



25th National Level Microbiolympiad (Silver Jubilee Event)

SYLLABUS FOR SECOND YEAR (Intermediate level)

1. **Microbial metabolism:** Biomolecules (Carbohydrates, lipids, amino acids, proteins, and nucleic acids); General characteristics of Enzymes, Factors Influencing Enzymatic Activity (pH, temperature, substrate)
2. **Metabolic Pathway-** glycolysis; Fermentation, Krebs's cycle; Gluconeogenesis; Glyoxylate bypass; primary and secondary metabolism, Energy Production and Generation of ATP in these metabolic Pathways
3. **Microbial diversity and associations:** Algae; Fungi; Archaeobacteria; Rickettsia; Mycoplasmas; Lichen; Mycorrhizae and Protozoa.
Microbial association: Mutualism; Commensalism; Parasitism; Synergism; Ammensalism; Predation and Cooperation.
4. **Microscopy:** Phase contrast microscopy, dark field microscopy; fluorescent microscopy; Electron microscopy (SEM, TEM);
5. **Microbial genetics:** Gene; Genome; Chromosomes; Genetic code; Genotype and Phenotype, Plasmid.
Mutation - Spontaneous, Induced Mutation, Mutagens, The Frequency of Mutation, Identifying and detecting the mutants (replica plate and fluctuation test)
6. **Immunology:** Specific and non-specific immune response; Concept of Antigen and Antibodies; Infection; Types of immunity, Three line of defense
7. **Industrial microbiology:** Characteristic of strain used for fermentation, Screening (primary, secondary); Fermentation media; Fermentor; Inoculum Development, Downstream processing (cell separation, Distillation, centrifugation, filtration).
8. **Air and Water Microbiology:** Micro-flora, Microbial air sampling, Microbial enumeration method for water, Potability of water
9. **Techniques of Microbiology:** Spectrophotometer, colorimeter, Beer's and Lambert's law, Staining (Cell wall, capsule, flagella, spore, PHB), Biochemical test (detection of enzyme amylase, protease, lipase, DNase, catalase), alcohol estimation by specific gravity. Equipment Viscometer, Aseptic cabinets, Air sampler, Centrifuge

Celebrating 25 Years of Excellence in Microbiology

Think Micro Dream Big!

Visit to Register : <https://microbiolympiad.org>