AP STATE COUNCIL OF HIGHER EDUCATION

CBCS PATTERN FOR MICROBIOLOGY

B.Sc MICROBIOLOGY (CBCS) REVISED SYLLABUS - 2020

MBT- I: INTRODUCTION TO MICROBIOLOGY AND MICROBIAL DIVERSITY

CREDITS: 4

TOTAL HOURS: 60

UNIT-I: History of Microbiology & Place of Microorganisms in the living world

No. of hours: 12

History of Microbiology- Theory of spontaneous generation-Biogenesis and abiogenesis; in the context of contributions of Anton von Leeuwenhoek, Edward Jenner, Louis Pasteur, Robert Koch, Ivanowsky, Martinus Beijerinck and Sergei Winogradsky

Importance and applications of microbiology

Place of Microorganisms in the Living World Haeckel s three Kingdom concept, Whittaker s five kingdom concept, three domain concept of Carl Woese

UNIT-II: Prokaryotic microorganisms and Viruses

No. of hours: 12

Ultra structure of Prokaryotic cell- cell wall (in detail); Structure and/Functions (in brief) of cell membrane, cytoplasm, nucleoid, plasmid, inclusion bodies, flagella (brief structure and arrangement), pili, capsule, endospore

General characteristics of Bacteria (Size, shape, arrangement, reproduction); few examples of heterotrophic, autotrophic, parasitic, obligate intracellular parasitic bacteria.

General characteristics of Archaea

General characteristics of viruses, Cultivation of Viruses (in brief)

Morphology, Structure and replication of TMV and Lambda

UNIT-III: Eukaryotic microorganisms

No. of hours: 12

Fungi - Habitat, nutrition, vegetative structure and modes of reproduction; outline classification

Algae Habitat, thallus organization, photosynthetic pigments, storage forms of food, reproduction.

Protozoa – Habitat, cell structure, nutrition, locomotion, excretion, reproduction, encystment, outline classification

UNIT-IV: Principles of Microscopy, Sterilization and Disinfection **No. of hours: 12**

Principles of microscopy - Bright field and Electron microscopy (SEM and TEM).

Staining Techniques - Simple and Differential staining techniques (Gram staining, spore staining, Acid fast staining).

Sterilization and disinfection techniques –
Physical methods autoclave, hot- air oven, pressure cooker, laminar air flow, filter sterilization, Radiation methods UV rays, Gamma rays.
Chemical methods alcohols, aldehydes, fumigants, phenols, halogens and hypochlorites.

UNIT-V: Isolation and Culture of Bacteria and Fungi **No. of hours: 12**

Isolation of Microorganisms from natural habitats.
Growth media- Natural, synthetic and semi synthetic media, Basal and complex media, selective, enrichment, enriched and differential media
Pure culture techniques dilution-plating, Streak-plate, Spread-plate, Pour-Plate and micromanipulator. Preservation of microbial cultures sub culturing, overlaying cultures with mineral oils, lyophilization, sand cultures, storage at low temperature.

16/1/21