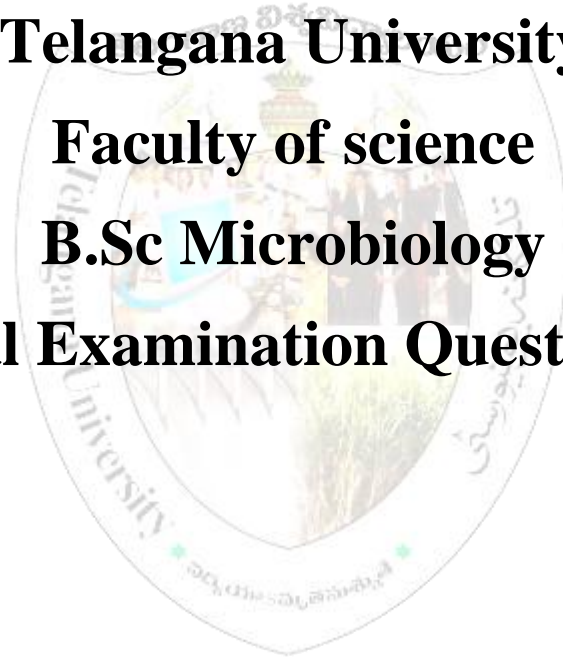


Telangana University
Faculty of science
B.Sc Microbiology
Practical Examination Question Bank



Semester: I

General Microbiology

Time: 3 hrs

Max Marks: 50

I. Major Experiment (20M)

1. Calibrate the microscope for its measurement in 10X (Low power) and 45X (high power). Report the calibrated values in each magnification.
2. Prepare a slide of microscopic object (Bacteria and Fungal spores) and measure the size of object with the help of calibrated ocular micrometer in low power and high power. Report the result and demonstrate your observation.
3. Identify the Gram's nature of the given bacterial culture and report its morphology and arrangement.
4. Perform the endospore staining for the given bacterial culture. Observe the microscopic characteristics and report the results.
5. Isolate the bacteriophages from the given sewage sample and report the result.

II. Minor experiment(10M)

1. Demonstrate the preparation of agar plates/slants.
2. Isolate the bacteria by streak/spread/pour plate technique.
3. Demonstrate the 10-fold serial dilution for the given soil sample.
4. Demonstrate the motility for the given bacterial culture by hanging drop method.
5. Find out the viable count for the given bacterial culture plate.

III. Spotters: (5X2=10M)

1. Compound Microscope
2. Nutrient Agar Medium
3. Nutrient Broth Medium
4. Autoclave
5. Hot air oven
6. Filtration apparatus
7. Laminar Air Flow
8. Streak plate
9. Spread plate
10. Agar-agar
11. Blood agar
12. MacConkey agar
13. Saccharomyces
14. Rhizopus
15. Aspergillus
16. Penicillium
17. Fusarium

IV. Record and Viva-voce (10M)

Semester: II
Microbial diversity

Time: 3 hrs

Max Marks: 50

I. Major Experiment (20M)

1. Isolate the halophilic microorganisms from the given sample and report the results.
2. Isolate and identify the cyanobacteria from the given sample and report the results.
3. Isolate the methanogenic microorganisms from the given sample and report the results.
4. Perform the fungal mounting for the given fungal culture and report the results.

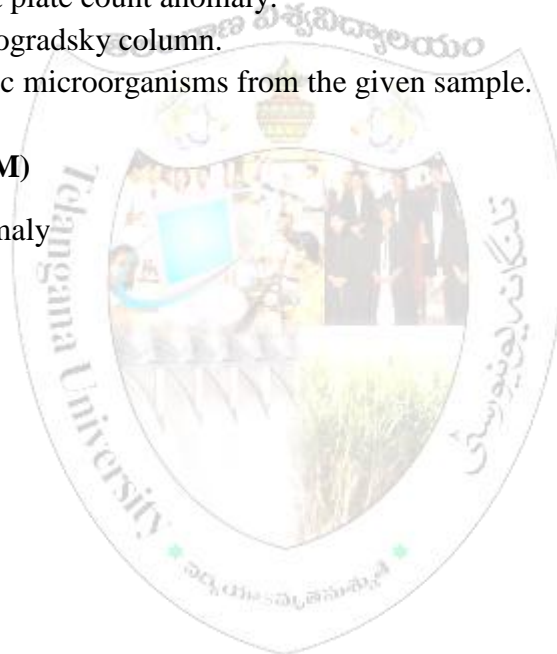
II. Minor experiment (10M)

1. Demonstrate the great plate count anomaly.
2. Demonstrate the Winogradsky column.
3. Isolate the antagonistic microorganisms from the given sample.

III. Spotters: (5X2=10M)

1. Great plate count anomaly
2. Cyanobacteria
3. Winogradsky column
4. Aspergillus
5. Penicillium
6. Rhizopus
7. Mucor
8. Anabaena
9. Nostoc
10. Oscillatoria
11. Spirulina
12. Plasmodium
13. Entamoeba histolytica
14. Giardia
15. Chlamydomonas
16. Chlorella

IV. Record and Viva-voce (10M)



Semester: III

Food and Environmental Microbiology

Time: 3 hrs

Max Marks: 50

I. Major Experiment (20M)

1. Determine the B.O.D of the given industrial/sewage sample and report the results.
2. A water sample inoculated for presumptive test and tubes with growth are provided. Find out the coliform count by MPN method and report the result.
3. Identify the air microflora from the given plate by cultural and staining properties.
4. Isolate and identify the probiotic bacteria/yeast.

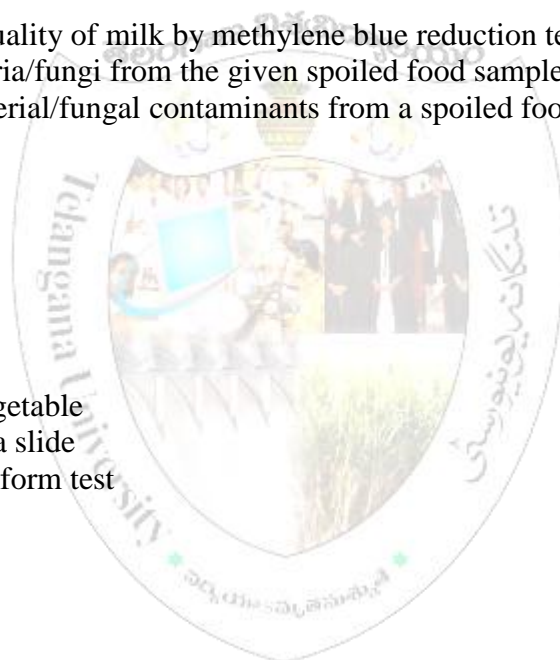
II. Minor experiment (10M)

1. Determine the quality of milk by methylene blue reduction test and report the results.
2. Isolate the bacteria/fungi from the given spoiled food sample.
3. Identify the bacterial/fungal contaminants from a spoiled food sample inoculated medium.

III. Spotters (5X2=10M)

1. VAM fungi
2. Phyllosphere
3. MPN tubes
4. Spoiled bread
5. Spoiled fruit/Vegetable
6. Curdling bacteria slide
7. Presumptive coliform test
8. Carbon cycle
9. Nitrogen cycle
10. E.coli
11. Cheese
12. Yoghurt

IV. Record and Viva-voce (10M)



Semester: IV
Immunology and Medical Microbiology

Time: 3 hrs

Max Marks: 50

I. Major Experiment (20M)

1. Determine the total WBC/RBC count of the given sample and report the result.
2. Perform the Differential count of blood leucocytes of the given sample and report the result.
3. Perform the quantitative WIDA/VDRL test of the given blood (serum) sample of the patient and report the result.
4. Perform the IMVIC tests for the given bacterial culture. Report the results.

II. Minor experiment (10M)

1. Determine the blood group and Rh type of the given blood sample and report the result.
2. Perform the qualitative test for VDRL of the given sample.
3. A blood sample is provided to you perform the separation of serum and plasma from it and report the results.
4. Perform the catalase test/oxidase test for the given bacterial culture and report the results.
5. Comment upon the given antibiotic sensitivity test results.
6. Comment upon the results of Ouchterlony double diffusion test

III. Spotters(Marks 5x2= 10M)

1. Haemocytometer
2. Blood Grouping Kit
3. Indole test
4. Methyl red test
5. Simmons citrate test
6. Vogesproskauer test
7. Ouchterlony Double Diffusion Test
8. Spleen
9. Lymph node
10. Thymus
11. Neutrophile
12. Basophile
13. B-lymphocyte
14. Ig-A
15. Ig-M
16. Ig-E
17. ELISA
18. RIA
19. Hybridoma technology

IV. Record and Viva-voce (10M)

Semester: V

Molecular Biology and Microbial Genetics

Time: 3 hrs

Max Marks: 50

I. Major Experiment (20M)

1. Extract the total amount of genomic DNA from the given bacterial culture.
2. Extract the plasmid DNA from the given bacterial strain.
3. Separate the given genomic DNA/ plasmid DNA by agarose gel electrophoresis.

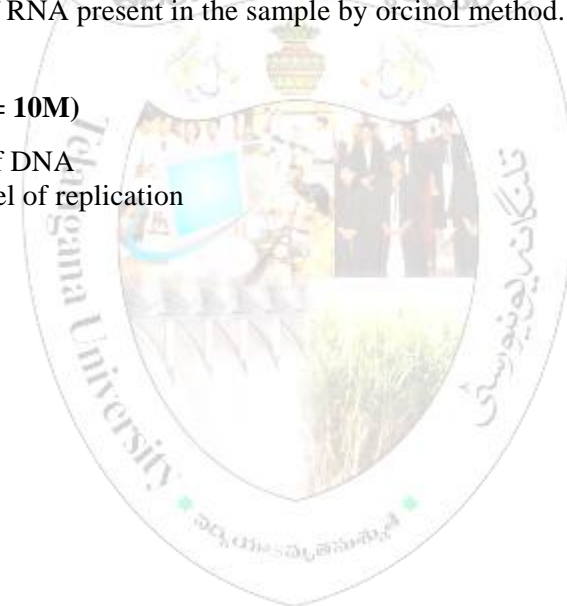
II. Minor experiment (10M)

1. Determine the total amount of protein present in the given sample by biuret method.
2. Estimate the amount of DNA present in the sample by diphenyl method.
3. Estimate the amount of RNA present in the sample by orcinol method.

III. Spotters (Marks 5x2= 10M)

1. Watson-Crick model of DNA
2. Semiconservative model of replication
3. Frameshift mutations
4. Transformation
5. Conjugation
6. Transformation
7. Transduction
8. Structure of t-RNA
9. Bacterial ribosomes
10. Lac operon
11. p^{BR} 322 vector
12. p^{UC} vector
13. Cosmid vector
14. Shuttle vector
15. Klenow fragment
16. T₄ DNA ligase
16. c-DNA synthesis
17. Recombinant insulin production
18. Transgenic tomato-Flavr savor
19. Bt-cotton
20. Recombinant Hepatitis-B vaccine production

IV. Record and Viva-voce (10M)



Semester: V
Microbial Omics

Time: 3 hrs

Max Marks: 50

I. Major Experiment (20M)

1. Isolate the total amount of protein from the given E.coli culture.
2. Isolate the total amount of genomic DNA from the given E.coli culture.
3. Isolate the plasmid DNA from the given E.coli culture.
4. Separate the genomic/plasmid DNA by gel electrophoresis.
5. Perform the sequence analysis for the given nucleotide/ amino acid sequence by BLAST.

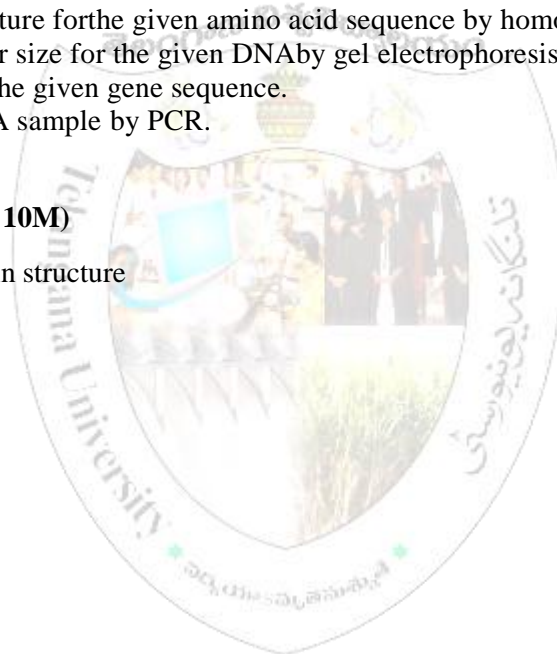
II. Minor experiment (10M)

1. Predict the protein structure for the given amino acid sequence by homology modelling.
2. Determine the molecular size for the given DNA by gel electrophoresis.
3. Design the primers for the given gene sequence.
4. Amplify the given DNA sample by PCR.

III. Spotters (Marks 5x2= 10M)

1. Different levels of protein structure
2. Protein folding
3. Protein microarray
4. X-ray crystallography
5. DNA microarray
6. RNA Interference
7. NCBI
8. EMBL
9. DDBJ
10. UNIPROT
11. PDB
12. BLAST
13. FASTA
14. Pairwise alignment
15. Multiple sequence alignment
16. Phylogenetic tree construction

IV. Record and Viva-voce (10M)



Semester: VI
Industrial Microbiology

Time: 3 hrs

Max Marks: 50

I. Major Experiment (20M)

1. Perform the screening for amylase producing bacteria.
2. Perform the screening for citric acid producing fungi.
3. Estimate the amount of alcohol produced in fermented media by dichromate method.
4. Demonstrate the production of citric acid by submerged fermentation.

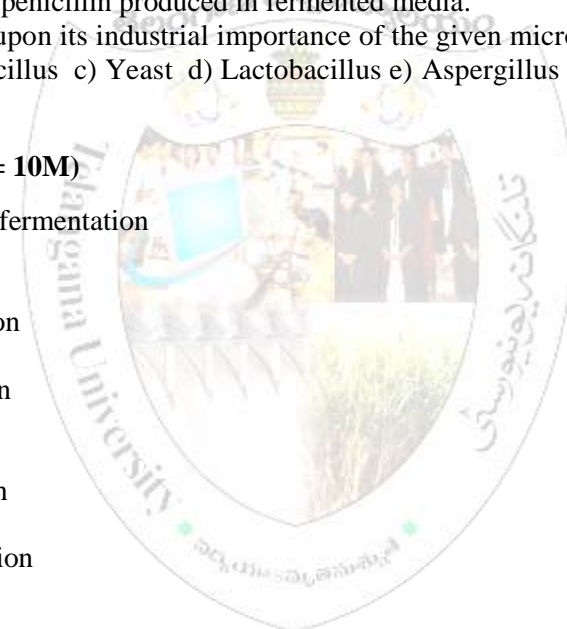
II. Minor experiment (10M)

1. Estimate the amount of citric acid produced in fermented media by titrimetry.
2. Estimate the amount of penicillin produced in fermented media.
3. Identify and comment upon its industrial importance of the given microbial slide.
a) Bacillus b) Lactobacillus c) Yeast d) Lactobacillus e) Aspergillus

III. Spotters(Marks 5x2= 10M)

1. Entrapment method of fermentation
2. Fermentor
3. Batch fermentation
4. Continuous fermentation
5. Surface fermentation
6. Submerged fermentation
7. Dual fermentation
8. Multiple fermentation
9. Solid state fermentation
10. Alcohol fermentation
11. Lactic acid fermentation
12. Beer production
13. Wine production
14. Biogas production
15. Penicillin production
16. Glutamic acid production

IV. Record and Viva-voce (10M)



Semester: VI

Pharmaceutical Microbiology

Time: 3 hrs

Max Marks: 50

I. Major Experiment (20M)

1. Determine the phenol coefficient for the given disinfectant.
2. Determine the antibacterial spectrum of the given antibiotic.
3. Find out the MIC of the given antibacterial compound.

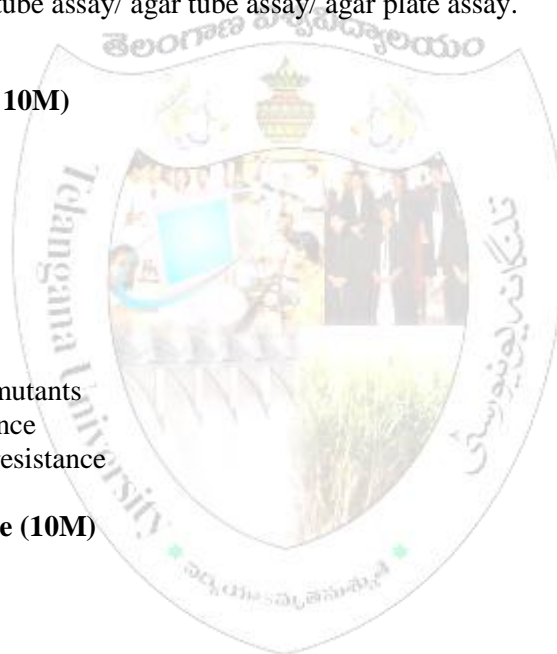
II. Minor experiment (10M)

1. Determine the sensitivity/ resistance of the given antibiotic.
2. Demonstrate the liquid tube assay/ agar tube assay/ agar plate assay.

III. Spotters(Marks 5x2= 10M)

1. Sulphonamides
2. Nalidixic acid
3. Nitrofurans
4. Penicillin
5. Polymyxins
6. Streptomycin
7. Nystatin
8. Isolation of nutritional mutants
9. Genetics of drug resistance
10. Biochemistry of drug resistance

IV. Record and Viva-voce (10M)



Semester: VI
Applied Microbiology

Time: 3 hrs

Max Marks: 50

I. Major Experiment (20M)

1. Isolate and enumerate the total microflora from the rhizosphere and report the results.
2. Isolate the Rhizobium bacteria from the given leguminous root nodules.
3. Perform the staining of the given mycorrhizal fungi and report the results.

II. Minor experiment (10M)

1. Determine the Gram's nature of the given bacterial culture.
2. Perform the Ziehl-Neelson staining for the given bacterial culture and report the results.
3. Prepare the blood smear and identify the malarial parasite from the given blood sample.

III. Spotters (Marks 5x2= 10M)

1. Nitrogen fixation
2. Phosphate production
3. Azolla
4. Rhizobium
5. Mycorrhizae
6. Trichoderma
7. Pseudomonas
8. Terpenes
9. Geosmins
10. Vanillin
11. Coumarin
12. Malarial parasite

IV. Record and Viva-voce (10M)

