

SYLLABUS FOR LABORATORY TECHNICIAN (LEVEL-7 IN THE PAY MATRIX)
UNDER A.II. & VETERINARY DEPARTMENT

PAPER	SUBJECT	MARKS	DURATION
Paper-I	General Knowledge (50 Questions)	100	3 hours with compensatory time of 20 minutes per hour for persons with benchmarked disabilities]
	General English (25 Questions)	50	
	Essay Writing	30	
	English Comprehensive	20	
	TOTAL	200	
Paper-II	Basic Computer knowledge (50 Questions)	100	3 hours with compensatory time of 20 minutes per hour for persons with benchmarked disabilities]
	Simple Arithmetic (30 Questions)	60	
	General Intelligence & Reasoning (20 Questions)	40	
	TOTAL	200	
Paper-III	Technical/Specialised subject (100 Questions) as follows :-		3 hours with compensatory time of 20 minutes per hour for persons with benchmarked disabilities]
	Microbiology	30	
	Hematology	30	
	Veterinary Anatomy & Physiology	30	
	Gen. Lab. Ethics & Management	10	
	Biochemistry	40	
	Pathology	20	
	Histopathology	10	
	Cytopathology	10	
	Parasitology	20	
TOTAL	200		

NOTES:

- 1) Questions shall be set in Objective Type Multiple Choice pattern only except for essay writing and English comprehension under Paper-I with all questions carrying equal marks and answers for each of the questions shall be marked using blue or black ball point pen. In other works, there shall be multiple probable answers (at least four) wherein the candidate has to choose the correct answer for every objective type question.
- 2) Questions will be set in tune with the level of educational qualifications prescribed in the corresponding Recruitment Rules/ Service Rules for the post(s).
- 3) A brief description of the common syllabus for direct recruitment to Group 'B' posts is as follows:

Paper-I

General Knowledge: Questions will be designed to test the candidate's knowledge of current events and of such matters of everyday observation and experience as may be expected of an educated person. The test will also include questions relating to Indian history and culture, Indian polity including the Constitution of India, geography, economy and general science. Questions on Mizo history and culture will also form part of the syllabus.

General English: Question in this components will be designed to test the candidate's understanding and knowledge of English Language and will be based on error recognition, fill in the blanks (using verbs, preposition, article etc.), Vocabulary, Spellings, Grammar, Sentence Structure, Synonyms, Antonyms, Sentence Completion, Phrases and Idiomatic use of Words, etc.

Essay Writing: Question on essay writing will be designed to test the candidate's grasp of his material, its relevance to the subject chosen, and to his ability to think constructively and to present his ideas logically, constructively and concisely.

English Comprehension: There will be questions on comprehension of passages also to test the vocabulary, grammar, logical thought ability and overall grasp of the candidates over English language.

Paper-II

Basic Computer Knowledge: Introduction to Computers, introduction to Graphical user interface based Operating System, elements of Word Processing, Spreadsheets, Power point presentations, Computer communication and internet, world wide web and web browser, communication and collaboration.

Simple Arithmetic: Number system, simplification, roots, averages, discounts, percentages, profit & loss, ratio and proportion, partnership, chain rule, time & work, time & distance, simple & compound interest, mensuration, permutations & combinations, heights & distances, line graphs, bar graphs, pie charts and tabulation.

General Intelligence & Reasoning: It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, spatial visualization, spatial orientation, problem solving, analysis, judgement, decision making visual memory, discrimination, observation, relationship concept, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc.

Part-III

Questions relating to the concerned technical/specialised subject will be set as per the educational qualification prescribed in the relevant Recruitment Rules/ Service Rules and the detailed syllabus for this Paper shall be notified by the concerned recruiting Department well in advance.

DETAILED SYLLABUS

Full Marks-200

Microbiology (30 marks)

- a) Introduction and brief history of Microbiology
 - General characteristics of bacteria, anatomy of bacteria (shape, size).
 - Types of Media and its uses.
- b) Bacteriology : type, source & transmission. Bacterial morphology, isolation and identification, pathogenicity, lab diagnosis:
 - Staphylococcus, Streptococcus, Clostridium tetani & C. perfringens
 - E.coli, Vibro cholera, Salmonella typhi, Mycobacterium tuberculosis
 - Brucellosis, Hemorrhagic Septicemia, Black Quarter (HS&BQ)
- c) Instruments and glass ware:
 - Autoclave, incubator, laminar airflow
 - Hot air oven, water bath
 - Petri dish, test tube, Pasteur pipettes
 - Centrifuge, Refrigerator
 - Principle and uses of microscope (simple, compound, electron microscope)
- d) Veterinary Mycology:
 - Morphology, culture characteristics of pathogenic fungi (aspergillus Sp., Candida Sp., Cryptococcus Sp., Dermatophytes).

e) Veterinary virology:

- Morphology, culture characteristics and laboratory diagnosis of the following viruses: -
 - ❖ CSF (Classical Swine Fever)
 - ❖ ASF (African Swine Fever)
 - ❖ PRRS (Porcine Reproductive and Respiratory Syndrome)
 - ❖ AI (Avian Influenza)
 - ❖ Rabies
 - ❖ RD (Ranikhet/Newcastle Disease)
 - ❖ Pox
 - ❖ IBD (Infectious Bursal Disease)
 - ❖ FMD (Food and Mouth Disease)

f) Principles, methods and application of:

- ELISA (Enzyme Linked Immuno Sorbent Assay)
- PCR

(i) Haematology (30 marks)

a) Introduction to haematology.

- Blood-components, collection, anticoagulants, preparation of smears and quality.
- Haemoglobin, TLC, DLC with absolute count, RBC, ESR, PCV (methods of estimate, clinical significance, Normal range).

b) Haemoglobin (normal and abnormal).

c) RBC - Structure, functions.

d) WBC - Physiology and function.

e) Platelets-structure & functions

f) Haemostasis (coagulation) - normal mechanism, abnormal haemostasis.

g) Anaemias (Normochromic, Normocytic, Megaloblastic, Haemolytic Anaemias)

Veterinary Anatomy & Physiology (30 marks)

a) Gross Anatomy of Muscles & Bones (Type, structure, function)

b) Gross Anatomy and Physiology of Digestive organs (Monogastric, Ruminants, Avian)

c) Gross Anatomy of heart and blood vessels

d) Gross Anatomy of excretory organs, structure and function of kidney

e) Gross Anatomy of Male and Female reproductive organs

f) Gross Anatomy and Physiology of respiratory organs (Animal & Birds)

General Laboratory Ethics & Management (10 marks)

- a) Role of Medical Laboratory Technician and their responsibilities
- b) Laboratory Organization
- c) Safety Measures in Laboratory
- d) Common Laboratory accidents and its prevention (first aid)
- e) Antiseptics, Sterilization and Disinfection
- f) Waste disposal and Management

Biochemistry (40 marks)

- a) Introduction and scope of Biochemistry, cleaning and care of laboratory glass ware and equipment, preparation and storage of Distilled water, Analytical Balance, Calorimeter, Spectrophotometer, pH meter, SI Unit of measurement, Prevention and disposal of biological sample. Acid and base, Ph buffer solution, indicator, standard solution, storage of chemicals, electrolytes, acid base balance
- b) Carbohydrate, Lipids, Protein-Classification, Biological importance and Normal reference range
- c) Glycolysis, TCA-cycle, Glyconeogenesis, Gluconeogenesis, Blood sugar and its regulation
- d) Lipid profile - estimation and normal reference range of :
 - Triglycerides
 - Total Cholesterol
 - HDL - Cholesterol
 - LDL - Cholesterol
- e) Laboratory test (manual) - Procedure, normal values and clinical significance of:
 - Liver Function Test (LFT) - (ALT, AST, ALP, GGT, Bilirubin, Protien, Albumin, Globulin)
 - Thyroid Function Test (T3, T4, TSH)
 - Estimation of Serum Electrolytes (sodium, potassium, calcium)
 - Kidney function test (KFT) - urea, creatinine, uric acid
- f) Blood glucose estimation by different Method

Pathology (20 marks)

- a) Pathology - Definition, Branches.
 - Acute and chronic inflammation (definition, characteristics).
 - Changes in inflammation.
- b) Routine examination and clinical significant of:
 - Urine
 - Stool
- c) Neoplasia - Benign and Malignant (Definition)

Histopathology – Basic & Technique (10 marks)

- Cells and tissues – Definition, cells and its organelles, function, cell cycle, mitosis meiosis.
- a) Histopathology technique: -
- Sample reception, registering, labelling.
 - Fixative & fixation (definition, aims & object, fixation & preservation).
 - Tissue processing.
 - Microtomy.
 - Section cutting, mounting and labelling.

Cytology (Basic & technique) (10 marks)

- a) Definition of cytology, role of cytology in the diagnosis, branches of cytology.
- b) Fine Needle Aspiration Cytology (FNAC)-
- Definition
 - Application
 - Role of FNAC, Advantages and Disadvantages,
 - Complications
- c) Staining: -
- Pap's stain-
 - o Preparation of chemical for Pap's stain.
 - o Procedure of Pap's stain

Parasitology (20 marks)

- a) Collection and examination of faecal sample for parasitic infection.
- b) Collection and examination of blood sample for blood parasites.
- c) Skin scrapping, examination and mounting of mites.
- d) Storage and transportation of tissue, faecal and blood samples for parasitic examinations.
