Rajiv Gandhi University of Health Sciences

Second Semester M. Pharm Degree Examination - JAN-2019

[Time: 3 Hours] [Max. Marks: 75]

Advanced Instrumental Analysis

Q.P. CODE: 5149

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary.

LONG ESSAY (Answer any Three) **3 X 10 = 30 Marks**

1. Describe the principle and instrumentation of ATR-IR.
2. Explain the fragmentation patterns for alcohols and carbonyl compounds.
3. Discuss the NOESY and COSY techniques of NMR spectroscopy.
4. Write the principle, instrumentation and applications of ICP-MS.

SHORT ESSAY (Answer any Nine) **9 X 5 = 45 Marks**

5. Write the principle and applications of RIA.
6. Discuss the Woodward - Fieser rule for α, β-carbonyl compounds.
7. Write the principle and applications of super critical fluid chromatography.
8. Explain the concept of cotton effect in ORD.
9. Discuss the principle and instrumentation of TGA.
10. Give the IR absorption frequencies and NMR peaks for the following compounds i) Ethyl methyl ketone ii) Benzamide
11. Explain Ring rule and isotope peak with suitable examples.
12. Write a note on circular dichroism.
13. Discuss the principle and applications of HPTLC.
14. Identify the structure of an organic molecule consistent with the following spectra data
    Molecular formula : $C_4H_8O_2$
    IR bands (cm^{-1}) : 2981, 1752, 1390, 1250, 1055
    NMR peaks (δ) : 1.3 (triplet 3H), 2.1 (singlet 3H), 4.0 (quartet 2H)
    Mass spectra peaks : 88, 61, 45, 43

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