

# **Rajasthan Public Service commission, Ajmer**

## **Syllabus for Screening Test for the post of**

### **Sr. Demonstrator-Microbiology**

#### **Medical & Health Department**

##### **I.General Bacteriology and Immunology**

1. Historical developments of Medical Microbiology.
2. The classification and Identification of Bacteria.
3. Morphology and ultra-structure of microbes. Microbiological method, pure culture and microscopic techniques.
4. Bacterial physiology and growth: Bacterial metabolism, Energy storage polymers, Growth curve, Growth control & influence of environmental factors, and bacterial viability.
5. Bacterial Genetics; Molecular Basis, gene variation, gene transfer, gene Regulation and application of molecular genetics.
6. Antimicrobial agents and Drug resistance (including genetic basis).
7. Disinfection and Sterilization, and their monitoring.
8. Normal flora & opportunistic infections.
9. Host-parasite relationships: Normal body defence or resistance to infection; Bacterial virulence, Toxins, Toxoids, Antitoxins and other extracellular Aggressins.
10. Immunology.
  - i. Immunity.
  - ii. Immunogens (Antigens), Immunoglobulins (antibodies) and their interaction.
  - iii. The complement System.
  - iv. Immune system: Cellular Basis, Normal & abnormal Development.
  - v. Immune Response: Primary, secondary, immune regulation, Hybridoma & Monoclonal antibody.
  - vi. Clinical immunology:
    - a. Immunoematology
    - b. Immune deficiency states (including AIDS)
    - c. Immunity to
      - 1) Infections (Bacterial, Viral, Parasitic & Fungal)
      - 2) Tumours and pregnancy
      - 3) Transplantation, Immunogenetics of tissue antigens and Immuno-suppression.
      - 4) Self antigens (Auto immunity): Breakdown of immune tolerance.
    - d. Immunological injuries.

##### **II.Systemic Bacteriology:**

- 1) Microbial characters, Epidemiology, pathogenicity & Pathogenesis, clinical features & lab diagnosis diseases caused by:
  - a) Gram positive & Gram negative bacteria including Anaerobes.
  - b) Mycobacteria, Actinomycetes.
  - c) Treponema, Borrelia, Leptospira.
  - d) Spirillum and
  - e) Legionellaceae
  - f) Rickettsiae, Bartonella, chlamydia & Mycoplasma.

### **III. Medical Virology:**

#### **a) Basic Virology:**

- I. General characteristics, morphology, genetics, replication & classification of viruses
- II. Viral infections, virus hostcell interaction
- III. Lab diagnosis of viral diseases
- IV. Interferon & antiviral agents.

#### **b) Systemic Virology:**

- I. Oncogenic Viruses
- II. Bacteriophages.
- III. DNA viruses: Pox, Herpes, AdenoPapova, Parvoviruses.
- IV. RNA Viruses: Picorna, Orthomyxo, , Paramyxo, Rubella, Arbo, Rhabdo, Corona viruses
- V. Miscellaneous: Hepatitis, Arena, Reo, Filo viruses, slow and unconventional viruses. Viruses causing Gastroenteritis.

### **IV. Medical Mycology:**

- I. General Characters of fungi & Principles of fungal diseases.
- II. Mycoses;
  - 1) Superficial, Cutaneous, sub cutaneous
  - 2) Systemic
  - 3) Opportunistic.
- III. Basic Laboratory diagnosis of mycoses.

### **V. Medical Parasitology:**

- 1) General characters & Basic principles of host parasite relationships & interactions.
- 2) Human Medical protozoology including phylum Apicomplexa.
- 3) Human medical helminthology.
- 4) Diagnostic methods in parasitic infections, Including immunodiagnosis,.

### **VI. Applied and clinical microbiology**

- 1) Lab diagnosis of various clinical syndromes.
- 2) Nosocomial infection
- 3) Bacteriology of water, milk and air.
- 4) Hospital waste management
- 5) Emerging & reemerging infections.
- 6) Immuno prophylaxis.
- 7) Automation and recent diagnostic methods in microbiology.

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### **Note: Pattern of Question Paper**

Objective type paper

Maximum Marks: 100

Number of Questions: 100

Duration of Paper: Two Hours

All questions carry equal marks.

There will be Negative marking.

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