This question paper contains **2** printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **5742**

Unique Paper Code : **2533012004**

Name of the Paper : **Biotechniques and Instrumentation**

Name of the Course : **Microbiology**

Semester : **IV, Part-II**

Duration : **2 Hours** Maximum Marks : **60**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt any *five* questions.

All questions carry equal marks.

1. Define the following (any *six*) : 6×2=12

   (*a*) Circular dichroism

   (*b*) Retention time

   (*c*) Centrifugal force

   (*d*) Resonance

   (*e*) Eluent

   (*f*) Semimentation coefficient

   (*g*) Chromatogram

P.T.O.

2. Differentiate between the following (any *two*) : 2×6=12

   (*a*) Rate zonal centrifugation and Isopycnic centrifugation

   (*b*) SDS PAGE and Native PAGE

   (*c*) Ion exchange and Affinity chromatography

3. Write the principle and application of the following techniques (any *two*) : 2×6=12

   (*a*) Differential centrifugation

   (*b*) Mass spectrometry

   (*c*) HPLC.

4. Write short notes on the following (any *two*) : 2×6=12

   (*a*) Phase Contrast microscopy

   (*b*) Gel filtration chromatography

   (*c*) Agarose gel electrophoresis.

5. (*a*) How does the scanning electron microscope operate and in what way does its function differ from that of the TEM ? 4+4=8

   (*b*) Explain the principle of UV-Visual Spectrophotometry. Give any *one* application of the technique. 2+2=4

6. (*a*) Explain how analytical ultracentrifugation is used for determination of the relative molecular mass of solutes in their native state. List the differences between analytical and preparative centrifugration. 4+3=7

   (*b*) What are fluorochromes ? Discuss their importance in Fluorescence microscopy. 2+3=5