B.Sc. II Year

Semester – IV

BIM -S402
SEC-2 MICROBIAL DIAGNOSIS IN HEALTH CLINICS

MM : 100
Time : 3 hrs
L Credit
4 4
Total Hours: 60

Sessional : 30
ESE : 70
Pass Marks : 40

Learning objectives:

- How to collect and process clinical samples.
- To know different tests used to diagnose the clinical samples
- To understand how different fermentation product are produced, purified and recovered.

Learning outcomes:

At the end of course student will be able to

- Collect and process clinical samples for diagnosis.
- Perform serological test to identify microorganism from clinical samples.
- Perform antibiotic sensitivity testing of clinical isolates.

UNIT–I

Major human diseases caused by bacteria, viruses, fungi and protozoans; Importance of diagnosis of human diseases;bacterial, viral, fungal and protozoan;Criteria used in diagnosis of human clinical samples for diagnosis.

(12 Lectures)

UNIT -II

Collection of Clinical Samples; andprecautions required. Method of transport of clinical samples to laboratory and storage.

(06 Lectures)

UNIT –III

Direct Microscopic Examination and Culture; Examination of sample by staining, Preparation and use of culture media, Distinct colony properties of various bacterial pathogens.

(12 Lectures)

UNIT –IV

Serological and Molecular Methods;Serological Methods - Agglutination, Precipitation, ELISA and its type , immunofluorescence, Nucleic acid based methods - PCR, Nucleic acid probes.

(14 Lectures)

UNIT –V

Testing for Antibiotic Sensitivity in Bacteria; Importance, Determination of resistance/sensitivity of bacteria using disc diffusion method, Determination of minimal inhibitory concentration (MIC) and MBCof an antibiotic.

(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. Dubey, R.C. *Advanced Biotechnology*. S. Chand & Co. P Ltd, New Delhi, p. 1161; ISBN: 81:219-4290-X.
3. CKJ Paniker. Test Book of Microbiology, Orient Longman

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DSC 4 SEC 2 SEMESTER IV BIM-C451(LAB COURSE)

1. Isolation of antibiotic producing microorganisms from soil.
2. Laboratory production of alcohol from Grape Juice/Sugarcane Juice.
3. Demonstration of vinegar production in laboratory.
4. Bioassay of vitamin B_{12}.
5. Fat hydrolysis (lipase activity) by a given bacterial culture.
6. Demonstration of fermentation by yeast.
7. Isolation of *Azotobacter* from garden soil.
8. Isolation of VAM (Vascular ArbuscularMycorrihizal spore from soil.
9. Isolation of phosphate solubilising microorganisms from soil.
10. Antibiotic sensitivity of UTI causing bacteria.
11. Slide agglutination reaction of unknown bacterial culture.
12. Demonstration of antigen-antibody reaction.

Suggested Reading

1. 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

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