



JAN-1612040701070400 Seat No. _____

M. P. M. (Sem. VII) (CBCS) Examination

November - 2019

Pharmaceutical Analysis - V

Time : 3 Hours]

[Total Marks : 80

- Instructions :**
- (1) Figure to the right indicates marks.
 - (2) Answer the three (03) questions from each section.
 - (3) Question one (01) and question five (05) are compulsory.
 - (4) Draw neat and clean diagrams as required.

SECTION - I

- 1** Answer any seven out of ten : **14**
- (1) Comment on : Fragment ion peak represent molecular weight of the compound in mass spectrometry.
 - (2) Comment on : NMR is important tool for quantitative analysis.
 - (3) Comment on : MALDI is an ionization technique used in the analysis of biomolecules in mass spectrometry.
 - (4) What is importance of vacuum system in mass spectrometer ?
 - (5) What is use of sinapinic acid (SPA) and α -Cyano-4-hydroxycinnamic acid (CHCA) in mass spectrometry ?
 - (6) Why reference compound needed in ^1H NMR ?
 - (7) Explain : Nuclear spin and Boltzmann distribution.
 - (8) Discuss in brief about moving boundary electrophoresis.
 - (9) Give name of different types of matrix used in FAB techniques with its application.
 - (10) Give application of X-ray spectroscopy in pharma field.
- 2** Answer the following questions : **13**
- (1) Enlist different types of ions produced in mass spectrometry. Discuss in detail about parent ion and fragment ion. **7**
 - (2) Classify different ionization techniques in mass spectrometry and describe chemical ionization technique in detail. **6**

- 3 Answer the following questions : 13
- (1) Discuss principle of NMR spectroscopy. 7
 - (2) Discuss the similarities and differences between proton and carbon 13 NMR. 6

- 4 Answer the following questions : 13
- (1) Write a detail note on Differential Scanning Calorimetry. 7
 - (2) Discuss instrumentation and applications of Thermo Gravimetric Analysis. 6

SECTION - II

- 5 Answer any two out of three questions : 14
- (1) Draw block diagram of mass spectrometer. Enlist different analyzer and write a note on any one analyzer. 7
 - (2) Write about retro Diels-alder reaction and McLafferty rearrangement. 7
 - (3) Explain relationship between shielding and deshielding in NMR. 7

- 6 Answer the following questions : 13
- (1) What is constructive interference ? Derive Bragg's equation. 7
 - (2) Discuss principle of mass spectrometry. 6

- 7 Answer the following questions : 13
- (1) What is isoelectric focusing ? Discuss basic principle and application of it. 7
 - (2) Discuss general rules for fragmentation in mass spectrometry. 6

- 8 Answer the following questions : 13
- (1) What is chemical shift ? Discuss factor affecting chemical shift. 7
 - (2) Compare and contrast heat flux and power compensated DSC in detail and discuss its practical applications. 6