Seat No:_____ Enrollment No:_____

PARUL UNIVERSITY

FACULTY OF APPLIED SCIENCE

M.Sc. Summer 2017-18 Examination

Semester: 3 **Date: 28/05/2018**
Subject Code: 11205204 **Time: 02:00PM to 04:30PM**
Subject Name: Spectroscopy of Organic Compounds **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1. A) Essay type/ Brief note (4x2) (Each of 04 marks) **(08)**
(a) What is a conjugated diene? Explain with example.
(b) Write the Wood-Ward Fieser rules for calculating λmax for conjugated dienes.

Q.1. B) Answer the following questions (Any two)
(a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) **(04)**
1. Briefly explain the significance of the finger print region of IR spectrum.
2. Define chromophores with an example.

(b) Write a Short note on types of electronic transitions in organic compounds. **(04)**
(c) Write the effect of Hydrogen bonding on IR spectra. **(04)**

Q.2. A) Answer the following questions.
(a) Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) **(04)**
1. What do you mean by chemical shift?
2. What is the shielding and deshielding effect in NMR spectroscopy?

(b) Write the applications of UV spectroscopy (Four points). **(04)**

Q.2. B) Answer the following questions (Any two)
(a) Short note/ Multiple choice questions. (Each of 01 marks) **(03)**
1. Write the full form of HMBC.
2. Write the name of one solvent used in NMR spectroscopy.
3. Vibrational transitions exist in …….. region of electromagnetic spectra.

(b) How many types of 1H-NMR-Signals are present in Propane and Propanol? **(03)**
(c) What is 2-D NMR spectroscopy? **(03)**

Q.3. A) Essay type/ Brief note (4x2) (Each of 04 marks) **(08)**
(a) What do you mean by McLafferty rearrangement?
(b) What are retro Diels-Alder fragmentation?.

Q.3. B) Answer the following questions (Any two)
(a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) **(04)**
1. Write a note on ortho effect in mass spectroscopy.
2. Write the full form of LCMS and HRMS.

(b) Write a note on GCMS analysis technique **(04)**
(c) Write the applications of mass spectrometry. (four points) **(04)**

Q.4. A) Answer the following questions.
(a) Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) **(04)**
1. Explain Stokes and Anti Stokes lines.
2. Differentiate between IR and Raman Spectroscopy (two points)

(b) Write a short note on Auger Effect. **(04)**

Q.4. B) Answer the following questions (Any two)
(a) Short note/ Multiple choice questions. (Each of 01 marks) **(03)**
1. What is TMS in NMR spectroscopy?.
2. What is the δ value of TMS in NMR?
3. What is the effect of deshielding on δvalue in NMR?.

(b) Write the applications of Raman Spectroscopy. **(03)**
(c) What is the effect of presence of electronegative atom on the δ value in NMR? Give example. **(03)**