

BIM –E801
DSE-10 BASIC TOOLS AND TECHNIQUES

MM : 100
Time : 3 hrs
L Credit
4 4

Sessional : 30
ESE : 70
Pass Marks : 40

Total Hours: 60

Learning objectives:

- To get the knowledge of sophisticated and common instruments used in the microbiology laboratory
- To know aseptic techniques to keep the instrument and media sterile.

Learning outcomes:

At the end of course students will be able to

- Maintain the sterility of glassware, utensils and medium by different physical and chemical procedure.
- Operate the different sophisticated instruments available in the laboratory.

UNIT-I

Industrial microbiology- Definition and scope, history of industrial microbiology, industrial microbiology in present scenario, development of industrial microbiology in India.

(06 Lectures)

UNIT-II

Basic knowledge of different instruments and their applications in microbiology such as microscope (Compound, SEM & TEM), micrometry, spectrophotometer, hot air oven, autoclave, laminar air flow and BOD incubator.

(10 Lectures)

UNIT-III

Isolation of industrially important microorganisms, Primary screening (crowded plate technique, auxanography technique, enrichment culture technique, differential culture technique), Importance of screening.

(14 Lectures)

UNIT-IV

Aseptic technique: contamination, sterilization (heating, steam sterilization, tyndallization, dry heat, chemicals, radiation sterilization, filter sterilization), sterilization of air.

(14 Lectures)

UNIT-V

Chromatography techniques: paper chromatography, thin layer chromatography, adsorption column chromatography, gas liquid chromatography, gel permeation, ion exchange and affinity chromatography, gel electrophoresis.

(16 Lectures)

Suggested Reading

1. Dubey R.C. and Maheshwari, D.K. *A Textbook of Microbiology*. 3rd ed., S. Chand & Co, Ram Nagar, New Delhi, p. 1034. ISBN 81-219-2620-3
2. Prescott's *Microbiology*, 10th Edition, McGraw Hill Publication
3. Dubey, R.C. and Maheshwari, D.K. *Practical Microbiology*. 2nd ed., S. Chand & Co. P Ltd, New Delhi, p. 413. ISBN: 81-219-2559-2
4. Dubey, R.C. *Advanced Biotechnology*. S. Chand & Co. P Ltd, New Delhi, p. 1161; ISBN: 81:219-4290-X.

