

GUJARAT TECHNOLOGICAL UNIVERSITY
B. Pharm. – SEMESTER – VII • EXAMINATION – WINTER • 2016

Subject Code: 270004**Date: 23-11-2016****Subject Name: Pharmaceutical Analysis-III****Time: 10:30 am - 01:30 pm****Total Marks: 80****Instructions:**

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

- Q.1** (a) Explain theory and types of Electronic transition involved in absorption of UV radiation by molecule. Give their characteristic wavelength. **06**
- (b) State Beer's-Lambert's Law of photometry and derive equation $A = a b c$. **05**
- (c) Ten milligrams of a compound "X" (M.Wt 151) is present per liter of solution. If molar absorptivity of "X" at 257 nm is 10625, what will be absorbance in the solution of "X" at 257 nm in 1 cm cell? **05**
- Q.2** (a) Draw labelled sketch of a double beam UV-VIS spectrophotometer. Describe working of Photo Multiplier Tube. **06**
- (b) Explain theory of absorption of Infrared radiation. **05**
- (c) Explain HOOK'S LAW for prediction of IR frequency. Discuss factor affecting IR frequency. **05**
- Q.3** (a) What is fluorescence? Explain Fluorescence and phosphorescence using Jablonski diagram. **06**
- (b) Differentiate UV and Fluorescence Spectroscopy. **05**
- (c) Discuss factors affecting fluorescence. **05**
- Q.4** (a) Explain working principle of Flame photometer with diagram. **06**
- (b) Explain principle of Inductively Coupled plasma emission spectroscopy. **05**
- (c) Enlist advantage, limitation and application of atomic absorption spectroscopy. **05**
- Q.5** (a) Explain Nuclear Magnetic Resonance and Spin lattice relaxation in ^1H NMR. **06**
- (b) What is chemical shift in NMR? Explain factor affecting it. **05**
- (c) A molecule $\text{C}_6\text{H}_{12}\text{O}$ is Ketone with following ^1H NMR spectral data. Elucidate the structure. Chemical shift (splitting)
 δ 2.25(singlet) , 2.45 (triplet), 1.6(quintet), 1.35(Sextet), 0.9 Triplet **05**
- Q. 6** (a) Explain principle involved in mass spectroscopy. **06**
- (b) Enumerate methods of Ionization in Mass Spectroscopy. Explain any one. **05**
- (c) Explain origin and application of Molecular Ion, M+1, M+2 and Base Peak in Mass Spectroscopy. **05**
- Q.7** (a) Write note on preparation of sample for IR spectroscopy. **06**
- (b) Write note on ^{13}C NMR. **05**
- (c) Explain advantages and principle involved in FTIR spectrophotometry. **05**