

Department of MICROBIOLOGY

- a) Enclose copy of curriculum **ENCLOSED**
 b) List of the practical experiments in the curriculum actually done by the students and practical demonstrated.

Sl. No.	Name of the experiments - B.Sc. I Microbiology Practicals
1	Microbiological Methods :
	(a) Preparation of culture media solid/Liquid, (b) Enumeration of bacterial number by serial dilution and Plating, (c) Study of Colony counter, (d) Study of Incubator, (e) Study of Laminar Air Flow, (f) Study of Auto Clave, (g) Study of Hot Air Oven, (h) To study the Washing Techniques and Sterilization.
2	Biochemical Test/ Immunology
a	Biochemical Test for Carbohydrates, Proteins, Lipids.
b	Diagnosis of Typhoid fever from Vidal Test
c	To determine The Blood Groups of A, B, O and Rh factor.
d	To determine Blood Sugar in human body.
3	Staining Method/Fungal Diseases
a	Study of method for staining Bacteria, study of Fungal diseases- Red Rot of Sugarcane, Tikka disease of Groundnut, Early and Late blight of Potato, Wheat smut disease
4	Spotting
a	Rhizopus, Aspergillus, Penicillium, Nostoc, Microcystis oscillatoria, Agaricus, Yeast, Amoeba, Paramoecium, Euglena, Plasmodium, Mucor
b	Glass wares (For spotting) : Slides, Cover slips, Test Tubes, Conical Flasks, Beaker, Measuring Cylinder, Petri dishes, Glass rods, Inoculation loops, Glass spreaders
Sl. No.	Name of the experiments - B.Sc. II Microbiology Practicals
1	To Study experiments related to spectrophotometer, Colorimetry and pH meter
2	Separation of Amino acids by paper Chromatography.
3	Demonstration of Agarose Gel electrophoresis.
4	Measurement of fungal growth by mycellial dry weight.
5	Determination of Thermal Death Point (TDP) of Micro Organisms.
6	Determination of Thermal Death Time (TDT)
7	Study of bacterial Growth by Turbidity Methods.
8	Measurement of Growth by dry weight and wet weight of Penicillium
9	Demonstration of Catalase activity by microorganisms.
10	Assaying of microbial Enzymes (Cellulase)
11	Assaying of microbial Enzymes (Amylase)

12	Determination of Antibiotic Sensitivity Test by Plating Method.
13	Spotting .-
	a. Centrifuge, b. Microscope, c. Bacteriophage, d. Phase Contrast-Microscope, e. Plasmids, f. Turbidometer, g. pH meter, i. Protein Separation, j. HPLC, k. Antibiotic disc
Sl. No.	Name of the experiments - B.Sc. III Microbiology Practicals
1	Isolation of Microorganisms from Air
2	Isolation of Microorganisms From the pond Water Sample by serial dilution Agar Plate Methods.
3	Isolation of Microorganisms from soil sample by serial dilution Agar plate
4	Isolation of keratinophilic fungi by baiting technique
5	Isolation of microorganisms from Rhizosphere
6	Isolation of Rhizobia from root nodules
7	Microscopic observation of root colorization by VAM fungi
8	Demonstration of Bacterial Antagonism.
9	Identification of symbiotic bacteroids of Rhizobia.
10	Biuret Test for Estimation of Protein.
11	Isolation of microorganisms from fruits, leaf vegetables.
12	Isolation of microorganisms by leaf impression methods.
13	Spotting
	a. Centrifuge, b. VAM Fungi, c. Bacteriophage, d. Pesticides, e. DNA f. Replication, g. Incubator, h. M-13 Phage, i. Diphtheria, j. Mushrooms, k. Pure l. Culture, m. Serial Dilution

c) When was the last exercise for curriculum revision undertaken?

As per the amendments made by affiliating University's Board of Studies.

d) Specialization of the course - **NIL**

e) No. of SoP's created Kits for practicals – **NIL**

PRACTICAL

M. M. 50

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- Basic information about autoclave, hot air oven, laminar air flow and other laboratory instruments
Preparation of solid/liquid culture media.
Isolation of single colonies on solid media.
Enumeration of bacterial numbers by serial dilution and plating.
Simple and differential staining.
Measurement of microorganism (micrometry) and camera Lucida drawing of isolated organism.
Determination of bacterial growth by optical density measurement.
General and specific qualitative test for carbohydrates
General and specific qualitative test for amino acids
General and specific qualitative test for lipids
Estimation of protein
Estimation of blood glucose
Assay of the activity of amylases
Assay of the activity of Phosphates
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Scheme of Practical Examination

Time - 4 hours	M.M. 50
1. Exercise on Microbiological methods	10
2. Exercise on Biochemical tests	10
3. Exercise on staining method	05
4. Spotting (1-5)	10
5. Viva-Voce	05
6. Sessional	10
	Total 50

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BSc II Micro Pr

PRACTICAL

M.M. - 50

Determination of growth phase of *E.coli* by measurement of OD and colony forming units.

Relationship between OD and Cfu measurements.

Measurement of growth by dry weight and wet weight - *Penicillium* spp.

Determination of antibiotic resistance by plating method.

Assaying of microbial enzymes; Catalase, Proteases, Peroxidases, Cellulase, Cellobioases, Amylase, Diastase.

Exercise on colourimeter/spectrophotometer/pH meter.

Exercise on paper, thin layer, column chromatography.

Exercise on paper and gel electrophoresis.

Exercise on tissue culture techniques.

Absorbance curve for dyes.

Testing of Beer's law

SCHEME OF PRACTICAL

Time - 4 hours

M.M.: 50

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| 1. Exercise on spectrophotometry / colorimetry / pH meter | 08 |
| 2. Exercise on Chromatography / Electrophoresis | 07 |
| 3. Measurement of microbial growth / microbial Enzymes / antibiotic sensitivity test | 10 |
| 4. Spotting (1-5) | 10 |
| 3. Viva-Voce | 05 |
| 4. Sessional | 10 |

Total 50

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B.Sc.3(microbiology)

MICRO-BIOLOGY SCHEME OF PRACTICAL

Duration : 4 Hrs.

Max Marks : 50

1. Characterization and Identification of micro-organism from any given source	15
2. Biochemical identification of some biodegraded organic molecules	10
3. Spots (1 to 5)	10
4. Viva voce	05
5. Sessional	10
Total -	50

(PRACTICAL SYLLABUS)

MOLECULAR BIOLOGY AND GENETIC ENGINEERING

Characterization of genetic markers of known bacterial strains.

Phage growth curve.

Isolation of DNA from bacteria.

Isolation of plasmid DNA and restriction analysis.

Simple cloning using plasmid DNA as vector and transformation of competent E. coli cells.

Electrophoretic analysis of proteins.

Isolation of Bacteria from air and soil (crop fields)

Isolation of Fungi from air and soil

Study of rhizospheric & Phyllospheric microbes of some economically important plants

Biodegradation study of some organic molecules

microbial assessment of potable water

Analysis of sewage waste

Analysis of Garbages (soild wastes)

REFERENCE :

Philipp Gorhardt, manual of Methods for general Bacteriology. ASM. 536pp.

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21/12/12

B Sc III Micro Py.

PRACTICAL FOR B.SC. PART III (MICROBIOLOGY)

- Characterization of genetic markers of known bacterial strain
- Isolation of DNA from bacteria
- Isolation of plasmid DNA
- Simple cloning using plasmid DNA as vector and transformation of competent E. coli
- Electrophoresis of protein / DNA.
- Isolation of microorganisms from air, soil and water.
- Isolation of pathogenic microorganisms.
- Study of rhizospheric and phyllospheric microbes from economically important plants.
- Biodegradation of some organic molecules.
- Microbial assessment of potable water.
- Analysis of sewage waste, solid waste (garbage).
- Isolation of aquatic fungi (zoosporic) by baiting technique.
- Isolation of keratinophilic fungi soil by baiting technique
- Demonstration of bacterial antagonism.
- Microscopic observation of root colonization by VAM fungi.

SCHEME FOR PRACTICAL EXAMINATION

Time : 4 hours

M.M. : 50

1. Characterization and identification of microorganism from given source/ Isolation of plasmid DNA/Genomic DNA	15
2. Biochemical identification of some biodegraded organic molecules/ Microbial assessment of potable water/BOD/COD	10
3. Spotting (1-5)	10
4. Viva-Voce	05
5. Sessional	10
Total	450

DAJ
24/7/12