Exam. Code : 103206
Subject Code : 8052

B.A./B.Sc. 6th Semester (Old Syllabus 2017-18)

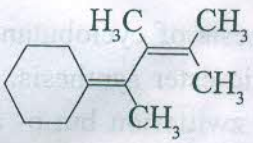
CHEMISTRY (Organic Chemistry—IV)

Time Allowed—2 Hours] [Maximum Marks—35

Note :— Attempt any ***four*** questions. All questions carry equal marks.

1. (a) Explain why a polar solvent shifts the π-π^* transition to a longer wavelength and n-π^* transition to shorter wavelength.

   (b) Calculate the λ_{max} for the following compounds :



2. (a) Why TMS is used as reference compound in NMR spectroscopy ?

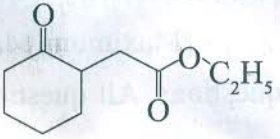
   (b) Discuss the Shielding and D-shielding of protons in NMR spectroscopy.

3. (a) Discuss Ruff degradation for the conversion of aldohexose to aldopentose.

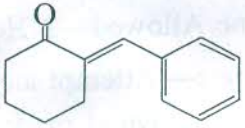
   (b) What is the difference between Epimer and Anomer ? Give one example each.

4. Define and explain the term Mutarotation. Why an aqueous solution of α- or β-glucose shows mutarotation while α- or β-methyl glycoside does not ?

5. Using Enamine synthesis, sketch the synthesis of the following compounds :



A



B

6. (a) Discuss Sanger's method for N-terminal residue analysis.
   (b) Write a note on Phenol-formaldehyde-resin.

7. (a) Discuss the synthesis of cyclobutane carboxylic acid using malonic ester synthesis.
   (b) Glycine exists as zwitterion but o- and p-amino benzoic acids do not. Explain.

8. The NMR spectrum of two isomeric mono-substituted aromatic esters having formula $C_{10}H_{12}O_2$ are :

   Compound A : δ 1.25(t, 3H); 3.6(s, 2H); 4.15(q, 2H); 7.5(m, 5H)

   Compound B : δ 2.65(t, 2H); 2.95(t, 2H); 3.68(s, 3H); 7.5(m, 5H)

   Assign the structures to both the compounds.