# Question Bank

**P**ractical **O**rganic **C**hemistry (*3rd Stage*)
*Dr. Peshawa Osw*

1st Semester

**Q 1/** Complete the following reactions:

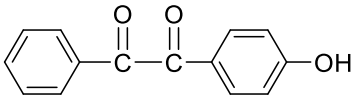
1. Benzaldehyde + Acetaldehyde $\xrightarrow{\text{10 \% NaOH}}$ ? $\xrightarrow{\text{heat}}$ ?

2. m-nitrobenzamide + House Bleach $\xrightarrow{\text{NaOH}}$ ?

3. p-chlorobenzil $\xrightarrow{\text{NaOH}}$ ? $\xrightarrow{\text{HCl}}$ ?

**Q 2/** Write the detail mechanism for pinacol-pinacolone rearrangement using an asymmetric compound.

**Q 3/** Complete the following reaction and then use the benzil-benzilic acid rearrangement to write down its mechanism.

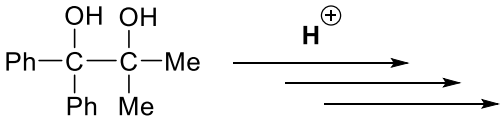


$\xrightarrow{\text{NaOH}}$ ?

**Q 4/** What is the difference between aldol and cross-aldol condensation? Give an example to explain.

**Q 5/** Write the detail mechanism for preparation of benzocaine

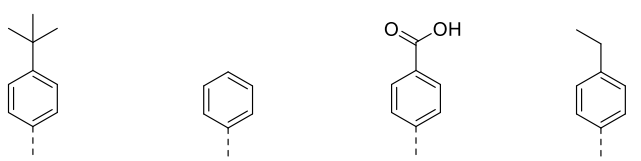
**Q 6/** Complete the following reaction, then explain the expected products:




**Q 7/** Write the detailed mechanism for the preparation of 5,5-diphenylhydrantoin.

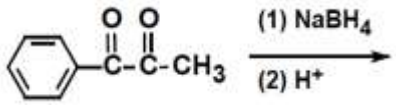
**Q 8/** Write the essential characteristics of Diels-Alder cycloaddition reaction.

**Q 9/** Arrange the following compounds according to increase their migratory aptitude of phenyl groups toward Pinacol-Pinacolone rearrangement reaction:



**Q 10/** Why do reduction reactions of aldehydes and ketones with $NaBH_4$ and $LiAlH_4$ require an acidification step?

**Q 11/** Show structures in the sawhorse projection for all stereochemical products for the reduction of the diketone shown below.




**Q 12/** Write the detail mechanism for the reaction of benzil and o-phenylene diamine in acidic medium.

**Q 13/** Complete the following reactions:

**1)** *N,N*-dimethylamine + 2-propanone $\xrightarrow{?}$

**2)** *p*-aminobenzoic acid + Ethanol $\xrightarrow{?}$

**Q 14/** Show the major organic product(s) for each of the following equations.

$$CH_3CH_2CH_2CHO \xrightarrow[(DMSO)]{H_2NNH_2/KOH}$$

**Q 15/** Define the following:

**1-** Dienophile

**2-** Benzylic acid rearrangement

**Q 16/** Write the reason of the following:

1- The PH at which imine formation is carried out must be carefully controlled.

**Q 17/** Complete the following reactions: