Firstra Rajix Gandhi University of Hea www.FirstRanker.com First Year M. Pharm Degree Examination [Time: 3 Hours]

APMACEUTICAL ANALYSIS

[Max. Marks: 100]

MODERN PHARMACEUTICAL ANALYSIS

(OS & RS)

Q.P. CODE : 7891

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

LONG ESSAYS (ANSWER ANY FOUR)

4 X 25 = 100 Marks

- a) Explain the general fragmentation rules for organic compounds in mass spectroscopy.
 b) Write the principles involved in the functioning of quadrupoles and time of flight analyzers.
- 2. a) What is chemical shift in NMR? Write factors affecting the chemical shift.
 - b) Write a brief account on 2D-NMR.
 - c) Identify the structure of organic compound using following data:
 - Mol. Wt: $C_5H_{10}O$
 - IR peaks: 2980, 1715, 1375, and 1120 $\rm cm^{\text{-}1}$
 - Mass spectra peak: 86, 71, 58, 43 (base peak) and 27
 - C-NMR peak: 210, 55, 34, 22, 18
 - NMR spectra (δ): 2.4 (2H, triplet), 2.1 (3H, singlet), 1.7 (2H, hextet), 0.9 (3H, triplet)
- 3. a) What is Hooke's law? Write its importance in IR spectroscopy.
 - b) What are the difference between dispersive and FT-IR spectrophotometer?c) How will you identify the following functional groups in an organic compound?
 - OH-, -NH₂, --COOR, -C=C-, -CHO
- 4. Write a note on any **<u>FIVE</u>** only
 - a) Atomic absorption spectroscopy
 - b) HPTLC
 - c) Precolumn derivatisation technique
 - d) Octant rule
 - e) Bravis's lattices
 - f) Test for statistical significance and Student 'T' test
- 5. a) Explain Woodward's rule and its applications in structural elucidation.
 - b) Explain in detail any two methods for simultaneous estimation of multicomponent sample by UV Spectrophotometry.
 - c) Explain principle and working of phototube and photomultiplier tube detector in UV-Visible spectrophotometer.
- 6. a) Write the principles of gas chromatography. Draw a neat labeled diagram of GC instrument and explain any two detectors used.
 - b) Explain the principle of super critical fluid chromatography.
 - c) What are theoretical plates? Explain Van-Deemter equation.

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