ORGANIC CHEMISTRY

DPP

DAILY PRACTICE PROBLEMS

DPP No. 2

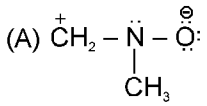
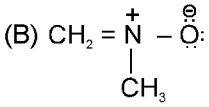
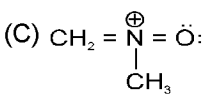
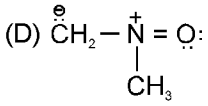
Total Marks : 32

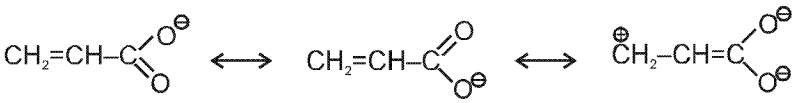
Max. Time : 35 min.

Topic : General Organic Chemistry

Type of Questions		M.M., Min.
Single choice Objective ('–1' negative marking) Q.1 to Q.4	(3 marks, 3 min.)	[12, 12]
Multiple choice objective ('–1' negative marking) Q.5 to Q.6	(4 marks, 4 min.)	[8, 8]
Subjective Questions ('–1' negative marking) Q.7	(4 marks 5 min.)	[4, 5]
Match the Following (no negative marking) Q.8	(8 marks, 10 min.)	[8, 10]

1. Which of the following is not a permissible resonating structure ?

(A) 
(B) 
(C) 
(D) 

2. 

I II III

The correct statement about the above structures is :

(A) II is the minor contributor to the real hybrid.

(B) III is most stable structure

(C) I contributes more to the real hybrid than that of II.

(D) I and II are equal contributors and III is a minor contributor.

3. Which of the following statement regarding resonance is NOT correct ?

(A) The different resonating structures of a molecule have fixed arrangement of atomic nuclei.

(B) The different resonating strcutrues differ in the arrangement of electrons.

(C) The hybrid structure has equal contribution from all the resonating structures always.

(D) None of the individual resonating structure explains all characteristics of the molecule.

4. Which of the following is the least stable resonating structure :

(A) $CH_2 = CH - \overset{\oplus}{C}H - \overset{\ominus}{C}H - NH_2$

(B) $\overset{\ominus}{C}H_2 - \overset{\oplus}{C}H - CH = CH - NH_2$

(C) $\overset{\ominus}{C}H_2 - CH = CH - CH = \overset{\oplus}{N}H_2$

(D) $CH_2 = CH - \overset{\ominus}{C}H - CH = \overset{\oplus}{N}H_2$

5.* Which of the following statements is/are correct ?

(A) The energy of resonance hybrid is always less than that of any resonating structure.

(B) The resonance energy is the difference between the enthalpies of formation of the molecule and the resonating structure having maximum energy.

(C) The resonance structures are hypothetical structure and they do not represent any real molecule.

(D) In delocalized structure of benzene the π-charge cloud is spread equally above and below the plane of molecule.

6.* Which of the following is/are acceptable resonating structures of Buta-1, 2, 3-triene.

(A) $\overset{\ominus}{\ddot{C}}H_2 - C \equiv C - \overset{\oplus}{C}H_2$

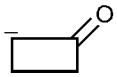
(B) $CH_2 = C = C = CH_2$

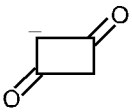
(C) $\overset{\oplus}{C}H_2 - C \equiv C - \overset{\ominus}{\ddot{C}}H_2$

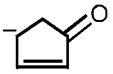
(D) $\dot{C}H_2 - C \equiv C - \dot{C}H_2$

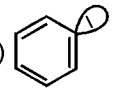
7. In how many species the –ve charge (anion) which is not delocalized by resonance , are :

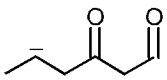
(i) 

(ii) 

(iii) 

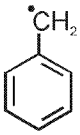
(iv) 

(v) 

(vi) 

(vii) $CH_3 - C \equiv C^-$

8.

	Column-I		**Column-II**
(A)	$\overset{\oplus}{C}H_2–CH=CH_2$	(p)	Resonance possible
(B)	$H_2N–CH=CH_2$	(q)	Even number of p-electrons
(C)		(r)	localized lone pair of e^-.
(D)	$H_2N–\underset{\underset{NH}{\|\|}}{C}–NH_2$	(s)	Delocalized lone pair of e^-.
		(t)	2 e^- in p orbitals

Answer Key

DPP No. # 2

1.	(C)	**2.**	(D)	**3.**	(C)	**4.**	(A)	**5.***	(ACD)
6.*	(ABC)	**7.**	4	**8.**	(A – p,q,t) ; (B – p,q,s) ; (C – p) ; (D – p,q,r,s)				

Hints & Solutions

DPP No. # 2

1. Nitrogen does not have vacant d-orbital, so cannot form five bonds.

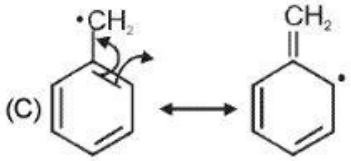
4. In (A) negative charge and lone pair on adjacent position.

5. Self explanatory. **7.** (i), (v), (vi), (vii) only

8. (A) $\overset{\oplus}{C}H_2 - CH = CH_2 \longleftrightarrow CH_2 - CH = \overset{+}{C}H_2$

(B) $\dot{N}H_2 - CH = CH_2 \longleftrightarrow \overset{\oplus}{N}H_2 = CH - \overset{\ominus}{C}H_2$

delocalised l.p.

(C) 

(D)