PD– 376 CV-19

M.Sc. Chemistry (3rd Semester)
Term End Examination Dec.-2020
Compulsory/Optional
Group-
Paper – III

Name/ Title of Paper: Physical Organic Chemistry [Maximum Marks : 80
Time : Three Hours] Minimum Marks : 29

Note : Answer from Both the section as Directed. The figures in the right hand margin indicate marks.

Section-A

1- Answer the following question- 1X10
   a- Choose hard soft acid base from Li^+, Ag^+, ROH.
   b- Write stability order of C_6H_5-Ch_2, $(CH_3)_3C^{\cdot}$ and Ch_3-Ch_2-Ch_2. Free Radicals.
   c- Give potential energy diagram of SN^2 Reaction.
   d- What is steric strain?
   e- Gibb's free energy ΔG=.....?
   f- Define aprotic solvent.
   g- The theory of kinetic isotope effects was first formulated in which of the following element?
      1- Hydrogen 2- Nitrogen 3- oxygen
   h- In SN^1 reaction when the solvent acts as nucleophile. It is called----------.
   i- What is steric LEFR?
   j- Write MO structure of allelic system.

2- Answer the following questions. 2X5=10
   (a) Explain reactivity selectivity principle.
   (b) Explain Hemond postulate
   (c) Explain kinetic isotope effect.
   (d) Give uses of activation energy.
   (e) Write properties of hard acids.

Section-B

Answer all questions- 6X2=12

3- a- Discuss transition state theory and uses of activation parameters.
   b- Explain conjugation and hyper conjugation.

Or

   a- Discuss electronic and structural effects on acidity and basicity?
   b- What do you mean by ambivalent nucleophile.

4- a- Give a note on specific and general catalysis. 6X2=12
   b- Explain Huckel molecular method taking example of allyl.

Or

   a- Discuss mechanistic significance of Gibb's freee energy.
   b- Explain Bell Evans. Polanyl principle

5- Write short note on any two- 6X2=12
   a- Nucleophilicity scales
   b- SRN^1 mechanism.
   c- Arrhenius equation
   d- Bronsted catalyst.

6- Write short note on any two of the following: 6X2=12
   a- Radical stability
   b- Confirmation barrier bassies to band rotation detection of acyclic system.
   c- the Nucleophilic and electrophilic catalysis
   d- structural and electronic effect on SN^1 and SN^2 reaction.

7- Write short note on any two of the following- 6X2=12
   a- Curtin- Hammett principle periselectivity.
   b- Reactivity , specificity and in pericyclic reaction.
   c- Solvation effect on reaction rates and equilibria.
   d- Various types of steric strain and their influences on reactivity.