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24-MB-23

**M.Sc. II SEMESTER [MAIN/ATKT] EXAMINATION  
JUNE - JULY 2024**

**MICROBIOLOGY**

Paper - III

**[Instrumentation]**

*[Max. Marks : 75]*

*[Time : 3:00 Hrs.]*

*[Min. Marks : 26]*

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**Note :** Candidate should write his/her Roll Number at the prescribed space on the question paper.  
Student should not write anything on question paper.  
Attempt five questions. Each question carries an internal choice.  
Each question carries **15 marks**.

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**Q. 1** Describe principle and applications of phase contrast microscope. (15 Marks)

**OR**

Explain principle and working of scanning electron microscope.

**Q. 2** Explain in detail (**any one**) - (15 Marks)

i) Density gradient centrifugation.

ii) Zonal separation.

**Q. 3** Describe principle, method and application of Thin Layer Chromatography. (15 Marks)

**OR**

Write about Gel exclusion chromatography in detail.

**Q. 4** Describe about vertical gel electrophoresis and compare with horizontal electrophoresis. (15 Marks)

**OR**

Write working and applications of visible spectroscopy.

**Q. 5** Write note on **any one** - (15 Marks)

i) Scintillation counter.

ii) Auto radiographic immuno assay technique.