



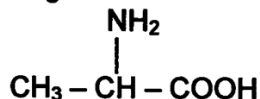
THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (15x2=30)

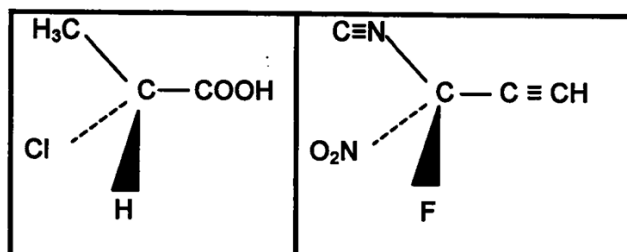
- a) Define pKa and relate it with the strength of acid.
b) Show hybridization of the under lined atom in the following compound by drawing hybrid orbital diagram.



- c) Starting from malonic ester, how will you synthesize the following?



- d) What are enantiomers and diastereomers?
e) Why 2 – Hydroxy benzoic acid is more acidic than 4 – Hydroxy benzoic acid?
f) Label the following structure as R or S.



- g) What do you mean by Epimerization?
h) Why picric acid is stronger than phenol?
i) Give reason for the zero value of dipole moment of Benzene and 0.4D for Toluene.
j) The internal alkene 2 – Butene is more stable than 1 – Butene. Justify this statement
k) Sketch chair forms of cis, trans isomers of 1,3 – Dimethylcyclohexane.
l) Why active methylene compounds are called so?
m) Draw structures of isomers of ethane.
n) Construct Z and E isomers of $\text{CH}_3\text{Cl} \text{C} = \text{CHCH}_3$.
o) Justify the order of acidic strength of given compounds. [Chloroethanoic acid > Ethanoic acid]

Q.2. Answer the following questions.

- Write a note on the followings: (5+5)
(i). Walden Inversion (ii) Alkylation of Active Methylene compound
- Detail a comparison of conformational analysis of the following: (5+5)
(i)n – Butane (ii) Propane
- Describe conditions, mechanism and synthetic applications of KNOEVENAGEL reaction. (10)