**M.Sc. (Semester–I) (C.B.C.S. Scheme) Examination**

**MICROBIOLOGY**

**Paper—I Microbial Techniques**

Time : 3 hours] [Maximum Marks : 80

**Note :—** All questions are compulsory and carry equal marks.

1. How a specific protein conformation is maintained by pH dependent ionization of its constituent amino acids ? 16

**OR**

(a) Examplify metabolic reactions involving protons. 8

(b) How does pH affect non-protein protoplasmic components. 8

2. (a) Focus on instrumentation of Fluorescence spectroscopy. 8

(b) Explain principle of IR spectroscopy. Add notes on its application. 8

**OR**

(c) Explain working of UV-visible spectroscopy. 8

(d) Take an insight to the applications of NMR and ESR. 8

3. Explain half life period of radio-isotopes. Comment on suitability and applications of tracer techniques. 16

**OR**

Mention various types of radio-active disintegrations. Elaborate in detail solid scintillation techniques. 16

4. Explain in detail gel filtration chromatography. 16

**OR**

(a) Highlight various applications of high performance liquid chromatography. 8

(b) Add notes on affinity chromatography. 8

5. Elaborate in detail assembly for horizontal paper electrophoresis. Comment on its suitability over other forms of electrophoresis. 16

**OR**

Explain in detail slab gel electrophoresis with relevance to working and applications. 16