

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.Sc. Biotechnology

Subject : Microbiology II (Practical)

IBT : 306 (i) Techniques in basic microbiology

- Unit - 1:** Principles, working and uses of following sterilizers
- (i) Hot air oven
 - (ii) Steam sterilizer
 - (iii) Insipissator
 - (iv) Bacteriological filters
- Unit - 2:** Preparation and sterilization of glasswares and media, disposals of media and cultures.
- 2.2 Study of permanent slides of bacteria and fungi
- (i) Gram Positive bacteria : Staphylococci group, Streptococci group, Bacillus species, spiral forms.
 - (ii) Gram Negative bacteria : *E.coli*, Pseudomonas species
 - (iii) Common fungi : Mucor, Rhizopus, Aspergillus, Penicillium, Alternaria, Curvularia and Neurospora.
 - (iv) Yeast
- Unit - 3:** Microscopic observation of various morphological forms of bacteria by
- (i) Simple staining
 - (ii) Negative staining
 - (iii) Differential Gram staining
- Unit - 4:** Microscopic observation of various cellular organelles of bacteria by special staining techniques.
- (i) Spirochetes staining - Fontana's staining
 - (ii) Spore staining - Schiffers method
 - (iii) Cell wall staining - Webb's method
 - (iv) Capsule staining - Hiss's method
- Unit - 5:** Preparation of liquid and solid culture media
- (i) N-broth and N-agar
 - (ii) MacConkey's agar, EMB agar, WB agar, SS agar, TSI agar slants (selective and differential)
 - (iii) Blood agar (enriched medium)
- Unit - 6.1** Isolation and cultivation of bacteria by streak plate and pour plate method.
- 6.2** Enumeration of bacteria by viable count techniques (serial dilution and plating)
- 6.3** Enumeration of bacteria by microscopic method (Total count of yeast by hemacytometer)

REFERENCE BOOKS :

1. Basic Experimental Microbiology by Ronald M. Atlas, Kenneth W. Dobra, Alfred E. Brown.
2. Basic microbiology : Brock Biology of Microorganisms, 8th edition. Michael T. Madigan, John T. Martinko, and Jack Parker : Prentice - Hall.
3. General Microbiology by Robert Boyd (1984).
4. Microbiology by Michael J. Pelzar, E.C.S. Chan, N.R. Kreig (1993)