M. Pharm 1st Sem. (ASTU) — 27/11/15

Total No. of printed pages = 5

PY 134101

Roll No. of candidate | | | | | | | | | | |

2015

M. Pharm 1st Semester End-Term Examination

MODERN ANALYTICAL TECHNIQUE

Full Marks –100 Pass Marks – 35 Time – Three hours

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

Answer Section-A and Section-B in two separate answer scripts.

SECTION – A

1. Give brief answers to any *five* of the following questions : 3×5=15

   (i) What are Chromophores and Auxochromes ? Give examples.

   (ii) What are the advantages with FTIR equipments from that of dispersive IR equipments ?

   (iii) Explain why mass spectrometry is not a spectroscopic technique.

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(iv) Enumerate the distinctive features between planar chromatography and column chromatography citing examples of each type.

(v) What is meant by Thermal Analysis ? Explain briefly the principle of Thermogravimetric Analysis (TGA).

(vi) What is ELISA ? Indicate its important applications.

2. Explain the Beer-Lambert's equation giving definition of all the terms appearing in it. 5

Or

Describe the Woodward-Fieser empirical rules for calculation of λ_{max} of compounds. 5

3. Discuss the distinctive features of ^{13}C NMR spectrum from that of ^{1}H NMR spectrum giving schematic diagram. 5

4. Discuss the characteristic salient features of HPTLC technique over that of conventional TLC technique. 5

5. Explain the principle and discuss the applications of LC-MS technique. 5

6. Explain the principle of working of Differential Scanning Calorimetric (DSC) technique mentioning the instrumental components. 5

7. Describe the characteristic features of an IR spectrum giving a schematic diagram. Discuss the important considerations and the general approach for interpretation of IR spectra. 10

SECTION – B

8. Give brief answers to the following questions : 3×5=15

(i) Name and define the various types of fundamental vibrational modes of bonds.

(ii) Enumerate the characteristic properties of tetramethyl silane (TMS) used as a reference standard in NMR spectroscopy.

(iii) Why UV-Vis spectroscopy is known as electronic spectroscopic technique ?

(iv) Define liquid-liquid chromatography (LLC) and indicate the polarity of liquids in 'normal chromatography' and 'reverse phase chromatography.'

(v) Enumerate the applications of Powder X-ray diffraction technique.

9. Explain the principle and discuss the applications of electrophoresis. 5

10. Describe the different techniques of ionization adopted in mass spectrometry. 5

11. Discuss the applications of Differential Thermal Analysis (DTA) in

(i) purity assessment of a compound

(ii) study of compatibility of drugs and excipients in formulation development. 5

12. Write an account on the applications of UV-Vis spectroscopic technique in the qualitative and quantitative analysis of Pharmacopoeial compounds citing examples from the latest edition of the Indian Pharmacopoeia. 10

Or

Describe the components of HPLC equipment. Discuss the applications of HPLC technique in the analysis of Pharmacopoeial compounds citing examples from the latest edition of the Indian Pharmacopoeia. 10

13. Explain the principle of NMR spectroscopic technique. Define and explain the following terms with example : 10

(i) Chemical shift

(ii) Multiplicity of signals

(iii) Coupling constant.