ORGANIC CHEMISTRY

DPP

DAILY PRACTICE PROBLEMS

DPP No. 1

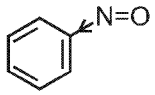
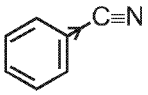
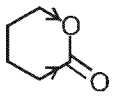
Total Marks : 36

Max. Time : 37 min.

Topic : General Organic Chemistry

Type of Questions		M.M., Min.
Single choice Objective ('–1' negative marking) Q.1 to Q.4,7, 8	(3 marks, 3 min.)	[18, 18]
Multiple choice objective ('–1' negative marking) Q.5 to Q.6	(4 marks, 4 min.)	[8, 8]
Comprehension ('–1' negative marking) Q.7 to Q.8	(3 marks 3 min.)	[6, 6]
Subjective Questions ('–1' negative marking) Q.9	(4 marks 5 min.)	[4, 5]

1. In which of the following species, incorrect direction of Inductive effect is/are shown ?

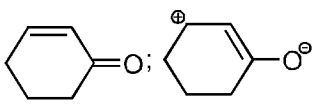
(A)  (B)  (C)  (D) $CH_3 - CH_2 \leftarrow MgBr$

2. Resonance structures of a molecule do not have :

(A) Identical bonding (B) Identical arrangement of atoms

(C) The same number of paired electrons (D) Nearly the same energy content

3. Which of the following are not resonating structures of each other ?

(A) $CH_3 - \overset{\overset{O}{\|}}{C} - CH_3$; $CH_3 - \overset{\overset{OH}{|}}{C} = CH_2$ (B) 

(C) $CH_3 - \overset{\overset{\oplus OH}{\|}}{C} - CH_3$; $CH_3 - \overset{\overset{OH}{|}}{\underset{\oplus}{C}} - CH_3$ (D) $CH_2 = C = O \quad \overset{\ominus}{C}H_2 - C \equiv \overset{\oplus}{O}$

4. Which does not have conjugate system ?

(A) $CH_2 = CHCl$ (B) $CH_2 = CHCHO$ (C) $CH_3CH = CH_2$ (D) 

5.* Which of the following statement/s is/are correct for the inductive effect ?

(A) It is a permanent effect (B) It transmits through sigma electrons

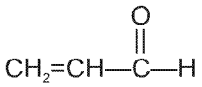
(C) It is represented by $\longleftrightarrow$ (D) It is represented by $\longrightarrow$ or $\longleftarrow$.

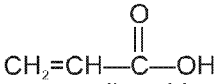
6.* Which of the following resonating structures are acceptable for methyl vinyl ether:

(A) $CH_2 = CH - OCH_3$ (B) $\dot{C}H_2 - CH = \dot{O}CH_3$ (C) $\overset{\ominus}{C}H_2 - CH = \overset{\oplus}{O}CH_3$ (D) $\overset{\oplus}{C}H_2 - CH = \overset{\ominus}{O}CH_3$

Comprehension #

But-1-ene (A) and Buta-1,3-diene (B) differ not only in the number of π bonds, but (B) also has σ and π bonds at alternate positions. This type of the system is called conjugated system. Following are some of the conjugate system


acrolein


acrylic acid


benzene

In such systems, π electron shifting result into permanent polarity. This type of π-electron shift in the conjugate systems is called mesomeric effect.

Rules for resonance forms :

(i) Individual resonating structures are imaginary, not real.
(ii) Resonance forms differ only in the position of their π electrons or nonbonding electrons.
(iii) Different resonating structures of a species don't have to be equivalent.
(iv) Resonating structures must be valid Lewis structures and obey normal rules of valency.
(v) The resonance hybrid is more stable than any individual resonating structures.

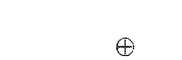
Rules for stability :

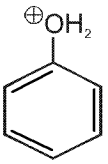
(i) Resonating structures with more no. of covalent bonds are more stable.

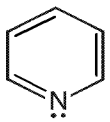
(ii) Structures in which all of the atoms have a complete valence shell of electrons (i.e., the noble gas structure) are especially stable and make large contribution to the hybrid.

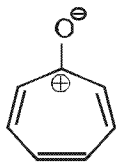
(iii) Structure that carry negative charge on a more electronegative atom and positive charge on less electronegative atom is comparatively more stable.

7. In which of the following compound, delocalisation is not possible

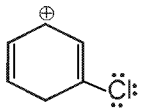
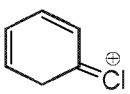
(A) 

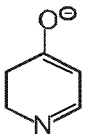
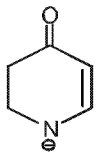
(B) 

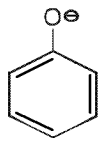
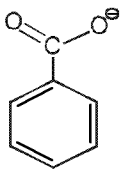
(C) 

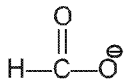
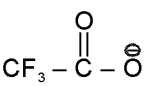
(D) 

8. Select the correct option related to stability of following structure.

(A)  > 

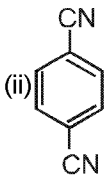
(B)  < 

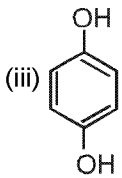
(C)  < 

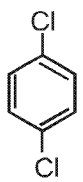
(D)  > 

9. How many molecules are non polar.

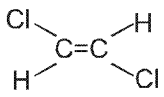
(i) $Cl - CH_2 - CH_2 - Cl$

(ii) 

(iii) 

(iv) 

(v) $CH_2 = CH - C \equiv C - H$

(vi) 

Answer Key

DPP No. # 1

1.	(A)	**2.**	(A)	**3.**	(A)	**4.**	(C)	**5.***	(ABD)
6.*	(AC)	**7.**	(A)	**8.**	(C)	**9.**	(ii), (iv) & (vi) are non polar.		

Hints & Solutions

DPP No. # 1

1. Case A has incorrect direction of I-effect.

9. (ii), (iv) & (vi) are non polar.