



**HEC-014-003707**

Seat No. \_\_\_\_\_

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

**November / December – 2017**

**Pharmaceutical Analysis - V**

*(Theory)*

**Faculty Code : 014**

**Subject Code : 003707**

Time : 3 Hours]

[Total Marks : 80

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

### **SECTION - I**

- 1 Answer the following questions : (any seven) 14
- (a) What is molecular spectroscopy?
  - (b) What is the difference between absorption and emission spectroscopy ?
  - (c) Explain the term :
    - (1) Chemical shift
    - (2) Coupling constant.
  - (d) What is importance of ionization in mass spectroscopy?
  - (e) Give Bragg's equation.
  - (f) Give major application of TMA.
  - (g) What is Isoelectric focusing point?
  - (h) Choose appropriate option: Polymorphic characterization of a drug is generally employed by TGA / XRD.

- (i) Give the full form :
- (1) PMR
  - (2) PXRD
- (j) What is glass transition point in thermal method?
- 2** Answer the following questions :
- (a) Discuss in detail principle and applications of mass spectroscopy. **7**
- (b) What is molecular ion peak and fragment ion peak? Write a brief note on Mc Lafferty rearrangement. **6**
- 3** Answer the following questions :
- (a) Discuss the similarities and differences between proton and carbon 13 NMR. **7**
- (b) Describe various thermal methods. Write a detailed note on DTA with applications. **6**
- 4** Answer the following questions :
- (a) What is electrophoresis? Discuss Isoelectric focusing techniques in detail. **7**
- (b) Discuss the principle and pharmaceutical applications of XRD. **6**

## SECTION - II

- 5** Answer the following questions : (any **two**) **14**
- (a) How thermal methods play a vital role in F and D? Discuss. Draw labeled diagram for DSC and TGA.
- (b) Explain the basic principle and applications of zone electrophoresis and Gel, electrophoresis.
- (c) Discuss the factors affecting the chemical shift.

- 6** Answer the following questions :
- (a) Give principle of NMR spectroscopy. How NMR spectroscopy helps in the structure elucidation of compounds. **7**
  - (b) Write a short note on LC-MS/MS. **6**
- 7** Answer the following questions :
- (a) Compare and contrast heat flux and power compensated DSC in detail and discuss its practical applications. **7**
  - (b) Describe chemical ionization technique with its advantages and disadvantages. **6**
- 8** Answer the following questions :
- (a) (1) Discuss the different terms : **4+3=7**
    - (a) spin spin coupling
    - (b) Base peak
    - (c) Time domain spectrum
    - (d) Shielding and Desheilding.
  - (2) Write a brief note on: Tetramethylsilane
  - (b) Discuss principle and applications of TGA. **6**
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