



NAAC Assessment & Accreditation Cycle - III: 'A++' grade with CGPA 3.65 on 4 point scale

Class-III Laboratory Assistant (Microbiology) post with eligibility of **B.Sc. Microbiology, Part-B** of the syllabus (suggestive) for testing **core subject knowledge, practical understanding, basic laboratory competency and Safety** expected at the undergraduate level.

Part-B: Subject Knowledge & Application – Microbiology

1. General Microbiology

- History and Scope of Microbiology
- Structure and Classification of Microorganisms
- Prokaryotic vs. Eukaryotic Cells: Structure and Functions of: Cell Wall, Cell Membrane, Capsule, Flagella, Pili/Fimbriae, Endospores
- Gram-Positive and Gram-Negative Bacteria
- Morphology and Arrangement of Bacteria; Basic Characteristics of: Bacteria, Fungi, Viruses, Algae, and Protozoa
- Microbial Nutrition and Growth: Nutritional Requirements, Types of Culture Media, Growth Phases/Bacterial Growth Curve
- Physical Factors Affecting Growth: pH, Temperature, Oxygen, Osmotic Pressure, Sterilization, and Disinfection Methods
- Basic immunology (antigens, antibodies, vaccines)
- Basic Molecular Biology
- Preparation of Laboratory Reagents and Media

2. Microbiological Techniques

- Microscopy, Staining Techniques, Culture Techniques, Sterilization, and Disinfection
- Basic instruments: autoclave, incubator, laminar airflow, centrifuge etc.

3. Biochemical and Identification Tests

- Biochemical Tests, Identification of Microorganisms
- Laboratory Instruments and Handling

4. Laboratory Calculations

- Preparation of normal, molar, and percentage solutions, dilution calculations, CFU calculation, serial dilution
- Unit conversions: e.g. Micro liter–milliliter etc.

5. Bio safety and Waste Disposal

- Bio safety levels, PPE usage, Biohazard symbols, Biomedical waste segregation, Spill management, Sharps disposal

6. Laboratory Safety & Good Laboratory Practices (GLP)

- Handling of microbial cultures and waste disposal
- Safety symbols and precautions
- Documentation and record keeping, Labeling and inventory management, SOP understanding, Quality control basics, Equipment maintenance logs
- GLP (Good Laboratory Practices)
