SRI VENKATESWARA UNIVERSITY :: TIRUPATI

FIRST YEAR B.Sc. MICROBIOLOGY
FIRST SEMESTER

Revised Syllabus Under CBCS W.E.F. 2020-21

STRUCTURE

YEAR	SEMESTER	PAPER	TITLE	MARKS	CREDITS
I	I	MBT - I	INTRODUCTION TO MICROBIOLOGY AND MICROBIAL DIVERSITY	100	
		MBP – I	INTRODUCTION TO MICROBIOLOGY AND MICROBIAL DIVERSITY	50	
	II	MBT – II	MICROBIAL PHYSIOLOGY AND BIOCHEMISTRY	100	
		MBP – II	MICROBIAL PHYSIOLOGY AND BIOCHEMISTRY	50	

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MBT- I: INTRODUCTION TO MICROBIOLOGY AND MICROBIAL DIVERSITY

TOTAL HOURS:48 **CREDITS: 4**

UNIT-I: **No. of hours: 13**

History and mile stones in microbiology. Contributions of Anton von Leeuwenhoek, Edward Jenner, Louis Pasteur, Robert Koch, Ivanowsky. Importance and applications of microbiology. Binomial Nomenclature ,Baltimore classification,Whittaker's five kingdom and Carl Woese's three kingdom classification ,outlines of Bergey's Manual of Systematic Bacteriology, General characteristics of Bacteria, Archaea, Mycoplasmas, Cyanobacteria, Fungi, Algae, Protozoa and viruses with an emphasis on distribution and occurrence, morphology, mode of reproduction and economic importance and outline classification

UNIT-II: **No. of hours: 8**

Methods of sterilization: Physical methods – Dry heat, moist heat, radiation methods, filtration methods, Chemical methods and their application.

Microbial cultures: Concept of pure culture, Methods of pure culture isolation, Enrichment culturing techniques, single cell isolation, and pure culture development.

Preservation of microbial cultures: subculturing, overlaying cultures with mineral oils, lyophilization, and cultures storage at low temperatures.

UNIT-III: **No. of hours: 7**

Staining Techniques - Simple and Differential staining techniques. **Principles of microscopy** - Bright field and Electron microscopy (SEM and TEM).Nutritional types of bacteria. **Microbiological media**-Natural and synthetic basal, defined, complex, enrichment, selective, differential, maintenance and transport media.

UNIT-IV: **No. of hours:10**

Microbial growth: Principles of growth, Kinetics of growth, Methods of measuring growth: **Direct methods**: viable plate counts, membrane filtration. **Indirect methods**: Metabolic activity – measurements of DNA, Protein, Microscopic counts, electronic counters, most probable number; Batch and continuous growth, Synchronous culture, Diauxic growth, Types of cultures-stock, batch, continuous and synchronous cultures. Cultivation of aerobes and anaerobes. Reproduction in bacteria and spore formation.

UNIT-V: **No. of hours: 10**

Ultra structure of Prokaryotic cell- Variant components and invariant components. Cell wall of bacteria and fungi- Gram positive cell wall, Gram negative cell wall, Cell wall of fungi and yeasts._Morphology, Ultrastructure and chemical composition of bacteria, Actinomycetes, Spirochetes, Rickettsiae, Mycoplasma, Chlamydiae. Economic importance of algae and fungi. SCP.

MBP- I: INTRODUCTION TO MICROBIOLOGY AND MICROBIAL DIVERSITY

TOTAL HOURS: 30 **CREDITS: 2**

1. Microbiology Good Laboratory Practices and Biosafety.
2. Principle, application and handling of laboratory equipments- Autoclave, Hot air oven, Incubators, Bio safety cabinets, Light microscopes, pH meter
3. Preparation and sterilization of culture media (liquid and Solid)for cultivation of bacteria
4. Preparation and sterilization of culture media for cultivation of fungi
5. Microscopic observation of bacteria, Cyanobacteria, Algae, protozoa and Fungi from natural habitats.
6. Simple staining
7. Negative staining
8. Gram's staining
9. Study of bacterial motility by Hanging-drop method.
10. Isolation of pure cultures of bacteria by streaking method.
11. Enumeration of CFU count by spread plate method/pour plate method.
12. Preservation of bacterial cultures by various techniques.

SUGGESTED READING:

- Madigan,Martinko, Bender,Buckley,Stahl.Brock Biology of Microorganisms. Pearson,2002
- Pelczar, M.J., Chan, E.C.S. and Kreig, N.R. (1993). Microbiology. 5th Edition, Tata Mc Graw Hill Publishing Co., Ltd., New Delhi.
- Dube, R.C. and Maheswari, D.K. (2000) General Microbiology. S Chand, New Delhi. Edition), Himalaya Publishing House, Mumbai.

- Power, C.B. and Daginawala, H.F. (1986). General Microbiology Vol I & II
- Prescott, M.J., Harley, J.P. and Klein, D.A. (2010). Microbiology. 5th Edition, WCB Mc Graw Hill, New York.
- Reddy, S.M. and Reddy, S.R. (1998). Microbiology Practical Manual, 3rd Edition, Sri Padmavathi Publications, Hyderabad.
- Singh, R.P. (2007). General Microbiology. Kalyani Publishers, New Delhi.
- Stanier, R.Y., Adelberg, E.A. and Ingram, J.L. (1991). General Microbiology, 5th Ed., Prentice Hall of India Pvt. Ltd., New Delhi.
- Microbiology Edited by Prescott
- Jaya Babu (2006). Practical Manual on Microbial Metabolisms and General Microbiology. Kalyani Publishers, New Delhi.
- Gopal Reddy *et al.,* Laboratory Experiments in Microbiology

SRI VENKATESWARA UNIVERSITY

B.Sc. DEGREE COURSE IN MICROBIOLOGY

W.E.F. 2020-21

MODEL QUESTION PAPER

Time: 3 hours Marks: 75 marks

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer any five of the following questions in Part A.
Part B consists of 5 Units. Answer one full question (A or B) from each unit (i.e., Q.No 9 from Unit – I, Q.No 10 from Unit – II, Q.No 11 from Unit – III, Q.No 12 from Unit – IV, Q.No 13 from Unit – V). Each question carries 10 marks.

PART – A

Answer any *Five* of the following question. (5X5=25M)

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

(P.T.O)

PART – B

Answer All The Questions. Each question carries 10 marks (5X10= 50M)

9.	(A) OR (B)
10.	(A) OR (B)
11.	(A) OR (B)
12.	(A) OR (B)
13.	(A) OR (B)