ORGANIC CHEMISTRY

DPP No. 13

DPP
DAILY PRACTICE PROBLEMS

Total Marks : 30

Max. Time : 33 min.

Topic : General Organic Chemistry

Type of Questions		M.M., Min.
Single choice Objective ('–1' negative marking) Q.1 to Q.5	(3 marks, 3 min.)	[15, 15]
Assertion and Reason (no negative marking) Q.6	(3 marks, 3 min.)	[3, 3]
Match the Following (no negative marking) Q.7	(8 marks, 10 min.)	[8, 10]
Subjective Questions ('–1' negative marking) Q.8	(4 marks, 5 min.)	[4, 5]

1. Which of the following is/are resonating structures of diazomethane (CH_2N_2).

(A) $HN=C=NH$ 　　(B) $CH_2 = \overset{+}{N} = N^{-}$ 　　(C) $\overset{-}{C}H_2 - \overset{+}{N} \equiv N$ 　　(D) all of these
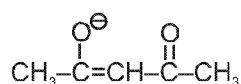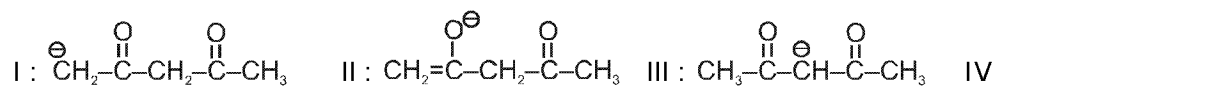
2. Which of the following does not represent the resonating structure of

(A) 　　(B) 　　(C) 　　(D)
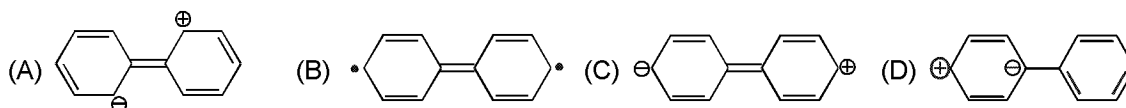
3. Decreasing + m-power of given group is :

(I) $- NH_2$ 　　(II) $- OH$ 　　(III) $- \overset{\ominus}{O}$ 　　(IV) $- NH - CO - CH_3$

(A) I > III > IV > II 　　(B) III > II > I > IV 　　(C) III > I > II > IV 　　(D) II > I > IV > III

4. The stability order of the following species is :

I : $\overset{\ominus}{C}H_2 - \overset{O}{\overset{\|}{C}} - CH_2 - \overset{O}{\overset{\|}{C}} - CH_3$ 　　II : $CH_2 = C(\overset{O^{\ominus}}{}) - CH_2 - \overset{O}{\overset{\|}{C}} - CH_3$ 　　III : $CH_3 - \overset{O}{\overset{\|}{C}} - \overset{\ominus}{C}H - \overset{O}{\overset{\|}{C}} - CH_3$ 　　IV :

$CH_3 - C(\overset{O^{\ominus}}{}) = CH - \overset{O}{\overset{\|}{C}} - CH_3$
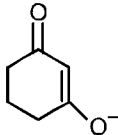
(A) I > II > III > IV 　　(B) III > I > II > IV 　　(C) IV > II > III > I 　　(D) IV > III > II > I

5. Identify the correct statements

(i) All C – C bonds in ⬡ are equal.   (ii) All C – C bonds in $CH_2 = CH – CH = CH_2$ are equal.

(iii) All C – O bonds in $CH_3 – C\!\!\begin{smallmatrix}O\\\\O^-\end{smallmatrix}$ are equal.   (iv) All C – O bond in [cyclohexenone structure with O and O⁻] are equal.

(A) i, ii, iii, iv   (B) i, iii, iv   (C) i, ii, iii   (D) ii, iii, iv

6. **STATEMENT -1** : Bond length of double bond in benzene is more than the bond length of double bond in buta-1,3-diene.

STATEMENT -2 : Increase in delocalisation of π electrons increases the bond length of double bond.

(A) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1.

(B) Statement-1 is True, Statement-2 is True; Statement-2 is NOT a correct explanation for Statement-1

(C) Statement-1 is True, Statement-2 is False   (D) Statement-1 is False, Statement-2 is True

7. **Match the column :**
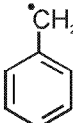
Column-I   **Column-II**

(A) $\overset{\oplus}{C}H_2–CH=CH_2$ (p)   Resonance possible

(B) $H_2N–CH=CH_2$ (q)   Even number of p-electrons
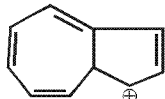
(C)   [benzyl radical structure, $\overset{\bullet}{C}H_2$ on benzene ring]   (r)   localized lone pair of e⁻.

(D) $H_2N–\underset{\underset{NH}{\|}}{C}–NH_2$ (s)   Delocalized lone pair of e⁻.

                                              (t)   2 e⁻ in p orbitals

8. Find the total number of carbon where positive charge can be delocalised by true resonance [Including the given structure] :

(a) [azulene-type bicyclic structure with ⊕ charge]   (b) $CH_3–\overset{\oplus}{C}H–CH=CH–\underset{\underset{}{C}}{}$ [with $=CH_2$ and benzene ring]

DPP No. # 13

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

Hints & Solutions

DPP No. # 13

1. Self explanatory
2. **(Moderate)** There are unpaired electrons, others have no unpaired electrons.
3. $-O^{\ominus} > -NH_2 > -OH > -NH-CO-CH_3$
6. Due to delocalization of π electron in benzene.

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

(B) $\overset{\cdot\cdot}{N}H_2 - CH = CH_2 \longleftrightarrow \overset{\oplus}{N}H_2 = CH - \overset{\ominus}{C}H_2$
delocalised l.p.

(C)

(D) $H_2\overset{\cdot\cdot}{N} - C - \overset{\cdot\cdot}{N}H_2 \longleftrightarrow H_2N - C = \overset{+}{N}H_2$
delocalised l.p.
localised l.p.

8. (a)

(b) $CH_3 - \underset{1}{CH} - CH = \underset{2}{CH} - \overset{3}{C} - $ (with $\overset{3}{C}H_2$) phenyl