Chapter 13

Amines

(Assertion and Reason Questions)

Directions: These questions consist of two statements, each printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following four responses.

(a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.

(b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.

(c) If the Assertion is correct but Reason is incorrect.

(d) If both the Assertion and Reason are incorrect.

Q.1. Assertion: Aromatic 1°amines can be prepared by Gabriel phthalimide synthesis.
Reason: Aryl halides undergo nucleophilic substitution with anion formed by phthalimide.

Q.2. Assertion: Only a small amount of HCl is required in the reduction of nitro compounds with iron scrap and HCl in the presence of steam.
Reason: $FeCl_2$ formed gets hydrolysed to release HCl during the reaction.

Q.3. Assertion: Amines are basic in nature.
Reason: Amines have lone pair of electrons on nitrogen atom.

Q.4. Assertion: Acetanilide is less basic than aniline.
Reason: Acetylation of aniline results in decrease of electron density on nitrogen.

Q.5. Assertion: Nitration of aniline can be conveniently done by protecting the amino group by acetylation.
Reason: Acetylation increases the electron-density in the benzene ring.

Q.6. Assertion: Aniline does not undergo Friedel-Crafts reaction.
Reason: –NH2 group of aniline reacts with AlCl3 (Lewis acid) to give acid-base reaction.

Q.7. Assertion: Acylation of amines gives a monosubstituted product whereas alkylation of amines gives poly-substituted product.
Reason: Acyl group sterically hinders the approach of further acyl groups

Q.8. Assertion: Nitrating mixture used for carrying out nitration of benzene consists of conc. HNO_3 + conc. H_2SO_4
Reason: In presence of H_2SO_4, HNO_3 acts as a base and produces NO_2^+ ions.

-x-x-x-

ANSWER KEY

Q.1 : (a) **Q.2 :** (d)

Q.3 : (a) Amines are basic due to the presence of a lone pair of electrons on nitrogen atom. The lone pair can be easily donated.

Q.4 : (d)

Q.5 : (c) Acetylation decreases the electron-density in the benzene ring thereby preventing oxidation.

Q.6 : (a) **Q.7 :** (c) **Q.8 :** (a)