ORGANIC CHEMISTRY

DPP

DAILY PRACTICE PROBLEMS

DPP No. 11

Total Marks : 27

Max. Time : 29 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]
Multiple choice objective ('–1' negative marking) Q.6	(4 marks, 4 min.)	[4, 4]
Subjective Questions ('–1' negative marking) Q.7 to Q.8	(4 marks, 5 min.)	[8, 10]

1. Inductive effect is a permanent effect and is distance dependent.

(A) Always (B) Some time (C) never (D) Can not decide

2. Which of the following statement is CORRECT regarding the inductive effect ?

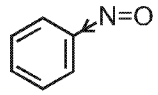
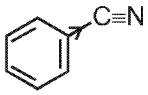
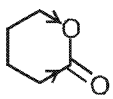
(A) electron-donating inductive effect(+I effect) is generally more powerful than electron-withdrawing inductive effect(-I effect)

(B) it implies the shifting of σ electrons from more electronegative atom to the lesser electronegative atom in a molecule

(C) it implies the shifting of σ electrons from less electronegative atom to the more electronegative atom in a molecule

(D) it increases with increase in distance.

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

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

4. Maximum –I effect is exerted by the group

(A) C_6H_5 (B) $-OCH_3$ (C) –Cl (D) $-NH_2$

5. Which order of I effect is incorrect.

(I) $-\overset{\oplus}{N}(CH_3)_3 > -\overset{\oplus}{S}(CH_3)_2$ [–I] (II) $-OCH_3 > -OH$ [–I]

(III) –F > –Cl [–I] (IV) $-CH_3 > -\overset{\ominus}{O}$ [+I]

(A) II, III & IV (B) III & IV (C) IV only (D) all

6.* 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 $\longleftarrow$.

7. In which C – C bond of $\overset{3}{C}H_3 - \overset{2}{C}H_2 - \overset{1}{C}H_2 - Br$, the inductive effect is expected to be the least.

8. How many groups show –I effect?

$-CH_3$, $-\overset{\oplus}{N}H_3$, $-OH$, $-O^{\ominus}$, $-N(CH_3)_2$, $-SO_3H$, $-CHO$, $-Cl$, $-COO^{\ominus}$

Answer Key

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1.	(A)	**2.**	(C)	**3.**	(A)	**4.**	(C)	**5.**	(C)

6.* (ABD)

7. Inductive effect is expected to be the least in the bond between cabon 3 and carbon 2. **8.** 6

Hints & Solutions

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2. ex. $\overset{\delta+}{CH_3} \rightarrow \overset{\delta+}{CH_2} \rightarrow \overset{\delta-}{Cl}$

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

4. Maximum – I effect – Cl.

5. Self explanatory.

6. Self explanatory.

7. Magnitude of inductive effect diminisnes as the number of intervening bonds increases. Hence, the effect is least in the bond between cabon 3 and carbon 2.