



ICMR-NATIONAL INSTITUTE OF PATHOLOGY

Safdarjung Hospital Campus, Ansari Nagar West, New Delhi-110029
(Under Indian Council of Medical Research (ICMR), Govt. of India)

Syllabus for CBT

a. **Technical Assistant (Total posts=9 Nos)**

A (General Intelligence/ Awareness/ Reasoning MCQ): 25 marks

- **General Intelligence and reasoning:** It will include questions of non-verbal type. Questions on similarities and differences, analogies, problem solving, decision making, judgement, visual memory, arithmetical number series and computation, non-verbal series, relationships concepts, abstract ideas and symbols, and their relationships etc.
- **General Awareness:** Current affairs and current events, general awareness related to health, nutrition, and scientific research.
- **Quantitative aptitude:** Computation of whole numbers, decimals, fractions, percentage, ratio and proportion, average, interest, profit and loss, basic algebra, time and distance, time and work, heights and distances, bar diagrams, pie chart, histograms, polygon etc.
- **Computer skills:** Basics of computer system, MS word, MS Excel, MS Power Point, Networking, formulas writing in excel, google form.

B (Technical subject): 50 marks

- Blood composition/ function/ volume/ hemopoiesis, blood coagulation, blood groups, molarity/ normality/ percent/ standardization of solutions/ stability of solutions/ dilution, Acids/ bases/ pH
Collection & processing of biological samples, pathogen identification, culture media, bacterial culture techniques, Urine analysis
Hematological stains, hemoglobin/ white blood cell counting/ red cell counting and indices/ platelets/ erythrocyte sedimentation rate, Preparation of laboratory grade water, laboratory information systems
- Biological/ chemical/ physical Laboratory hazards, fire prevention, first aid, ethics, Sterilization definition/ methods/ indicators/ disinfectants
Safe handling of instruments such as pH meter/ colorimeter/ spectrophotometer/ fluorimeters/ centrifuge/ water bath/ hot air oven/ incubator/ needle destroyer
Quality control in laboratory, Good Clinical Laboratory Practices, Basics of research methodology, Biomedical waste management.

- Biomolecules (Water/Carbohydrates/Proteins/Lipids/ Nucleic acids/Vitamins), DNA Replication, Transcription, Translation, Mutation, DNA repair, Regulation of gene expression, Recombinant DNA, Detection of Nucleic Acids and Proteins, Cell Signalling, Cell death and cell renewal, Oncogenesis and tumor suppressor genes,
- Bioseparation techniques: cell disruption, extraction, purification, and storage, Bio-techniques: Centrifugation, Microscopy, Electrophoresis, Chromatography, Radioisotopy, Spectroscopy; Enzymology: History, catalysis, Enzyme action, Michaelis-Menten equation, Industrial use of Enzymes, Tissue culture techniques, Gene sequencing techniques,
- Immunology: antibody and antigen, Allergy, B-Cell and T-Cells, Innate immunity, acquired immunity, precipitation reactions, agglutination reactions, neutralization tests, Immunotherapy; Bioinformatics and drug designing,

b. **Post: Technician 1-DMLT (Total post =4 nos)**

A (General Intelligence/ Awareness/ Reasoning MCQ): 25 marks

- **General Intelligence and reasoning:** It will include questions of non-verbal type. Questions on similarities and differences, analogies, problem solving, decision making, judgement, visual memory, arithmetical number series and computation, non-verbal series, relationships concepts, abstract ideas and symbols, and their relationships etc.
- **General Awareness:** Current affairs and current events, general awareness related to health, nutrition, and scientific research.
- **Quantitative aptitude:** Computation of whole numbers, decimals, fractions, percentage, ratio and proportion, average, interest, profit and loss, basic algebra, time and distance, time and work, heights and distances, bar diagrams, pie chart, histograms, polygon etc.
- **Computer skills:** Basics of computer system, MS word, MS Excel, MS Power Point, Networking, formulas writing in excel, google form.

B (Technical subject): 50 marks

- Blood composition/ function/ volume/ hemopoiesis, blood coagulation, blood groups, molarity/ normality/ percent/ standardization of solutions/ stability of solutions/ dilution, Acids/ bases/ pH
- Sources of cytological/ histological specimens, Collection & processing of biological samples, pathogen identification, culture media, bacterial culture techniques, Urine analysis
- Hematological stains, hemoglobin/ white blood cell counting/ red cell counting and indices/ platelets/ erythrocyte sedimentation rate, Preparation of laboratory grade water, Computers in laboratory information systems
- Biological/ chemical/ physical Laboratory hazards, fire prevention, first aid, ethics, Sterilization definition/ methods/ indicators/ disinfectants

- Safe handling of instruments such as pH meter/ colorimeter/ spectrophotometer/ fluorimeters/ centrifuge/ water bath/ hot air oven/ incubator/ needle destroyer
- Biopsy fixatives, Frozen section, Microtomes, tissue processor, tissue processing and embedding, section cutting, Hematoxylin and eosin staining, preparation of stains
- Quality control in laboratory, Good Clinical Laboratory Practices, Basics of research methodology, Biomedical waste management, Fine needle aspiration cytology procedure/ smear preparation/ staining, Ziehl-Neelsen staining, Types of microscopes and principles of microscopy, Papanicolaou staining
- Biomolecules (Water/Carbohydrates/Proteins/Lipids/ Nucleic acids/Vitamins), DNA Replication, Transcription, Translation, Mutation, DNA repair, Regulation of gene expression, Recombinant DNA, Detection of Nucleic Acids and Proteins, Cell Signalling, Cell death and cell renewal, Oncogenesis and tumor suppressor genes,
- Bioseparation techniques: cell disruption, extraction, purification, and storage, Bio-techniques: Centrifugation, Microscopy, Electrophoresis, Chromatography, Radioisotopy, Spectroscopy. Immunology: antibody and antigen, Allergy, B-Cell and T-Cells, Innate immunity, acquired immunity, precipitation reactions, agglutination reactions, neutralization tests, Immunotherapy; Bioinformatics and drug designing, Gene sequencing techniques,

c. **Post: Technician 1-Computer/ IT (Total post =2 nos)**

A (General Intelligence/ Awareness/ Reasoning MCQ): 25 marks

- **General Intelligence and reasoning:** It will include questions of non-verbal type. Questions on similarities and differences, analogies, problem solving, decision making, judgement, visual memory, arithmetical number series and computation, non-verbal series, relationships concepts, abstract ideas and symbols, and their relationships etc.
- **General Awareness:** Current affairs and current events, general awareness related to health, nutrition, and scientific research.
- **Quantitative aptitude:** Computation of whole numbers, decimals, fractions, percentage, ratio and proportion, average, interest, profit and loss, basic algebra, time and distance, time and work, heights and distances, bar diagrams, pie chart, histograms, polygon etc.
- **Computer skills:** Basics of computer system, MS word, MS Excel, MS Power Point, Networking, formulas writing in excel, google form

B. Technical subject (IT/Computer Science):

- Basic Computer Organization - Units of a computer, Computer Networks (network protocol, Network Topologies, etc),
- Network Security, System Administration and Maintenance,

- Database Management Systems (RDBMS, MySQL, etc),
- Operating Systems (UNIX and Windows), Algorithm and Data Structures,
- Internet Technologies and Web development (JavaScript), Data mining (Weka), Cloud Computing, Programming languages such as HTML, XML, PHP, Java, C, C-sharp, C++, Visual Basic.