

B. Pharm. 4th Year 2nd Semester Examination 2024

Subject: Advanced Instrumentation Techniques

Subject Code: BP811ET

Full Marks: 75

Time: 3 Hr

Q1. Answer the following questions (Question 1 is Compulsory) 10x2M=20 Marks

- a. Name some application areas of Thermal analysis.
- b. Define glass transition temperature.
- c. How internal calibration of a balance is done.
- d. What is the calibration frequency of UV, HPLC, and balance?
- e. How resolution power of UV is defined?
- f. Name different classical and instrumental methods.
- g. Discuss random errors.
- h. Discuss the composition of liquid chromatography systems.
- i. Discuss merits and demerits of RIA.
- j. Discuss the function of guard column in HPLC.

Long Answer Questions

2 x 10Marks = 20Marks

(Answer 2 out of 4)

- Q2.** Give a detailed discussion of the calibration procedure for HPLC. 10
- Q3.** How the analytical balance is calibrated? Discuss the measurement of precision/accuracy of weighing. 6+4
- Q4.** a) Discuss various quantitative chemical analysis by instrumental methods with proper examples. What are the limitations of quantitative chemical analysis? 7 + 3 = 10
- Q5.** Discuss the steps followed and procedure of RIA. Write a diagram of HPLC system with different parts. 3 + 3 + 4 = 10

Short Answer Question

7 x 5Marks = 35Marks

(Answer 7 out of 9)

- Q6.** Show the utility or use of XRD for pharmaceutical analysis.
- Q7.** Write on calibration of resolution power and limit of stray light for UV spectrophotometer.
- Q8.** Discuss the assembly of the XRD system for the measurement of crystallinity.
- Q9.** How DSC is used for thermal analysis of a material?
- Q10.** Discuss the interferences during analytical techniques.
- Q11.** Write in detail about data domain map.
- Q12.** Discuss various HPLC techniques with proper examples.
- Q13.** Discuss the problems during selecting an analytical method.
- Q14.** Discuss various Chemical Analysis based on sample size, analytical methods.