

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**PHARM.D YEAR-3 EXAMINATION – WINTER - 2025**

**Subject Code: 838802****Date: 24-11-2025****Subject Name: Pharmaceutical Analysis****Time: 10 : 30 AM TO 01 : 30 PM****Total Marks: 70****Instructions:**

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

- Q.1** (a) Explain the working and components of gas chromatograph with help of a neat, labeled, schematic block diagram. **06**
- (b) Write a note on ISO 9000. **04**
- (c) Explain the principle of NMR spectroscopy. **04**
- Q.2** (a) Discuss retention mechanism, instrumentation and applications of HPLC. **06**
- (b) Write the steps involved in analysis of drugs using HPTLC method. **04**
- (c) What is ICH guidelines? Enlist types of guidelines. Enlist quality guidelines. **04**
- Q.3** (a) What are the reference and indicator electrodes used in potentiometric titrations? Discuss the methods of detecting end point in potentiometric titrations. **06**
- (b) What is electrophoresis? Classify electrophoresis. Write applications. **04**
- (c) Explain the theory of Gel Filtration Chromatography. Write applications. **04**
- Q.4** (a) What is conductometric titration? Explain them with suitable examples. **06**
- (b) Explain the theory of polarography involving Ilkovic equation. **04**
- (c) What are different methods of Thermal analysis? Explain DSC in detail. **04**
- Q.5** (a) State and derive Lambert-Beer's law. What is deviation from Beer's law, Enlist various types of deviation. **06**
- (b) Explain the principle of Atomic absorption Spectroscopy. Give its applications. **04**
- (c) Explain: Chromatography. Give a suitable classification of various chromatographic techniques with examples **04**
- Q. 6** (a) Write a note on radiation sources and detectors used in IR spectroscopy. Explain Fingerprint Region. **06**
- (b) Explain principle and pharmaceutical applications of Mass Spectrometry. **04**
- (c) Explain theory of X-ray diffraction. Write applications of XRD. **04**
- Q.7** (a) What is quenching? Write types of Quenching with examples. Write pharmaceutical applications of fluorescence spectroscopy. **06**
- (b) Explain the principle and instrumentation of polarimeter. **04**
- (c) Enlist fuel and oxidants used in Flame photometry. Draw a well-labeled diagram of Flame emission photometer and write function of each component **04**