DEPARTMENT OF MICROBIOLOGY

SYLLABUS FOR ADMISSION TO M.Sc. MICROBIOLOGY AND M.Sc. FERMENTATION & MICROBIAL TECHNOLOGY ENTRANCE TEST-2007

Important Note : The test will be based on multiple choice questions and carry 100 marks.

Unit I. Origin of Life, nomenclature and systems of classification: artificial and natural. Concept of cell, cell organelle, cell cycle, mitosis and meiosis.

Unit II. Scope and History of Microbiology, spontaneous generation theory, Koch's postulates, Pasteur's contributions to microbiology. Sources of microorganisms, pure culture techniques. and preservation, bright field microscopy, Gram's staining.

Unit III. Structure of Bacteria and chemical composition, bacterial cell wall, cell membrane, capsule, pili and spore. Classification of viruses, basic structure of a bacteriophage. Life cycle of bacteriophage (lytic and lysogenic).

Unit IV. Morphology an structure of fungi & bacteria, Mode of reproduction and nutrition in bacteria and fungi.

Unit V. Microbial nutrition: growth medium (selective, differential, enrichment, complete, synthetic and minimal medium) factors affecting the growth of microorganisms.

Unit VI. Microbial interactions: commemsalism, amensalism, symbiosis, parasitism and predation. Plant pathology, classification of plant pathogens, control measures.

Unit VII. Biochemical pathways for metabolism of carbohydrates, lipids, proteins, Nitrogen fixation, Biogeochemical cycling and control of air, water and soil pollution.

Unit VIII. Mutation, spontaneous & induced, chemical nature of genetic material, replication of DNA, Genetic code, Bacterial recombination, transformation, conjugation and transduction. DNA recombinant technology & its applications.

Unit IX. Role of M/o's in industries such as bakery, alcoholic beverages, penicillin, biofertilizers, biopesticides, Mushroom cultivation, methods and future perspectives.

Unit. X. Immune response: antigens, antibodies, cell mediated immunity, immune system T and B lymphocytes, generation of antibody diversity, monoclonal antibodies.

Date and time of Entrance Exam: 22nd June 2007 (2.30 PM to 3.30 PM)

SAMPLE PAPER

(JET 2007 for Admission to M Sc (Microbiology) M. Sc (FMT)

1. Cell theory was given by

   A) Schleiden and Schwann B) Robert Brown
   C) Palade D) None of the above

2. Holocentric chromosomes have

   A) Diffused centromere B) Single centromere
   C) Centromere at the end D) None of the above

3. Which of following is commonly used pesticide termed as Bt.

   A) *Bacillus terreus* *B) Bacillus tacticum*
   C) Bacillus thruingensis *D)Bacillus trivalias*

4. The DNA replication is catalyzed by

   A) DNA polymerase I B) DNA polymerase II
   C) DNA polymerase III D) DNA gyrase

5. An organism that uses inorganic compounds as electron donors and relies on chemical compounds for energy is known as

   A) chemolithotroph B) chemoheterotroph
   C) photolithotroph D) photoorganotroph

6. Polio virus is

   A) RNA containing virus B) DNA containing virus
   C) Both RNA and DNA D) None of the above

7. Lysogeny is

   A) Reversible event B) Irreversible event
   C) Both of the above D)None of the above

8. ETC stand for

   A) Element translation component B) Extra terrestrial carbon
   C) Electron transport chain D) Electron type chain

9. Pre reduced growth media are used for cultivation of

   A) Anaerobes B) Aerobes
   C) Microaerophiles D) Facultative aerobes

10. Key enzyme of EMP is

    A) Enolase B) Pyruvate kinase
    C) Phosphofructokinase D) Fructose bis phosphate aldolase

Note: There will be no negative making