

Day: Tuesday  
Date: 07/05/2019

Time : 02.00 PM TO 05.00 PM  
Max. Marks: 60

S-2019-4410

N.B.

- 1) Q. No. 1 and Q. No. 5 are **COMPULSORY**. Out of the remaining attempt any two questions from each section
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer book.

**SECTION - I**

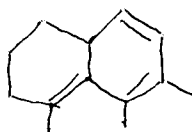
**Q.1** Answer the following (**ANY FIVE**) (10)

- a) Define spectroscopy
- b) What do you mean by EMR explain
- c) Define the term "Auxochrome"
- d) Explain any two types of 'Grating'
- e) Define wavelength and amplitude
- f) What do you mean by wavelength selector? Explain

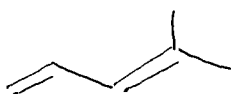
**Q.2** Explain the electronic transition involved in UV spectroscopy and write the limitations of Beer's law. (10)

**Q.3** Calculate the  $\lambda_{max}$  for the following compounds. Justify your answer (10)

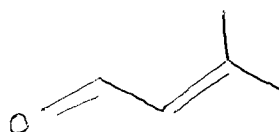
a)



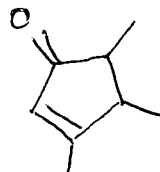
b)



c)



d)



**Q.4** Write short Note on (**ANY TWO**) (10)

- a) Spectrophotometric titrations
- b) Applications of UV spectroscopy
- c) Detectors in UV-Vis spectroscopy

**SECTION - II**

**Q.5** Answer the following (**ANY FIVE**) (10)

- a) What are nondispersive IR instruments
- b) What are advantages of Nephelometry techniques
- c) Explain the concept of coupled IR bands
- d) Provide any two point of comparison between fluorimetry and Nephelometry
- e) What is principle of RAMAN spectroscopy?
- f) Enlist important IR bands in IR spectra of organic acid compounds

**Q.6** Describe principle instrumentation and applications of FTIR (10)

**Q.7** Describe principle, instrumentation and advantages of spectrofluorimetry (10)

**Q.8** Write short notes on (**ANY TWO**) (10)

- a) RAMAN spectroscopy-advantages and applications
- b) Working and construction of double beam IR instrument
- c) Number of possible band in IR spectra of given compounds