

**DOCTOR OF PHARMACY**  
**Third Year Pharm. D. : SUMMER : 2022**  
**SUBJECT: PHARMACEUTICAL ANALYSIS**

Day : Friday  
Date 06-May-2022

S-5738-2022

Time : 10:00 AM-01:00 PM  
Max. Marks: 70

**N.B.:**

- 1) **Q. No.1 and Q.No.5 are COMPULSORY.** Out of the remaining solve **ANY TWO** questions from Section-I and Section-II each.
- 2) Both the sections should be written in the **SEPARATE** answer books.
- 3) Draw neat and well labelled diagrams **WHEREVER** necessary.

**SECTION-I**

- Q.1** A) Attempt **ANY FOUR** of the following: **(08)**
- i) Define Conductance, Molar conductance, Molar rotation and Specific rotation.
  - ii) Explain the terms Retention factor & Retention volume.
  - iii) Classify chromatographic techniques.
  - iv) State 3S principle in GLP.
  - v) Write about types of adsorbents used in Column chromatography.
- B) Write about various guidelines of ICH. **(03)**
- Q.2** a) Discuss theories of chromatography. Write a note on columns used in Gas chromatography. **(07)**
- b) Write applications of High Performance Liquid Chromatography. **(05)**
- Q.3** a) Discuss different developmental techniques used in Paper chromatography. **(07)**
- b) Write applications of Ion exchange chromatography. **(05)**
- Q.4** Write note on **ANY THREE** of the following: **(12)**
- a) Amperometric titrations
  - b) Dropping mercury electrode
  - c) Electrodes used in potentiometry
  - d) Applications of polarimetry

**SECTION-II**

- Q.5** A) Attempt **ANY FOUR** of the following: **(08)**
- i) Differentiate between DSC and DTA.
  - ii) Write steps involved in nebulization of sample.
  - iii) State Hook's Law.
  - iv) Enlist types of ions formed in Mass spectroscopy.
  - v) Explain factors affecting fluorescence.
- B) Compare between Nuclear Magnetic Resonance and Electron Spin Resonance. **(03)**
- Q.6** a) Discuss in detail instrumentation of a UV visible Spectrophotometer. **(07)**
- b) Write about transitions involved in UV visible spectroscopy. **(05)**
- Q.7** a) Discuss theory, principle involved in NMR spectroscopy. Write instrumentation of NMR Spectrophotometer. **(07)**
- b) State ideal properties of detectors. Explain detectors used in IR spectroscopy. **(05)**
- Q.8** Write note on **ANY THREE** of the following: **(12)**
- a) Burners used in Flame Photometry
  - b) Applications of ESR
  - c) Instrumentation of AAS Spectrophotometer
  - d) Applications of XRD