

Rajiv Gandhi University of Health Sciences, Karnataka
VIII Semester B. Pharm Degree Examination – 18-Nov-2023

Time: Three Hours

Max. Marks: 75

ADVANCED INSTRUMENTATION TECHNIQUES

Q.P. CODE: 5043

Your answers should be specific to the questions asked

Draw neat labeled diagrams wherever necessary

All the Questions are compulsory

LONG ESSAYS

2 x 10 = 20 Marks

1. Write a note on Coupling and Decoupling methods in NMR Spectroscopy. Add a note on applications of ^{13}C NMR

OR

Explain the calibration methods for UV-visible Spectrophotometer and GC as per ICH guidelines.

2. Write the principle and working of differential scanning calorimeter (DSC). Add a note on its applications

SHORT ESSAYS

7 x 5 = 35 Marks

3. Briefly outline the instrumentation of Mass Spectrometer.

OR

State and derive an equation for Bragg's law.

4. Explain the methodology involved in the calibration of HPLC.

OR

Explain the utilization of ELISA technology in the measurement of biological activities.

5. Write the various components, Limitations and application of Radio Immune Assay.

6. Explain validation parameter for electronic balance.

7. Give a brief outline of principle of FT-NMR and ^{13}C NMR

8. Discuss in detail about the LC-MS/MS technique.

9. Discuss the principle and working of DTA

SHORT ANSWERS

10 x 2 = 20 Marks

10. Define quenching and give example
11. Detector used in Flame Photometer.
12. **Define singlet, doublet and triplet in ^1H NMR.**
13. Enlist application of thermo gravimetric analysis (TGA).
14. **Write the principle involved in Extraction techniques.**
15. Define Spin-Spin coupling.
16. Mention the applications of thermal methods of analysis
17. **What is X-ray Crystallography**
18. Define validation and calibration.
19. Mention the Advantages of HPTLC-MS techniques.