Organic Chemistry
Some Basic Principles and Tech

1. **Assertion (A):** Carboxylic acid is more acidic than carbolic acid

Reason (R): Conjugate base of carboxylic acid is more stable than conjugate base of carbolic acid.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

2. **Assertion (A):** Carboxylic acid is more acidic than carbolic acid

Reason (R): Carboxylic acid have equivalent resonating structure.

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(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

3. **Assertion (A):** A species having a carbon atom possessing sextext of electrons and a positive charge is called a carbocation

Reason (R): A species having a carbon carrying a negative charge on carbon atom is called carbanion.

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(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

4. **Assertion (A):** $(CH_3)_3\overset{\oplus}{C}$ is more stable than $CH_3\overset{+}{C}H_2$ and $\overset{+}{C}H_3$ is the least stable cation.

Reason (R): Hyperconjugation interaction in $(CH_3)_3\overset{\oplus}{C}$ is greater than in $CH_3\overset{+}{C}H_{2+}$ as the $(CH_3)_3\overset{+}{C}$ has nine C–H bonds. In CH_3, vacant p orbital is perpendicular to the plane in which C–H bonds lie; hence cannot overlap with it.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
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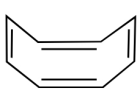
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

5. **Assertion (A):** The compound cyclooctatetraene has the following structural formulas



It is cyclic and non-aromatic compound.

Reason (R): $(4n+2)\pi-$electron rule does not hold good and ring is non-planar

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(4) Both (A) and (R) are false

6. **Assertion (A):** Energy of resonance hybrid is equal to the average of energies of all canonical forms.

Reason (R): Resonance hybrid cannot be presented by a single structure.

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(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

7. **Assertion (A):** Tertiary carbonium ions are generally formed more easily than primary carbonium ions.

Reason (R): Hyper conjugative as well as inductive effect due to additional alkyl groups stablise tertiary carbonium ion.

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(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

8. **Assertion (A):** Cyclohexanone exhibits keto-enol tautomerism

Reason (R): Keto form of cyclohexanone is more stable than its enol form.

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(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

9. **Assertion (A):** Pyrrole is strong base than aniline

Reason (R): Pyrrole have delocalised lone pair.

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(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

10. **Assertion (A):** The ratio of σ — bonds and π — bonds in tetracyanomethane is 1.

Reason (R): Tetracyanomethane has 8σ and 8π bonds.

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(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

11. **Assertion (A):** $CHCl_3$ is more acidic than CHF_3.

Reason (R): The conjugate base of $CHCl_3$ is more stable than CHF_3.

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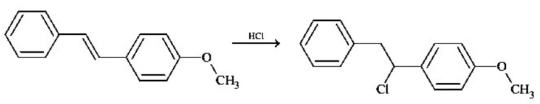
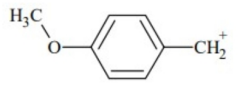
(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

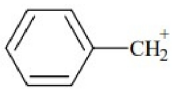
12. **Assertion (A):** The major product of addition of HCl upon the alkene (I) is II given below.



Reason (R): The reaction occurs by carbocationic inter mediate formation and the carbocation



is more stable than



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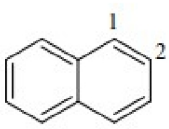
13. **Assertion (A):** In naphthalene



the electrophilic attack on indicated position 1 is more hindered so less stable intermediate is formed hence it takes place at position 2.

Reason (R): The electrophile attacks on the position which gives less stable intermediate.

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(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

14. **Assertion (A):** Pyrrole, is aromatic and undergoes electrophilic aromatic substitution extremely readily and predominant by at position adjacent to nitrogen.

Reason (R): Nitrogen in the ring bearing a lone pair in conjugation with $\pi -$ electrons brings aromaticity to the pyrrole.

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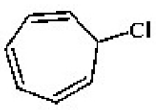
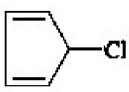
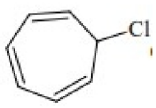
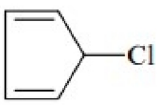
(4) Both (A) and (R) are false

15. **Assertion (A):**  dissociates easily whereas  does not dissociate

Reason (R):  dissociates produces a highly stable aromatic cycloheptatrienyl carbocation but  produces very unstable anti aromatic cyclopentadienyl cation on dissociation.

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ANSWER KEY															
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Ans.	1	3	1	1	1	3	1	1	4	1	1	1	4	2	1