## Paper DLTC 03: Clinical Microbiology (General and Systematic)

### THEORY

**Module 1:**

- Introduction to microbiology- historical prospective, principle of microbiology, microscopes (types and uses)
- Bacteria: Classification, anatomy, reproduction , growth and nutrition.
- Sterilization:- methods employed, both physical and chemical.
- Media used in Microbiology:- Classification, types, constituents, methods of preparation, adjustment of pH, sterilization.

**Module 2:**

- Serology:- Antigen, antibody, antigen-antibody reaction.
- Newer methods of diagnosis: PCR, Bactec, Flow cytometry.

**Module 3:**

- Systemic (Individual Bacteria): Diagnosis features (morphology, cultured characters, biochemical reaction,, antigenic characters, pathogenicity and laboratory diagnosis) of *Staphylococcus, Streptococcus, Pneumococcus, Neisseria, Corynebacteria, Clostridia, Escherichia coli, Klebsiella species, Salmonella, Shigella, Proteus, Pseudomonas, Mycobacterium tuberculosis, Treponema pallidum.*

### PRACTICALS

1. Preparation of smears for staining and fixation from samples and culture media (both liquid and solid media).
2. Care and use of microscpes (including Fluorescent microscope).
3. Staining techniques: (Gram staining, zeihl nelson, Fluorescent method): preparation of satins, procedure, reporting of smears, principle involved.
4. Equipments used in sterilization: Description (structure), working principle involved, articles sterilized, advantages and disadvantages.
5. Culture media: types, constituents of each media, method of preparation, adjustment of pH, sterilization, uses.
6. Culture techniques: different methods of inoculation from clinical samples and bacterial growth from media.
7. Preparation of wet mount and motility of organisms.
8. Sputum examination: Physical examination, wet preparation, smear examination, concentration techniques for mycobacteria.
9. Serology: Widal, VDRL, RPR, ELISA, PCR, Flow cytometry.
10. Systemic bacteriology: Practical demonstration of diagnostic features of
    - Gram positive organisms.
    - Gram negative organisms.
    - Anaerobes, spirochetes.