

Solution of DPP #6

TARGET: JEE (ADVANCED) 2015 Course: VIJETA & VIJAY (ADP & ADR)

CHEMISTRY

1.
$$X \xrightarrow{P_4O_{10}} X \xrightarrow{P_4O_{10}} X \xrightarrow{NeMgBr} X \xrightarrow{NeMgBr} X \xrightarrow{Ca(OH)_2} X \xrightarrow{Ca(OH)_2} X \xrightarrow{Co(OH)_2} X \xrightarrow{Co(OH)_2}$$

7.
$$\begin{array}{c|c} H \\ N : & Q \Rightarrow \\ I \\ N : & Q \Rightarrow \\ \hline \\ N : & Q \Rightarrow \\ \hline \\ N : & Q \Rightarrow \\ \hline \\ (H^{\oplus}) \\ \hline \\ O \mapsto \\ \hline \\ (H_{2}O) \\ \hline \\ O \mapsto \\ \hline \\ (H_{2}O) \\ \hline \\ O \mapsto \\ \hline \\ (H_{2}O) \\ \hline \\ ($$

Nucleophilic addition-elimination reaction of amines with carbonyl compounds. The primary aromatic amine generates a quinoline derivative with β -diketones.

19.
$$NO_{2} \longrightarrow NH_{2}$$

$$NO_{2} \longrightarrow NO_{2}$$

$$\stackrel{\hat{\mathbb{N}}_2 \text{Cl}^{\Theta}}{\longrightarrow} \xrightarrow{Zn/HCl}$$

CH₃NH₂/Cu₂O/ Δ

20.
$$\begin{array}{c|c} CN & CH_2-NH_2 \\ \hline \\ D_2O_5 & \hline \\ \hline \\ A & (P) & (Primary amine) \\ \hline \\ (I) Br_2+KOH & \hline \\ Hoffmann's & C & NH-CH_3 \\ \hline \\ Bormamide reaction & Carbylamine & (Q) & (Secondary amine) \\ \hline \\ Carbylamine & (Secondary amine) \\ \hline \end{array}$$

- **21.** NaHSO₃ on addition of carbonyl compound forms a salt.
- **22.** Self explanatory.
- 23._ G.R. can not prepared in aqueous solution due to acid base reaction.

24.
$$\begin{array}{c} COOH \\ NH_2 \\ \hline NaNO_2 + HCI \\ \hline \end{array}$$

$$\begin{array}{c} COOH \\ N_2^{\oplus}CI^{\oplus} \\ \hline \end{array}$$

$$\begin{array}{c} COOH \\ \hline \end{array}$$

$$\begin{array}{c} COOH \\ \hline N=N- \\ \hline \end{array}$$

34. The product is:

Ph – CH – CH = N – NH
$$\stackrel{\text{Ph}}{\longrightarrow}$$
 Et Me

Me

I = (+, +) (E)

II = (+, +) (Z)

III = (-, +) (E)

IV = (-, +) (Z)

36.
$$CH_3O \longrightarrow CH_3O \longrightarrow$$

37. Br O_3 Br CH=O O_3 Br CH=O O_3 Br CH=O O_3 Br O_3 Br O_3 Br O_3 Br O_3 Br O_4 CH=N-OH O_4 Cis - cis

trans - trans cis R trans trans S cis

Total isomeric product = 4

38. (i)
$$CH_3 \xrightarrow{H_3PO_2/\Delta} CH_3$$
 (ii) $CH_3 \xrightarrow{H_3PO_2/\Delta} CH_3$ (iii) $CH_3 \xrightarrow{H_3PO_2/\Delta} CH_3$ (iii) $CH_3 \xrightarrow{H_3PO_2/\Delta} CH_3$ (iii) $CH_3 \xrightarrow{H_3PO_2/\Delta} CH_3$

39. (C=O), (–OH), (C≡CH), (COOEt), (COOH) Total = 5

41.
$$(\text{cyclobutanone})$$
 (cyclobutanone) (cyclobutanone) (cyclobutanone) (cyclobutanone) (cyclobutanone) (Butanolacton) (Butanolacton) (Butanolacton)

42. (A)
$$OH^{\Theta}$$
 CH_2OH $COOH$ CH_2OH $COOH$

(B)
$$CH=O$$
 $CH=O$ $CH=O/OH^{\Theta}$ $CH=CH_2-CHO$ $CH_3-CH-CH_2-CHO$ $CH_3-CH-CH_2-CHO$

43. (A) Me-C-CH₂-CH₂-CH₂-CH₂-C-Me
$$\xrightarrow{\text{intramolecular} \\ \text{aldol condensation}}$$
 Me $\xrightarrow{\text{Me}}$ $\xrightarrow{\text{M$

- (C) Perkin's condensation reaction.
- (D) Benzil-Benzilic acid rearrangement.

Nu-addition on C=O group,

Electrophilic substitution on ring

Aliphatic Nu-substitution on C-Br, Elimination of R-X,

Electrophilic substitution on ring.

Aliphatic Nu-substitution on C-Br, Elimination of R-X

(D)

Electrophilic addition on C=C

Electrophilic addition on C=C

Electrophilic substitution on ring.