

GUJARAT TECHNOLOGICAL UNIVERSITY

B.PHARM – SEMESTER – V • EXAMINATION – WINTER – 2015

Subject Code: 2250003

Date: 15/12/2015

Subject Name: Pharmaceutical Analysis III

Time: 10.30 AM to 1.30 PM

Total Marks: 80

Instructions:

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

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|-------------|------------|---|-----------|
| Q.1 | (a) | Give an account of the detectors used in UV VIS spectrophotometer. Add a note on monochromators. | 06 |
| | (b) | Explain different types of electronic transition in spectroscopy. Predict the type of electronic transition in dimethyl amine, methanol. | 05 |
| | (c) | Explain Deviation of Beer's law and explain instrumental factors affecting on deviation of Beer's law. | 05 |
| Q.2 | (a) | Explain various transitions occurring in a molecule when electromagnetic radiations interact with it. Discuss in detail the principle of IR Spectroscopy. | 06 |
| | (b) | Explain the principle, working and advantages of FTIR. | 05 |
| | (c) | Write a note on solid sampling technique with its merits and demerits. | 05 |
| Q.3 | (a) | Explain the theory of fluorescence and phosphorescence. Discuss the factors affecting fluorescence intensity. | 06 |
| | (b) | Draw a well labeled diagram of Spectrofluorimeter. Explain advantages and limitations of fluorescence spectroscopy | 05 |
| | (c) | Define quenching. Explain types of quenching. Derive $F=2.303kI_0abc$. | 05 |
| Q.4 | (a) | Explain the principle of NMR. Give an account of instrumentation in NMR. | 06 |
| | (b) | Write a note on spin - spin coupling and coupling constant. | 05 |
| | (c) | Define chemical shift. Explain in brief factors affecting chemical shift. | 05 |
| Q.5 | (a) | Discuss the theory of Mass Spectroscopy. Give an account of detection techniques used in Mass spectroscope. | 06 |
| | (b) | Explain in brief various fragmentation rules in MS. | 05 |
| | (c) | Give the difference between gas phase and desorption phase ionisation technique and write a note on quadrupole ion filter and TOF. | 05 |
| Q. 6 | (a) | Write a short notes: (1) Hollow Cathod lamp (2) Flame photo meter. | 06 |
| | (b) | Explain in detail flame and nebulizer burner system in flame photometry. | 05 |
| | (c) | Discuss about the interference in FES. | 05 |
| Q.7 | (a) | Calibration of UV – VIS spectrophotometer | 06 |
| | (b) | Write a note on ^{13}C NMR spectroscopy. | 05 |
| | (c) | Explain: wave number, frequency, line spectra, band spectra, absorption spectra, emission spectra | 05 |
