

GUJARAT TECHNOLOGICAL UNIVERSITY
B.PHARM- SEMESTER VIII – • EXAMINATION – WINTER -2022

Subject Code:BP811TT**Date: 28/12/2022****Subject Name: Advanced Instrumentation Techniques****Time: 02:30PM TO 05:30PM****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) | Explain in detail chemical ionization source used in mass spectrometer. | 06 |
| | (b) | Describe the rules for fragmentation of molecules in MS with suitable examples. | 05 |
| | (c) | Draw a block diagram of MS. Discuss different detectors used in MS | 05 |
| Q.2 | (a) | Discuss important factors in sample preparation and handling in DTA | 06 |
| | (b) | Discuss the principle, instrumentation and application of DSC | 05 |
| | (c) | Draw the block diagram of TGA. Explain the factor affecting TGA curve | 05 |
| Q.3 | (a) | Discuss instrumentation and applications of X-ray powder diffraction technique | 06 |
| | (b) | Write a note on HPTLC/MS | 05 |
| | (c) | What is x-ray diffraction? Give detail idea about Bragg's law. | 05 |
| Q.4 | (a) | Explain instrumentation and applications of GC-MS/MS. | 06 |
| | (b) | Describe the principle and procedure involved in the solid phase extraction | 05 |
| | (c) | Explain calibration of Fluorimeter | 05 |
| Q.5 | (a) | Write the principle involved in NMR spectrometer. Add a note on factors affecting on Shielding and de -shielding in NMR Spectra. | 06 |
| | (b) | Write principle, instrumentation and application of proton magnetic resonance. | 05 |
| | (c) | Write a note on ¹³ C NMR | 05 |
| Q. 6 | (a) | Discuss in detail the validation parameter for bio-analytical methods as per ICH guideline | 06 |
| | (b) | Explain validation and calibration of UV-Visible spectrophotometer. | 05 |
| | (c) | Discuss elements of process validation | 05 |
| Q.7 | (a) | What is extraction? Give detail note on liquid -liquid extraction technique. | 06 |
| | (b) | Define RIA? Elaborate various components of RIA | 05 |
| | (c) | Discuss different methods of RIA. Write application of RIA | 05 |
