

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
B.PHARM – SEMESTER – 7 EXAMINATION – SUMMER-2025

Subject Code: BP701TP

Date: 09-05-2025

Subject Name: Instrumental Methods of Analysis

Time: 02.30 PM TO 05.30 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) State and derive Beer-Lambert's Law. | 06 |
| | (b) Explain the principle and applications of AAS. | 05 |
| | (c) Write a note on Radiation Source and Monochromator used in UV – VISIBLE spectrophotometer. | 05 |
| Q.2 | (a) Explain the different modes of vibrations in poly atomic molecules. | 06 |
| | (b) What do you mean by fluorescence? Write in detail applications of fluorimetry. | 05 |
| | (c) Describe the factors affecting fluorescence. | 05 |
| Q.3 | (a) Enumerate the detectors used in UV spectroscopy and discuss any TWO. | 06 |
| | (b) Write a note on sampling techniques used in IR spectroscopy. | 05 |
| | (c) Describe types of paper chromatography based on the development. | 05 |
| Q.4 | (a) Write notes on
(i) Gel electrophoresis techniques, (ii) Paper electrophoresis techniques. | 06 |
| | (b) Give a brief account on (i) Golay cell (ii) Bolometer | 05 |
| | (c) Write a brief note on Nephelometry and Turbidimetry with its applications. | 05 |
| Q.5 | (a) Write a note on principle, interferences and instrumentation of flame photometry. | 06 |
| | (b) Give advantages, disadvantages and application of adsorption chromatography. | 05 |
| | (c) Enlist various detectors used in Gas chromatography. Explain any one in detail. | 05 |
| Q. 6 | (a) Explain terms: (i) HETP (ii) Peak asymmetry factor
(iii) Retention time (iv) Resolution (v) Capacity factor (vi) Tailing factor | 06 |
| | (b) Discuss various Detectors and Pumps used in HPLC. | 05 |
| | (c) Explain the principle, advantages, disadvantages and applications of TLC. | 05 |
| Q.7 | (a) Write a note on theory, instrumentation and applications of affinity chromatography. | 06 |
| | (b) Discuss instrumentation and applications of Gel chromatography. | 05 |
| | (c) Give brief account on resins used in ion exchange chromatography. | 05 |
