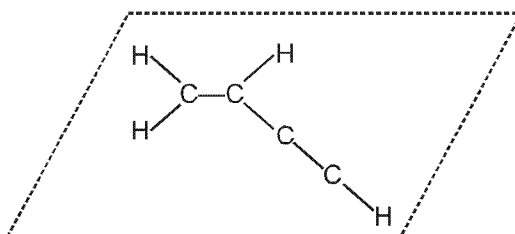
4. $\text{CH}_2 = \text{C} = \text{CH}_2$

Propadiene



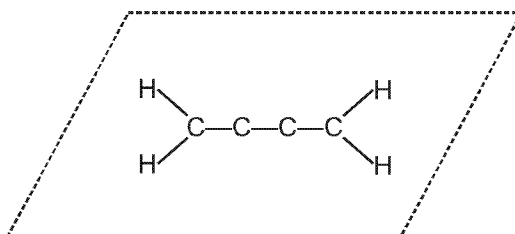
5. $\text{CH}_2 = \text{CH} - \text{C} \equiv \text{CH}$

Butenyne



6. $\text{H}_2\text{C} = \text{C} = \text{C} = \text{CH}_2$

Buta-1,2,3-triene

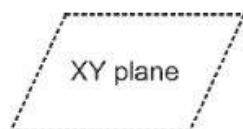


Answer Key

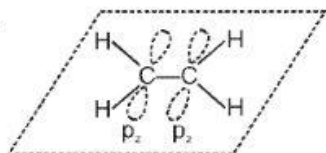
DPP No. # 9

Hyb. : 1. B. A	$sp^3 \quad sp^3 \quad sp^3$ $CH_3-CH_2-CH_3$ $109^\circ \quad 109^\circ \quad 109^\circ$	No. of sp^2-sp^2 σ -bonds 0	No. of sp^2-sp σ -bonds 0
Hyb. 2. B. A	$sp^3 \quad sp^2 \quad sp^2$ $CH_3-CH=CH_2$ $109^\circ \quad 120^\circ \quad 120^\circ$	1	0
Hyb. : 3. B. A	$sp^3 \quad sp \quad sp$ $CH_3-C \equiv CH$ $109^\circ \quad 180^\circ \quad 180^\circ$	0	0
Hyb. : 4. B. A	$sp^2 \quad sp^2 \quad sp^2 \quad sp^2$ $CH_2=CH-CH=CH_2$ $120^\circ \quad 120^\circ \quad 120^\circ \quad 120^\circ$	3	0
Hyb. : 5. B. A	$sp^2 \quad sp^2 \quad sp \quad sp$ $CH_2=CH-C \equiv CH$ $120^\circ \quad 120^\circ \quad 180^\circ \quad 180^\circ$	1	1
Hyb. : 6. B. A	$sp^2 \quad sp \quad sp^2$ $CH_2=C=CH_2$ $120^\circ \quad 180^\circ \quad 120^\circ$	0	2
Hyb. : 7. B. A	$sp^2 \quad sp^2 \quad sp^3 \quad sp^2 \quad sp \quad sp^2$ $CH_2=CH-CH_2-HC=C=CH_2$ $120^\circ \quad 120^\circ \quad 109^\circ \quad 120^\circ \quad 180^\circ \quad 120^\circ$	1	2

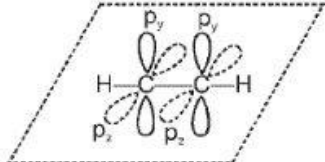
2.



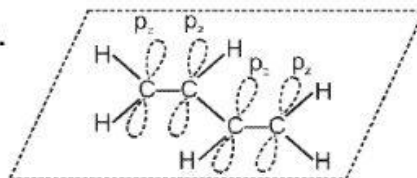
1.



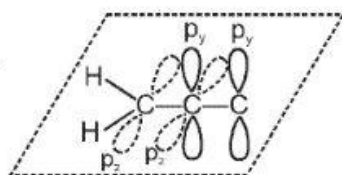
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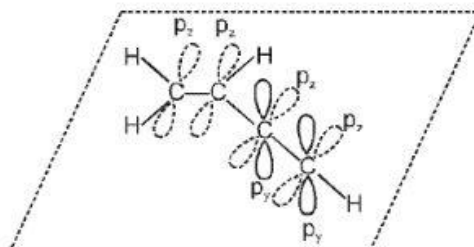
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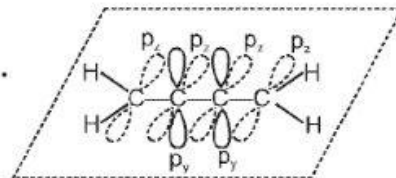
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5.



6.

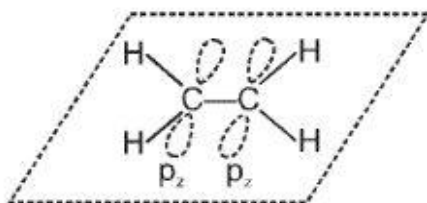


Hints & Solutions

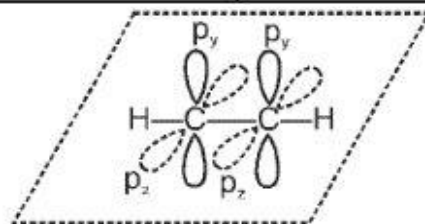
DPP No. # 9

Hyb. : 1. B. A	$sp^3 \quad sp^3 \quad sp^3$ $CH_3-CH_2-CH_3$ $109^\circ \quad 109^\circ \quad 109^\circ$	No. of sp^2-sp^2 σ -bonds 0	No. of sp^2-sp σ -bonds 0
Hyb. 2. B. A	$sp^3 \quad sp^2 \quad sp^2$ $CH_3-CH=CH_2$ $109^\circ \quad 120^\circ \quad 120^\circ$	1	0
Hyb. : 3. B. A	$sp^3 \quad sp \quad sp$ $CH_3-C \equiv CH$ $109^\circ \quad 180^\circ \quad 180^\circ$	0	0
Hyb. : 4. B. A	$sp^2 \quad sp^2 \quad sp^2 \quad sp^2$ $CH_2=CH-CH=CH_2$ $120^\circ \quad 120^\circ \quad 120^\circ \quad 120^\circ$	3	0
Hyb. : 5. B. A	$sp^2 \quad sp^2 \quad sp \quad sp$ $CH_2=CH-C \equiv CH$ $120^\circ \quad 120^\circ \quad 180^\circ \quad 180^\circ$	1	1
Hyb. : 6. B. A	$sp^2 \quad sp \quad sp^2$ $CH_2=C=CH_2$ $120^\circ \quad 180^\circ \quad 120^\circ$	0	2
Hyb. : 7. B. A	$sp^2 \quad sp^2 \quad sp^3 \quad sp^2 \quad sp \quad sp^2$ $CH_2=CH-CH_2-HC=C=CH_2$ $120^\circ \quad 120^\circ \quad 109^\circ \quad 120^\circ \quad 180^\circ \quad 120^\circ$	1	2

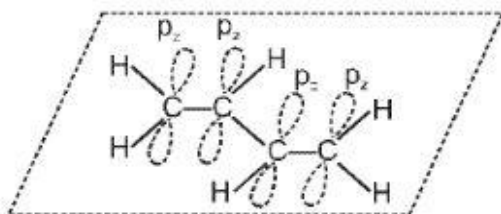
1.



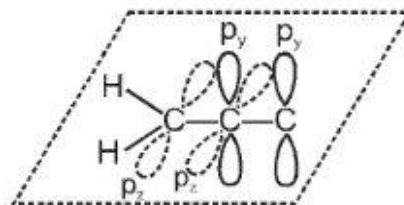
2.



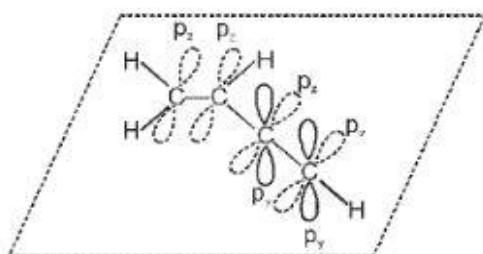
3.



4.



5.



6.

