Answer the Following Questions

Question No. 1: Give an account for:

a) β-Ketoacids are unstable acids.

b) In dicarboxylic acids, even number of carbon atoms have higher m.p. than the odd one.

c) The thermal behavior of dicarboxylic acids.

Question No. 2: Show how can you convert

1- CH₃COOEt \[\rightarrow\] Ethyl acetoacetate

2- H₂C\[\underset{\text{COOEt}}{\longrightarrow}\] Veronal

3- CH₂COOH \[\underset{\text{CH₂COOH}}{\rightarrow}\] N.B.S

Question No. 3:

A) Illustrate the steps of the following reactions:

1- Friedel-Craft reaction.

2- Cannizarro tiled reaction.

3- Sand Mayer reaction.

B) Classifying the following groups as either ortho, para or meta:

-CH₃, -COOH, -OCH₃, -OH, -NHR, -CHO and Cl.
Question No. 4:

A) Write short on:
   1- Aromaticity of benzene.
   2- Reaction of NaOH with chlorobenzene in high pressure and temperature.

B) Give mechanistic equation to illustrate the preparation of the following compounds:
   1- Benzaldehyde.  2- Asprin.  3- Salicyldehdye.  4- Saccharin.
   5- Methyl orange.  6- Phenolphethaleine.

Best wishes