COURSE OUTCOMES:

After successful completion of this course, the student will be able to:

INTRODUCTION TO MICROBIOLOGY AND

MICROBIAL DIVERSITY

PAPER- I CODE : 3-1-115

1. Have developed a good knowledge of the development of the discipline of Microbiology and the contributions made by prominent scientists in this field.

2. Have developed a very good understanding of the characteristics of different types of microorganisms, methods to organize/classify these into and basic tools to study these in the laboratory.

3. Are able to explain the useful and harmful activities of the microorganisms.

4. Are able to perform basic experiments to grow and study microorganisms in the laboratory.

MICROBIAL BIOCHEMISTRY AND METABOLISM

PAPER -2 CODE: 3-2-115

1. Developed a very good understanding of various biomolecules which are required for development and functioning of a bacterial cell.

2. Have developed how the carbohydrates make the structural and functional components such as energy generation and as storage food molecules for the bacterial cells

3. Well conversant about multifarious function of proteins; are able to calculate enzyme activity and other quantitative and qualitative parameters of enzyme kinetics; also knowledge about lipids and nucleic acids.

4. Student are able to make buffers, study enzyme kinetics .

MICROBIAL GENETICS AND MOLECULAR BIOLOGY

PAPER – 3 CODE: 3-3-115

1. Understood genome organization of model organisms namely E.coli and Saccharomyces, and the molecular mechanisms that underlie mutations.

2. Developed a fairly good knowledge about the three well known mechanisms by which genetic material is transferred among the microorganisms namely transformation, transduction and conjugation.

3. Are able to describe different types of the extrachromosomal elements or the plasmids; the nature of the transposable elements in the prokaryotic and the eukaryotic cells.

4. Has acquired knowledge of gene, their expression and regulation of expression.

5. Has acquired a fairly good understanding mechanisms of genetic exchange, mutations and their implications.

IMMUNOLOGY AND MEDICAL MICROBIOLOGY

PAPER- 4 CODE : 3-4-115

1. Understood the basic and general concepts of causation of disease by the pathogenic microorganisms and the various methods of diagnosis.

2. Developed a thorough understanding of common bacterial, viral, fungal, parasitic diseases of human being including some very important diseases of the animals also.

3. Study the protective role of the immune system of the host and developed an understanding of the the immune system and its response to pathogenic microorganisms.

4. Has acquired a good understanding of normal microflora of human body

5. Has acquired skills of handling microorganisms in the laboratory and study their characteristics.

6. Are able to conduct experiments for growing common bacteria in different microbiological media, antibiotic sensitivity determination and antigen antibody reaction

ENVIRONMENTAL AND AGRICULTURAL MICROBIOLOGY

PAPER – 5 CODE: 3-5-125

1. Have developed a fairly good knowledge and understanding of different types of environments and habitats where microorganisms grow .

2. Are able to identify the important role microorganisms play in maintaining healthy environment by degradation of solid/liquid wastes; how these activities of microorganisms are used in sewage treatment plants, production of activated sludge and functioning of septic tanks .

3. Have understood the significance of BOD/COD and various tests involving use of enumerating fecal E.coli for assessing quality of water.

4. Developed a clear understanding of the multifarious roles of microorganisms in soil, in association with plants and thus in the field of agriculture.

FOOD AND INDUSTRIAL MICROBIOLOGY

PAPER - 6 CODE: 3-5-126

1. Are capable of describing a large number of substrate that are used for the industrial fermentation processes.

2. Have developed an understanding of different types of reactors or fermenters which are used for laboratory

3. Have acquired a detailed knowledge of number of products which are produced by industrial fermentation processes.

4. Are able to describe the role of microorganisms in the production of food, its spoilage, including their role in homemade fermented foods.

5. Are able to identify the role of microorganisms in the causation of the diseases and how to protect against food-borne pathogens.

6. Developed experimental skills for testing the milk and different foods for the presence of microorganisms

MICROBIAL DIAGNOSIS IN HEALTH CLINICS

PAPER – 7 CODE: 3-6-112

1. Has acquired a fairly good understanding of normal microflora of human body, common diseases caused by bacteria, viruses and other microbes.

2. Has acquired skills of handling microorganisms in the laboratory and study their characteristics.

3. Have developed a very good understanding of practical aspects of collection of different clinical samples, their transport, culture and examination by staining, and molecular and immunological diagnostic methods for diagnosis of microbial diseases.

MICROBIAL BIOTECHNOLOGY

PAPER – 8 (A) CODE: 3-6-112 A

1. Developed an understanding how microbiology is relevant to technological developments for agriculture and environment.

2. Developed an understanding how microbiology is relevant to technological developments for industries related to food and fermentations.

3. Developed an understanding how developments in recombinant DNA technology is juxtaposed with microbially-based technological developments for agriculture, industry and environment.

MICROBIAL QUALITY CONTROL IN FOOD AND PHARMACEUTICAL INDUSTRIES

PAPER – 8 (B) CODE: 3-6-112 B

1. Acquired detailed knowledge of antimicrobial agents, their chemical nature, and mechanism of action and basis of resistance of microbes to these antimicrobials, formulations involving different antimicrobials, stabilization of formulations.

2. Developed understanding of different types of disinfectants/antiseptics and their specific uses, and evaluation of their bactericidal and bacteriostatic actions; basic knowledge of cell cultures.

3. Developed practical skills for testing pharmaceutical products for sterility testing and pyrogenicity testing using different methods

BIOFERTILIZERS AND BIOPESTICIDES

PAPER – 8 (C) CODE : 3-6-112 C

1. Have developed a very good understanding of practical aspects of production of biofertilizers.

2. Have developed a very good understanding of practical aspects of the production of biopesticides/bioinsecticides.