Total No. of printed pages = 3

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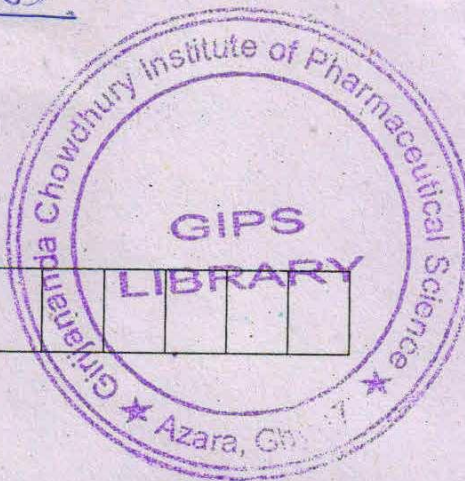
2017

M.Pharm. 1st Semester End-Term Examination

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES

(New Regulation)

Full Marks – 75   Time – Three hours

The figures in the margin indicate full marks for the questions.

1. Answer *all* questions : $(10 \times 2 = 20)$

    (a) What is the main difference between atomic absorption and flame emission spectroscopy?

    (b) How will you differentiate between the following pairs of compounds using IR spectra

        (i) CH_3CH_2CHO

        (ii) $CH_3CH_2CH_2OH$

    (c) What are independent and dependent chromophores? Give examples.

    (d) Calculate the λ_{max}, for 2,3 dimethyl 1,3 buta diene.

    (e) Explain Bragg's equation of X ray methods.

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(f) Explain the splitting pattern in the NMR spectrum of 1,1 di bromo ethane.

(g) Write about the various types of electronic relexation process in NMR.

(h) Explain why CMR spectra are much more difficult to record than PMR.

(i) Explain the nitrogen rule in Mass Spectroscopy.

(j) Write the importance of preparative TLC.

2. Answer any *seven* questions :   (7 × 5 = 35)

(a) Write about the sources of zone broadning in chromatography. Differentiate between frontal and displacement analysis of chromatogram.

(b) With reference to the example of pure and impure ethanol explain the process of nuclear magnetic double resonance.

(c) Explain the basic principle and application of ELISA. Give an account on zone electrophorosis.

(d) Differentiate between dispersive IR and Fourier transform IR. Write about the different types of monochromator used in IR spectrometer.

(e) Write about various types of crystals and applications of X-ray diffraction.

(f) Explain how many NMR signals are expected and the position of signals in the NMR spectra of (i) Styrene (ii) n-Propyl chloride.

(g) Explain the instrumentation of HPLC.

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(h) With suitable diagram explain the phenomenon of flourescence and phosphorescence.

(i) Explain about the various types of ions produced in a Mass spectrometer.

3. Answer any *two* questions : $(2 \times 10 = 20)$

(a) Write about the basic principle of mass spectrometry. Explain various ionisation techniques in mass spectroscopy. With example write about Mclafferty rearrangement.
$(3 + 4 + 3 = 10)$

(b) What is column efficiency? Write the various factors affecting column efficiency. Explain the types of ion exchange techniques in ion exchange chromatography. Write about the various detector used in GC. $(2 + 2 + 2 + 4)$

(c) Write about the various types of burners used in flame photometer. Explain the effects of solvents in flame photometry. Point out the application of UV spectroscopy. $(3 + 3 + 4)$

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