

Pramukh Swami Science & H.D. Patel Arts College, Kadi

Bachelor of Vocation Pharmaceutical Chemistry Semester- V

Mid Sem Examination, NOVEMBER - 2016

(PC - 512) Advanced Analytical Chemistry-III

Time: 2 hours 09/11/2016 Total Marks: 60

Q.1. Answer any 12 questions. Each question carries 1 mark [12]

1. What is spectroscopy?
2. State Lambert's law.
3. What is the range of middle IR region?
4. Transition observed in methane is :
(a) $\sigma \rightarrow \sigma^*$ (b) $\pi \rightarrow \pi^*$ (c) $\sigma \rightarrow \pi^*$ (d) None
5. Michelson interferometer is used in UV spectrophotometer.
(True/False)
6. Write the relation between absorbance and transmittance?
7. How is any object seen colored?
8. Write full name of ATR?
9. Longer the wavelength, _____ will be the frequency.
10. Which transition requires lowest amount of energy?
11. Energy of electronic transition $>$ Energy of electronic transition. (True/False)
12. The range of UV is _____ nm and range of visible region is _____.
13. IR spectroscopy gives information about number of protons in a sample. (True/False)

Q.2. Answer any five questions. Each question carries 4marks [20]

1. Write a short note on electronic transitions observed in UV spectroscopy?
2. How is sample prepared for analysis in IR?

3. Discuss: (a) Prism and (b) grating monochromator?
4. Describe the instrumentation of IR spectrophotometer with detailed information about sources and detectors?
5. Explain principle and working of FTIR?
6. Define : (a) Transmittance (b) Rotational Transition
(c) Wavelength (d) Frequency.

Q.3. Answer any four questions. Each question carries 7 marks [28]

1. State and derive Lambert Beer's law. Also mention the limitations of Beer's law.
2. Explain different types of vibration observed in IR spectroscopy?
3. Write a note on instrumentation of UV spectrophotometer?
4. Write a brief note on ATR? Write about the advantages of FTIR?
5. Which information is obtained from UV spectroscopy? Write about different applications of UV spectroscopy?