

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
B.PHARM - SEMESTER- 5 EXAMINATION – SUMMER -2020

Subject Code: 2250003
Date: 27-10-2020
Subject Name: Pharmaceutical Analysis III
Time: 2:30 PM TO 5:30 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) Draw and predict the no. of NMR signal of following compounds **06**
 A) Anisole B) Diethyl ether C) Ethyl ethanoate D) Acetone E) Ethoxyacetic acid F) Allyl bromide
- (b) Discuss factors affecting chemical shift in NMR. **05**
- (c) Write a note on spin - spin coupling and coupling constant. **05**
- Q.2** (a) Predict the structure of given compound by given data. **06**
 M. F. $- C_3H_5BrO_2$
 IR $- 3067, 2760, 2571, 1717, 1432, 1265 \text{ cm}^{-1}$
 NMR $- 2.9 \text{ ppm}$ 2H triplet
 $- 3.45 \text{ ppm}$ 2H triplet
 $- 10 \text{ ppm}$ very broad exchangeable
 MS $- 152, 135, 107, 73$
- (b) Write short notes on any two with example (i) Mc-Lafferty rearrangement **05**
 (ii) Base Peak (iii) M+2 peaks
- (c) Define mass spectroscopy and give the principle with labeled diagram of mass spectrometer **05**
- Q.3** (a) What is the energy of one mole of photon having wavelength 300 nm? **06**
 (Planck constant value: $6.626 \times 10^{-34} \text{ J} \cdot \text{Sec}$)
- (b) Draw a well labeled diagram of Spectrofluorimeter. Explain advantages and limitations of fluorescence spectroscopy. **05**
- (c) Write a note on Hollow cathode lamp. **05**
- Q.4** (a) Justify the following comments. **06**
 1. Fluorescence occurs at longer wavelength than absorbance radiation.
 2. Compounds having $n-\pi^*$ transition show decrease in λ_{max} on increasing polarity of solvent
- (b) State Beer's law. What is deviation from Beer's law, enlist various types of deviation and explain any one in detail. **05**
- (c) Give an account of the detectors used in UV VIS spectrophotometer. Add a note on monochromators. **05**
- Q.5** (a) How would you differentiate primary alcohol, Secondary alcohol and tertiary alcohol with the help of fragmentation in MS? **06**
- (b) Discuss constructions and working of Michelson interferometer. **05**
- (c) Enlist detectors used in IR spectroscopy and write a note on any two thermal detectors. **05**
- Q. 6** (a) Enlist six function group with its structure having wave no around 1700 cm^{-1} ? **06**
- (b) Write down the Application of Atomic absorption Spectroscopy. **05**
- (c) Discuss the wave Properties of Electromagnetic radiation **05**

- Q.7 (a)** Fill in the blanks **06**
1. _____ is used as light source in AAS.
 2. _____ is used as chemical in calibration of UV for Stray light.
 3. Group of chemical responsible for the UV absorption is known as _____.
 4. Detector is used at _____ angle in Fluorescence Spectroscopy.
 5. _____ peaks are used to identify the bromide ion in MS.
 6. _____ is used as internal standard in NMR for Non aqueous medium.
- (b)** Explain analysis of binary mixtures of absorbing substances by simultaneous equation method. **05**
- (c)** Draw the schematic spectrum pattern of UV, IR, NMR, MS (With Axis) **05**

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