# previous years jee problems with solutions on hydrocarbons

# 1 In the following reactions compound x is;

$$C_8H_6 \xrightarrow{Pd-BaSO_4} C_8H_8 \xrightarrow{i. B_2H_6} XX$$

$$\downarrow H_2O$$

$$\downarrow HgSO_4, H_2SO_4$$

$$C_8H_8O \xrightarrow{i. EtMgBr, H_2O} Y$$

$$(a) \xrightarrow{C} CH_3$$

$$(b) \xrightarrow{O} CH_3$$

$$(c) \xrightarrow{O} OH$$

$$(d) \xrightarrow{C} CHO$$

### Solution: (C)

The compound X is 2-phenylethanol.

The triple bond of ethynylbenzene is selectively hydrogenated to double bond by using Lindlar's catalyst to obtain styrene.

Hydroboration oxidation of styrene gives 2-phenylethanol (compound X).

$$C \equiv CH$$

$$\xrightarrow{Pb-BaSO_4} CH = CH_2$$

$$\xrightarrow{(i) B_2H_6} CH_2CH_2OH$$

$$\xrightarrow{(ii) H_2O_2, NaOH} H_2O$$

# Question 2. In the following reactions compound y is;

$$C_8H_6 \xrightarrow{Pd-BaSO_4} C_8H_8 \xrightarrow{i. B_2H_6} XX$$

$$\downarrow H_2O$$

$$\downarrow H_2SO_4, H_2SO_4$$

$$C_8H_8O \xrightarrow{i. EtMgBr, H_2O} Y$$

$$ii. H^+, heat$$

$$CH_3$$

$$(b)$$

$$CH_3$$

$$(c)$$

$$CH_2$$

$$CH_3$$

$$(d)$$

$$CH_3$$

Solution: (D)

$$C \equiv CH$$

$$HgSO_4, H_2SO_4$$

$$H_2O$$

$$C \rightarrow CH_3$$

$$HO$$

$$CH_2CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

. In the given transformation, which of the following is the most appropriate reagent?

$$\begin{array}{c} \text{CH=CHCOCH}_3 \\ \\ \xrightarrow{Reagent} \\ \text{HO} \end{array}$$

- (1) NaBH<sub>4</sub>
- (2) NH<sub>2</sub>-NH<sub>2</sub>, OH
- (3) Zn Hg / HCl
- (4) Na, Liq.NH<sub>3</sub>

### Solution:

In  $NH_2$ - $NH_2$ , OH, the medium is basic so it will not have any effect on the OH group in the reagent. Hence option (2) is the answer.