

**GUJARAT TECHNOLOGICAL UNIVERSITY****Pharm D –III<sup>rd</sup> Year • EXAMINATION – WINTER - 2022****Subject Code: 838802****Date: 25/01/2023****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) What does ICH stand for? Enlist all ICH guidelines. **06**  
(b) Write a short note on GLP. **04**  
(c) Define chromatography. Classify the chromatographic methods with suitable examples. **04**
- Q.2** (a) Explain the principle of separation for **06**  
1. Thin layer chromatography  
2. Paper chromatography  
3. Affinity chromatography  
(b) Enlist the detectors used in Gas chromatography. Explain the principle of any one. **04**  
(c) Explain the terms: Retention time, Retardation factor, Selectivity factor, Resolution. **04**
- Q.3** (a) Discuss the factors affecting column efficiency. **06**  
(b) Differentiate in HPLC and HPTLC. **04**  
(c) Explain the principle of separation of electrophoresis. Classify electrophoretic methods. **04**
- Q.4** (a) Discuss the applications of **06**  
1. Conductometric titrations  
2. Amperometric titrations  
(b) Enumerate the applications of Potentiometry. Discuss the methods of detecting end point in potentiometric titrations. **04**  
(c) Explain the principle of Polarography. Write Ilkovic's equation and explain each term. **04**
- Q.5** (a) Explain principle of **06**  
1. Atomic absorption spectroscopy  
2. Polarimetry  
(b) Write a short note on DSC. **04**  
(c) Explain terms: Reference electrode, Half-wave potential, Specific conductance, Liquid junction potential. **04**
- Q. 6** (a) Derive and explain Beer Lambert's Law. Discuss its limitations. **06**  
(b) Explain the principle of IR absorption. Explain different types of molecular vibrations. **04**  
(c) Explain the terms: Wavelength, Mass to charge ratio, Molar absorptivity, Fermi Resonance. **04**
- Q.7** (a) Draw a well labeled Jablonski diagram and explain each term. **06**  
(b) Explain the principle of mass spectrometry. Draw a block diagram for a typical mass spectrometer. **04**  
(c) Explain: Spin spin coupling, Chemical shift. **04**