GOVERNMENT OF JAMMU AND KASHMIR,
SERVICES SELECTION BOARD, JAMMU.

# Notice

It is hereby notified for the information of all the candidates that the syllabi notified vide this office No. SSB/Sel/Secy/2014/722, Dated 25.01.2014 for the following posts has been revised alongwith distribution of marks and the same is published at Annexure A to this notice.

i) Draftsman (Mechanical)
ii) Pharmacist/Medical Assistant
iii) Lab Assistant (Health)
iv) Horticulture Technician IV

Secretary,
J&K Services Selection Board,
Jammu.

No. SSB/ /Sel/Secy/2014/3016-31 Dated:25-04-2014.

Copy to the:-

1. Financial Commissioner, Revenue, J&K Govt., Jammu.
2. Financial Commissioner, Industries and Commerce, J&K Govt., Jammu.
3. Principal Secretary to the Hon'ble Chief Minister J&K.
4. Principal Secretary to the Hon'ble Governor, J & K State.
5. Divisional Commissioner, Kashmir, Jammu for information.
6. All Board Members for Information.
7. Director Information, J&K Government Jammu with the request to publish the said notification in at least three leading local newspaper of Jammu/Srinagar on three consecutive dates.
8. Director, Radio Kashmir, Jammu. He is requested to kindly broadcast the above said notification appropriately.
9. Director, Doordarshan Jammu. He is requested to kindly telecast the above said notification appropriately.
10. Deputy Secretary/Administrative Officer, J&K Services Selection Board, Jammu /Srinagar.
11. Sr. Law Officer, J&K S.S.B, Jammu.
12. Principal Pvt. Secretary to Chief Secretary J&K Government, Jammu.
13. Pvt. Secretary /P.A to Secretary, General Administration Department, Civil Secretariat, Jammu.
14. Pvt Secretary to Chairperson SSB, for information of the Ld. Chairperson.
15. Incharge Website for uploading of the Notice on the official website of the Board.

# Annexure "A"

## "PHARMACIST / MEDICAL ASSISTANT"

# SYLLABUS FOR WRITTEN TEST

**Marks :-150**
**Time :- 2.30 Hours**

**First Aid and Emergency Health Services** **10 Marks**

- Outline of the First-Aid
- Structure and functions of the body
- Dressing and Bandages (use of Triangular Bandages and Cotton Roller Bandage, Rubber Bandage and Different types of Dressing).
- Cardio-pulmonary resusciration.
- Wounds.
- Haeomorrhage
- Shock
- Electric Stock
- Different methods of artificial respiration.
- Asphyxia.
- Fractures and Dislocation.
- Unconsciousness and Fainting
- Epilepsy and Hysteria.
- Poisons including food poisoning.
- Common Conditions:
  - Foreign body in ear, eye and nose
  - Cramps
  - Frost-Bite
  - Bites and Stings etc.
  - Epistaxis
  - Snake Bite
  - Dog Bite
- Transport of injured persons
- Use of common medicines

**STERILIZATION/DISINFECTION** **10 Marks**

Physical, Chemical and Mechanical Methods etc. Disposal of contaminated Media, sterilization of syringes, glass wares, apparatus etc. Biomedical waste management.

## SURGICAL INSTRUMENTS, THEIR NAMES & USES, PREPARATION OF PATIENT FOR OPERATION, PRE & POST OPERATIVE PATIENT CARE

# SURGICAL INSTRUMENTS (Their Names & Uses)
# (Their Preparation & Uses)

## SURGICAL INSTRUMENTS: 05 Marks

- Instruments for general surgery
- Operation of the face and neck
- Operations of the Nose, Throat and Ear
- Ophthalmic Surgery
- Operations on the Chest
- Operations on the Genito-Urinary Tract
- Gynecological and Obstetric Operations
- Orthopaedic Operations
- Neuro-Surgical Operations
- Operations on the Vascular System
- Trauma Surgery

## PREPARATION OF INSTRUMENTS TRAY: 05 Marks

- Major procedures tray
- Basic/Minor procedures tray
- Limited procedures tray
- Thyroid tray
- Long instruments tray
- Biliary Tract Procedures tray
- Choledochoscopy tray
- Basic rigid Sigmoidoscopy tray
- Gastrointestinal procedures tray
- Rectal procedures tray

## GYNECOLOGIC AND OBSTETRIC TRAYS: 05 Marks

- Dilatation of the Cervix and Curettagge of the Uterus (D&C) tray.
- Cervical Cone tray
- Laparoscopy tray
- Abdominal Hystrectomy tray
- Caesarian section tray
- Vaginal Hysterectomy tray

## GENITOURINARY TRAYS: 05 Marks

- Vasectomy tray
- Open Prostatectomy tray
- Kidney tray

## THORACIC TRAYS — 02 Marks

- Mediastinoscopy tray
- Thoractomy tray
- Pcemaker tray

## CARDIOVASCULAR TRAYS: — 02 Marks

- Vascular procedures tray
- Vascular Shunt tray
- Cardiac Procedures tray

## ORTHOPAEDIC TRAYS: — 05 Marks

- Basic Orthopaedic procedures tray
- Minor Orthopaedic procedures tray
- Hip replacement tray
- Knee or Ankle Anthroscopy tray

## NEUROLOGIC PROCEDURES TRAY — 02 Marks

- Craniotomy tray
- Laminectomy tray

## OTORHINOLARNGOLOGIC (ENT TRAYS): — 02 Marks

- Basic Ear procedures tray
- Nasal Procedures tray
- Myringotomy tray
- Tonsillectomy and Adenoidectomy tray
- Tracheostomy tray
- Antral Puncture tray

## OPTHALMIC TRAYS: — 05 Marks

- Basic Eye procedures tray
- Eyelid and Conjuntional procedures tray
- Basic Eye Muscle procedures tray
- Dacryocystrohinostomy tray
- Corneal Procedures tray
- Cataract Extraction and Lens procedures tray
- Glaucoma procedure tray
- Basic Eye procedures Microscope tray
- Retinal procedures tray

**PEDIATRIC TRAYS:** **05 Marks**

- Pediatric major procedures trays
- Pediatric minor procedures trays
- Pediatric Gastrointestinal procedures trays

## PREPARATION OF PATIENT FOR OPERATION, PRE & POST OPERATIVE PATIENT CARE

**15 Marks**

**PRE-OPERATIVE CONSIDERATIONS:**

- Psychological support of the surgical patient. **05 Marks**

**PROTECTION OF THE PATIENT IN SURGERY:** **08 Marks**

- Admission Procedure
- Transfer Procedure Position
- Environmental Controls
- Electro Surgery
- Operative Recores
- Counting Procedure
- Sterilization
- Emergencies and Disasters

**SAFETY FOR MEDICAL ASSISTANT, PHARMACIST IN A OPERATION THEATRE:** **04 Marks**

- In service education
- Body Mechanic
- Fatigue factors
- Radiation Safety
- Infection control
- Chemical hazards.

## Anatomy and Physiology

Course Content

Unit-I Introduction to terms used Marks 25

Unit-II Organization of body

- Cell: Types, Structures and Functions
- Tissues: Types, Structures and Functions
- Glands: Types & Functions
- Membranes: Types & Functions
- Organs & Systems

Unit:- III Skeletal systems

- . Bones: types, structure, functions
- Axial Skeleton
- Appendicular skeleton
- Joints:- Definition structure and functions

Unit-IV Muscular system

- Position and action of chief muscles of the body.

Unit-V Cardio-Vascular Systems

- Heart: Position, Structure differences, name and position of chief blood and lymph vessel and function
- Circulation of Blood: systemic pulmonary and portal circulation coronary circulation
- Cardio-Vascular System
- Heart: position, structure, conduction system, functions and cardiac cycle.
- Blood vessel:- types, Structural differences, name and position of chief blood and lymph vessel and functions
- Circulation of Blood: Systemic Pulmonary and portal circulation coronary circulation
- Blood composition and functions, blood groups and RH factor
- Blood Pressure and Pulse

Unit-VI Lymphatic system

Lymph vessels, glands ducts and lymph circulation, lymph tissues in the body , Spleen and reticulo-endothelial system

Unit-VII Respiratory system

- Structure and functions of respiratory organs
- Physiology of respiration

Characteristics of normal respiration and its deviations

Unit-VII Digestive system

Structure and function of organs of digestion

Unit-VII Process of digestion and absorption

Metabolism: meaning and metabolism of food constituents.

Unit-IX Excretory Systems

Organs of Excretion such as –Lungs colon, Kidney and skin

Structure and function o organs of urinary systems

Structure and functions of the Skin

Fluid and electrolyte balance

Unit-IX Nervous system

- Types, structure and functions of neuron.
- Central Nervous system; Structure and functions
- Autonomic Nervous system: Structure and functions

Unit-X Endocrine system

Structure and functions of pituitary, pancreas, thyroids-parathyroid, thymus and supra rental glands.

Unit-XII Sense Organs

Structure and function of eyes, ear, nose and tongue.

Physiology of vision, hearing and equilibrium

Unit-XIII Reproductive system

- Structure and functions of female reproductive and accessory organs
- Process of reproduction, menarche, menstrual cycle and menopause
- Reproductive health
- Structure and function of male reproductive organs.

Applied physics and chemistry

Unit-I Unit and Measurement

- Introduction
- Units of length
- Unit of Mass
- Unit of Equivalents
- Principles of Physics

Unit-II Mater

- States of matter
- General properties of solids
- General properties of liquids
- Practical Application

Unit-III Mechanics

- Centre of Gravity
- Archimedes principle
- Traction
- Friction
- Levers and pulleys

Unit-IV Pressure

- Introduction
- Concept of pressure
- Hydrostatic pressure
- Atmos0phereic pressure
- Barometer
- Siphon
- Effects of changes in atmospheric
- Pressure on Human Body
- Practical Application

Unit-V Heat

- Production of Heat
- Measurement of Temperature
- Clinical Thermometer
- Transmission of Heat
- Application of Heat
- Sterilization

Unit-VI Ionizing and Radiation

- Radioactivity
- Radioisotopes
- Clinical Uses of Radioisotopes and
- Radio Elements
- Radiation Hazards

## Chemistry

Unit I Oxygen
Unit II Water
Unit III Soluti9ons
Unit VI Ionization
Unit VI Acids and Bases
Unit VI Salt
Unit VII Metals and Non –Metals

## Nutrition

Marks 10

Unit Introduction

- Changing concepts-foods habits and customs

- Relationship of nutrition to health

Unit II Food

- Constituents
- Normal Requirements
- Sources
- Deficiencies
- Balance Diet

Unit III Normal dietary requirements and deficiency diseases of each of the constituents of food

- Factors affecting selection and planning of meals
- Method of calculating normal food requirements
- Low cost menu

## Unit VI Community Nutrition Marks 20

- Concept of community nutrition
- Nutritional needs for special groups i.e., infants, children, pregnant women, lactation mothers, old people etc.
- Nutrition education: needs and methods
- Substitute for non-vegetarian food
- Methods of improving an ill-balanced diet
- Community nutrition programme
- Food hygiene an law related to food.
- Sterilization/Disinfection/Bio-Medical Waste/ sepsis , Asepsis
- Natural, Physical, Chemical and Mechanical method etc
- Community Health

- . Public Health and Hygiene
  - Modern concept of public heath
  - Comprehensive Health care
  - Five year plans, priorities allocation of medical and health services
  - Health and family planning organizations set up at the nation the sate, the District and Block levels
  - Functions of primary Health Centre , CHC Distt. Hospital Ads and Sub centers.

Unit-II Epidemiological Methods Approaches and investigations
Unit-III Health Education

- Heath Education(Information, Education and Communication)
- Principles Ethics, Attributes of Health Educator
- Various Methods of Health Education

Unit- IV National Health Programme

- National Malarial Eradication programme
- National leprosy Eradication programme
- National tuberculosis control programmme
- National Aids control programmme
- National programmme for control of Blindness
- National iodine Deficiency Disorders programmme
- National Universal Immunization Prograammme
- National Family Welfare prograamme
- National Ginea-Worm Eradication prograamme
- National Cancer Control Programme
- National filarial Control Programme
- National Water Supply and Sanitation Programme

Unit V Records Keeping and vital statistics

Unit –VI Minor Ailments

- Classification,, early detection and management
- Standing instructions/orders

Unit –VI Environmental Hygiene

Secretary,
J&K Services Selection Board,
Jammu.

# "HORTICULTURE TECHNICIAN-IV"

# SYLLABUS FOR WRITTEN TEST

**Marks :-150**
**Time :- 2.30 Hours**

## Soil-General Concept and importance, soil texture (Social Particles): 30 Marks

- Types of Soil- Sandy, Clayey and loam soils and their general properties i.e. water retention, aeration, nutrient status,
- Soils organic matter- meaning, sources and importance.
- Soil reaction- meaning, acidic and alkaline soils concepts, their effect on plant growth and management.
- Plant Nutrients- names of essential macro and micro nutrients, important functions of N,P and K, their deficiency symptoms in plants.
- Manures- definition, different, types and importance (FYM, compost, Green Manure).
- Fertilizers- Definition, names of common NPK fertilizers, their nutrient percentage, recommended NPK doses for paddy, maize, sarson, Wheat, Apple and Cherry trees grown in Jammu & Kashmir, their mode and methods of application.
- Soil Testing- and its importance.
- Soil erosion- causes, types of erosion, soil conservation a methods with reference to J&K State.
- Introductory Botany.
- Plant parts, root, leaf, stem, flower and their functions
- Modified plant parts with functions,
- Photosynthesis and Importance.
- Seed Structure, Importance, Conditions necessary for germination, Minimum Standards for seed certification, Breeder foundation and certified seed.
- Self and cross- Pollination.
- Elementary studies of following plant families of economic importance.
  - Graminance (Padey and Maize)
  - Rosacae (Apple)
  - Solanacea (Tomato)
  - Cucurbitaceae (Bottlegourd)
  - Leguminacca (Pea)

## Plant protection fundamentals: 30 Marks

- Definition of disease and their causes
- Symptomology (leaf spot, wilt, blight, mildew, scab etc.)
- Different management Methods
- Fungicides: Definitions, types, formulations, names of common fungicides used in Jammu & Kashmir; care in handling.

- Plant protection equipment, spraying and dusting machines, their working, calibration and maintenance,
- Definition of insect pest, general morphology of insect
- Different insect pest viz, borera, bug, gesed, their
- Economic threshold values
- Insecticides, definition, types. Formulation, names of common insecticides used in Kashmir, cadre in handling.
- Insect pest management methods.
- Extension Education
  - Agri. Extension Education Definition and Importance.
  - Principles, Objectives.
  - Qualities and role of Extension Worker
  - Extension teaching Methods; Classification, approaches i.e., individuals, Group, Mass, discussions, pamphlets, bulletins, charts, diagrams, exhibitions, campaigns, Kissan mela.
  - Brief description of IRDP, SFDA, IAQP, NAEP, KVK with social reference to J&K STATE
  - Farm Planning
  - Village Panchayat and its functions
  - Collections of socio- Economic data; kind of schedules

## Nursery Management and propagation — 35 Marks

- Location, Soil, fencing, nearness to water source, layout of seed bed, nursery bed, stool bed, stratification.
- Building nursery store and workshop, Store and workshop, tools and implements.
- Maintenance of nursery.
- Selection of mother plant for bud wood, root stock.
- Budding, grafting, layering
- Fruit production
- Selection of Orchard site.
- Layout of Orchard.
- Orchard floor Management
- Planting, Training, Pruning.
- Cultural Practices including irrigation.
- Cultivation of Apple, Pear, Cherry, Plum, Grapes, Almond, Walnut, Strawberry, Mango and Guava Under following headings;
- Soil, Commercial varieties, pacing, fertilizers, irrigation, harvesting, yield.

## Orchard Diseases — 25 Marks

- Major diseases, Symptoms, damaging stage and control measures of;
- Apple and pear viz; Scab, Leaf Spot, Mildew Canker. Viz; Stone fruits ( Peach, Plum, Apricot, Cherry, Almond) viz Blight and leaf pots.
- Walnut viz; Mistletoe etc
- Grapes viz; Anthrocnose, Mildews.
- Plants protection –(B)
- Major Insect Pests, damaging stage, Symptoms and control measures with respect to following fruit plants (under Jammu and Kashmir Conditions);
- Apple and Pear viz; Sanjose Scale, Borer, Leaf Minor, Aphids mites, Caterpillars.

- Stone fruits (Peach, Plum, Cherry, Almond, Walnuts) viz; Leaf curing aphids, Chaffer beetle etc.
- Pomegranate viz; Anar butter fly.

## Physiology (Introductory) — 15 Marks

- Introduction to the subject of postharvest technology; nature and extent of postharvest losses in fruits; Factors responsible for post harvest loss. Factors affecting rate of respiration and transpirations; ripening of fruits, Quality attributes of fruits.

## Fruit Handling and Storage — 15 Marks

- Harvesting techniques of fruits, criteria for harvest maturity of fruits, principle and techniques of pre-cooling, advantages of scientific grading; grade standards for apple, advantages of fruit packing; use of various packing materials; principles of refrigerated and controlled atmosphere storage of fruits, transportation of fruits and its problems; Marketing channels of apples.

Secretary,
J&K Services Selection Board,
Jammu.

# "DRAFTSMAN (MECHANICAL)"

# SYLLABUS FOR WRITTEN TEST

**Marks :-150**
**Time :- 2.30 Hours**

- Importance of safety and general precautions observed in the Instt. and in the section. Importance of trade in the development of Industrial Economy of the Country. Related Instruction. Recreational, medical facilities & other extra curricular activities of the Instt. (All necessary guidance to be provided to the new working of Industrial Training Institute system including stores procedures etc. 03 Marks
- Nomenclature. Description and use of drawing instruments & various equipment in drawing office. There care and maintenance, lay out of a drawing sheet. 03 Marks
- Type of lettering proportion and spacing of letter and words 02 Marks
- Terms & definitions-polygons and circles. Lines and their meaning, section lines of different materials, conventional signs, symbols & abbreviations, hatching, & shading, Norms of dimensioning different types of drawing sheets. 02 Marks
- Definition of ellipse, parabola, hyperbola, different methods of their construction, Definition and method of drawing involutes cycloid curves, helix and spiral. 03 Marks
- Planes and their normal, projections, projection and orthographic projection, first angle and Third angle projection. 03 Marks
- Concept about Horizontal & Vertical Plane. 02 Marks
- Principle of orthographic Projection, projection of solids like prism, cones, pyramids and frustums in various position. 02 Marks
- Solution of problems to find out the true shape of surfaces when solids are cut by different cutting planes. 02 Marks
- Construction of different types of scales, their appropriate uses, principle o R.F. diagonal & vernier. 02 Marks
- Importance of free hand sketching, machine drawing. Material and equipment required in Sketching. 02 Marks
- Importance of sectional views. Types of Sectional views & their uses. Parts not shown in Section. 02 Marks

- Definition of Intersection & interpenetration curves. Common methods to find out the curve of interpenetration. 02 Marks
- Solution o problems on interpenetration of prism, cones, and pyramids with their axes intersecting at an angle. Intersection of cylinder. 02 Marks
- Theory of projection as specified in SP - 46-1938. 02 Marks
- Definition of development, its need in industry and different method of developing the surface. 02 Marks
- Principle of Isometric projection, Difference between isometric drawing and isometric projection. Isometric Scale, Dimensions an isometric drawing. 03 Marks
- Different methods of drawing Isometric views. 02 Marks
- Principle and types of oblique projection. Advantage of oblique projection over isomertic projection. 03 Marks
- Types of perspective projection fundamental concept & definition, location of station point. 03 Marks
- Terminology- feature, functional feature, functional dimension, datum dimension, principle. 02 Marks
- Units of dimensioning, system of dimensioning, method of dimensioning and common features limit, fit, tolerance. 02 Marks
- Tolerances dimensioning, geometrical tolerance. Indication of symbols for machining and surface finishes on drg. (Grades and micron values). 02 Marks
- Screw thread, terms and nomenclature, type of screw thread, proportion and their uses, Thread conventions. 02 Marks
- Types of bolts and nuts their proportions, uses, different types of locking devices. 02 Marks
- Different types of machine screws cap screws and their specifications. Different types of foundation bolts. 02 Marks
- Purpose, terms different types keys(Heavy duty and light duty) and proportions use of cotters, pins and circlips. 02 Marks
- Types of fastening materials, types of rivets, their proportion & uses. Types of riveted joints, terms & proportions or riveted joints. Conventional representation. 02 Marks
- Causes of failure of riveted joints, efficiency of riveted joints 02 Marks
- Description of welded joints and their representation (Actual and symbolic) Indication of welding symbols on drawings as per BIS.

04 Marks

- Description and use of drafting machine. Different sizes of drawing sheets as per BIS 02 Marks
- Safety precaution descriptions uses and care o hand tools including contraction rule. Brief description of production of cast iron, wrought iron steel and alloy steel. 02 Marks
- Safety precautions, Hand tools used for moulding. The description, use and care of hand tools. Description of different types of moulding. Description of different types of core, sand, and dressing material, Description of cupola. 02 Marks
- Description of measuring tools and hand tools used in forge work. Description and use of the mechanical hammer. Colour coding of different metals and identification. 04 Marks
- Description and application of simple measuring tools, description of parts of lathe & its accessories. 03 Marks
- Method of using precision measuring instrument such as inside & outside micrometers, depth gauges, vernier, calipers dial indicator, slip gauges, sine bars, universal bevel protractor etc. 04 Marks
- Brief description of milling, shaping, slotting and planning machines, quick return mechanism of these machines. 04 Marks
- Name and brief description of common equipment necessary for sheet metal work. Different type and uses of joints employed in sheet metal work. 03 Marks
- AC & DC Motors, Generators of common types and their uses. Names and brie description of common equipment necessary for sheet metal work. 04 Marks
- Type of Ferro-printing papers. Specification of Sensitized. Ammonia papes-Expiry-precautions in Ammonia Printing. 03 Marks
- Introduction to computer-DoS, windows and to AUTO CAD. related theory. 02 Marks
- Procedure of inking a drawing conventional colours used for different metals as per ISI material an equipment for colouring procedure. 02 Marks
- Procedure of tracing on tracing cloth and specification of tracing cloth. 02 Marks

- Types of assembly drawing. Different types of detailed drawings and preparation of bill of materials. 03 Marks
- Use of bearing, types of bearing and materials used. 03 Marks
- Difference between frictional and antifriction bearing. Advantages of antifiction bearing over frictional bearing. Materials and proportion of pats for drawing purposes. 03 Marks
- Heat treatment of steel. 03 Marks
- Shadelines & their use on machine drawings. Conventional method for drawings shade lines, surface shading by means of lines. 03 Marks
- Piping materials and specifications of WI & Steel pipes, pipe threads pipe fittings, specifications of fittings. 02 Marks
- Different types of pipe joints. 02 Marks
- Use of gears in transmission of power. Different types of gears. Cast gears and machined gears. Use of odontograph for drawing profile of gears etc. 02 Marks
- Brief description of Petrol, Diesel and Gas engines. 02 Marks
- Brief description, working principle and function of hydraulic jack, press accumulator, ram etc. 01 Marks
- Different locating methods clamping devices. 01 Marks
- Lay out of machine foundations. Brief treatment of the principal involved and the precautions to be observed, Lay out of machine foundation. 01 Marks
- Related theories of press tool with tolerance. 01 Marks
- Working of Blow off cock and simple carburetor. 02 Marks
- Numbering of drawings and standard parts > Familiarization with BIS.698 02 Marks
- Production of interchangeable parts, fits limits, tolerance & amiliarisation with IS -919 & IS 2709 . Different methods of showing machine surfaces on drawings. 02 Marks
- Familiarisation with-
- (Drg Board), IS-1360, IS-13609T-Sqr), IS-696(code of Engg. Drg). 02 Marks
- Belts-Power transmitted by belts. Materials of belts slip and creep velocity of Belt. Arc of contact, simple exercise in calculations of belts speed, no's of Belt needed in V-belt drive, law of belt. Crowing of pulley, velocity ratio. 05 Marks

- Necessity of coupling. Types uses and proportion of different types of coupling. Material used for coupling 02 Marks
- Use of carns in industry. Types of cam, kinds of motion, displacement diagrams. 02 Marks

Secretary,
J&K Services Selection Board,
Jammu.

# "LAB. ASSISTANT"
# (HEALTH DEPARTMENT"

# SYLLABUS FOR WRITTEN TEST

**Marks :-150**
**Time :- 2.30 Hours**

## ANTOMY THEORY — 10 Marks

**1. INTRODUCTION**
- Different Parts of the human body, Common Anatomical Terms, Anatomical Positions and important planes.
- Animal Cell.
- Tissue of the body, classification and function.
- Primary tissues of the body.

**2. SKELETAL SYSTEM**
- Joints & Movements
- Muscle & Monce.

**3. GASTRO-INTESTINAL SYSTEM**
- Mouth and Pharynx.
- Salivary Glands and Tonsils.
- Oesophagus and Stomach.
- Location of different organs in the Abdomen in situ.
- Liver and Gall Bladder.
- Spleen and Pancreas.

**4. GENITO-URINARY SYSTEM**
- Kidney
- Ureters, Bladder and Urethra.
- Male Reproductive System.
- Female Reproductive System.

**5. RESPIRATORY SYSTEM**
- Thoracic Cavity, Pleura and Lungs.

**6. CARDIO-VASCULAR SYSTEM**
- Heart and Pericardium.
- Arterial System.
- Venous and Lymphatic System.

**7. NERVOUS SYSTEM**
- Meanings and cerebrospinal fluid.
- Brain, Spinal Cord and the Nerves.

**8. LOCO-MOTOR SYSTEM**
- Parts of Upper Limb: - Bones Land marks and important vessels.

## PHYSIOLOGY THEORY — 15 Marks

**1. BLOOD**

- Composition and General function of Blood.
- Description of Blood Cells: - Normal Counts and function.
- Anti-congulants. 03

**2. CARDIO-VASCULAR SYSTEM** 01

- Functions of hart and blood vessels.
- Circulation:- Systemic Circulation
  Pulmonary Circulation.

**3. RESPIRATORY SYSTEM** 02

- Name of the Structure involved in respiration and their function
- External and Internal Respiration. How respiration and expiration are brought about.
- Transport of O2 and CO2 in the blood.
- Definition of Respiratory Rate, Tidal Volume, Vital Capacity, Cyanosis, Hypoxia.

**4. EXCRETORY SYSTEM** 01

- Functions of Kidney.
- Formation & Composition of Urine-normal and abnormal constituents.

**5. SKIN**

- Functions of Skin. 01

**6. DIGESTIVE SYSTEM** 02

- Composition and functions of Saliva. Mastication and deglutition.
- Functions of Stomach, Composition of Gastric Juice, Pancreatic Juice, Bile and Succus entericus.

**7. ENDOCRINE GLANDS** 01

- Definition, name and the hormones secreted by them.
- Major action of each hormone.

**8. REPROCUCTIVE SYSTEM** 02

- Male Genital System.
- Female Genital System.
- Names of Primary and Accessory Sex organs in make and female, Secondary Sexual characters in make and female.
- Functions of Ovary, formation of Ova, actions of Ovarian Hormones.
- Functions of Testis – Spermatogenesis and actions of testosterone.

**9. BLOOD GROUP, ABO and Rh, basis for classification, basis for determination, importance and Blood Groups.** 01

**10. CEREBROSPINAL FLUID, Formation, composition and functions.** 01

## BIO-CHEMISTRY THEORY — 10 Marks

**1. Elementary knowledge of Inorganic Chemistry – Atomic Weight, Molecular weight, Equivalent weight-Acids, basis and Salts-indicators-molar**

**solutions, Buffer Solution, Titration (Acid Base) Definition of Solutions. Methods of expressing concentration: Dilution.**

2. **Elementary knowledge of Organic Chemistry-Organic Compounds. Aliphatic and Aromatic. Alcohols, Aldehydes, Ketones, Amines, Esters, Phenol, Acids Colloids etc.**
3. **Elementary of Analytical Chemistry-Instrumentation, Centrifuge Balances, Colorimeter, Spetrophtometer, Flamephotometer Fluorimeter etc.**

## CLINICAL BIOCHEMISTRY THEORY — 25 Marks

1. **Aims and Scope Biochemistry.**
2. **CARBOHYDRATES – Importance, Definition, Classification, some properties.**
3. **PROTEINS-Amino Acids, essential amino acids, peptides, denaturation of proteins, Physiologically important proteins, functions of plasma proteins.**
4. **LIPIDS-Definition, classification, steroids, examples.**
5. **NUCLEICACIDS-DNAAND RNA, their importance.**
6. **HAEMOGLOBIN.**
7. **ENZYMESAND CO-ENZYMES-Elementary.**
8. **GASTRIC JUICE collection, Acidities.**
9. **CARBOHYDRATE-METABOLISM- elementary aspects, definition of Glycolysis, Glycogenoysis Hormonal regulation of Blood Sugar, Diabetes-Mellitus-Ketosis, Gcosuria, Renal Glycosuria, Pentosuria.**
10. **METABOLISM OF LIPIDS – elementary aspects, Triglyeerides, Cholestrol. Plasman Lipoprotiens-Ketone bodies and Ketonuria.**
11. **PROTIEN METABOLISM – Formation of Urea. Creatinine Proteinuria. Edema, Transaminases.**
12. **WATER AND MINERAL METABOLISM – Dehydration, Calcium, Phosphorus, Sodium, Potassium, Chloride, Iron, Lodine, their physiological functions and disease state.**
13. **HARMONES – definition, functions of some important hormones.**
14. **Blood and cerebrospinal Fluid functions of Blood & CSF.**
15. **Urine Normal and abnormal tests.**

## MICROBIOLOGY AND PARASITOLOGY THEORY — 30 Marks

1. **Requirement and use of Common Laboratory Equipment**
   - Incubator, Hot Air Oven. Autoclave. Water Bath. Anacrobic Jar. Vaccum Pump. Media Pouring Chamber, Refrigerator. Centrifuge.

2. **Microscope**
   - Principal, Operation, Care and use of Microscope.

3. **Sterilization and Disinfection**
   - Classification and general principles of Sterilization. Physical. Chemical and Mechanical Methods. Disposal of contaminated Media, Syringes, Glassware, Apparatus.

4. **Classification and Morphology of Bacteria**
   - **Brief Outline of :-**
     - Structure of Cell, Capsule, Flagella and Spores.
     - Growth of Bacteria
     - Nutrition of Bacteria.

5. **Staining of Bacteria**
   - Simple, Grams, Ziehl-Neelsen, Albert. Spore Stain.
   - Composition and preparation of staining reagents.

6. **Cultivation of Micro-Organisms-I (In detail)**
   - Classification of Media, Composition of Laboratory culture Media and Special Media.

7. **Cultivation of Micro-Organisms-II (In detail)**

8. **Identification of Bacteria:**
   - Cultural Characters, Bio-Chemical reactions and serotyping.

9. **Normal flora of micro-organisms in the human body.**

10. **Gram Positive and Gram Negative co---Staphylo----Penumococcus Neissriae (In brief).**

11. **Gram Negative Bacilli:**
   - Salmonella. Shigella. E. Coli. Klebsiella, Protein. Pseudomonas Vibro cholera Haemophilus. (In Brief)

12. **Gram Positive Bacilli:**
   - Aerobic
     a) Corynebacterium diphtheria. (In Brief).
     b) Mycobacterium tubercoulosis and Mycobacterium leprae.
   - Anacrobic bacilli – Clostridia. (In Brief).

13. **Antibiotic Sensitivity test – Principles and methods of determination of sensitivity. Candida. Asperigillus. Dermatophytes. (In Brief).**

14. **HIV & AIDS:**
   - Brief Account

15. **Immunity, Antigens, Antibodies and antigen antibody reaction and their applications in diagnosis of diseases.**
16. **Principles, Procedures and Diagnostic significance of agglutination. Precipitation. Neutralisation and complement fixation reactions.**
17. **Collection and processing of Clinical materials like Sputum. Urine Swabs. Stool. Blood, CSF and Aspirates.**

## CLINICAL PATHOLOGY AND HAEMATOLOGY — 30 Marks

**THEORY:**

1. **Introduction of Haemotology.**
2. **Collection of Blood**
3. **Antieoagulants.**
4. **Red Cell Count:**
   - Haemocytometer
   - Methods
   - Caloculation.

5. **White Cell Count. (Total Leucocyte Count):**
   - Morphology of White Cells.
   - Normal Values.
   - Romanowsky Stains
   - Staining Precedures
   - Counting Methods.

6. **Absolute Eosi Nophil Count.**
7. **Erytrocyte Sedimentaion Rate (ESR)**
   - Westergren's Method.
   - Wintrobe's Method.
   - Factors effecting ESR.
   - Importance and Limitations.
   - Normal Values.

8. **Packed Cell Volume.**
   - Macro and Micro Methods.
   - Normal Values.

9. **Haemoglobin Estimation and its clinical importance.**
10. **Red Cell Indices**
    - Calculations and Importance.

11. **Retienlocyte Count:**
    - Methods
    - Appearance
    - Normal Values.

12. **Sickle Cell Preparation.**
13. **Osmotic Fragility Test:**
    - Scorning Test.
    - Qualitative and Quantitative Test
    - Normal Values.
    - Factors allocating fragility.
    - Interpretation.

14. **Peripheral Blood Film**
15. **Preparation of Bone Marrow Smears**
16. **Coagulation Tests.**
    - Process of Coagulation.
    - Factors of Coagulation.
    - Tests of Coagulation.
      a. Bleeding time.
      b. Whole Blood Coagulation Time.
      c. Clot Retraction Test.
      d. Prothrombin Test.
      e. Toorniquet test.
      f. Platelet Count.

17. **Urimanalysis.**
    - Normal Constituent.
    - Physical Examination.
    - Chemical Examination.

- Microscopic Examination.

**18. CSF Examination.**
- Normal and abnormal Cell Count.

**19. Semen Analysis.**
- Physical Preterition.
- Motility.
- Morphology.

**20. Coomb's Test**

## HISTOTECHNOLOGY THEORY — 14 Marks

**1. Introduction.**
**2. Cell, Tissues and Their functions.**
**3. Examination Methods of Tissues and Cells.**
**4. Fixation of Tissue:**
- Classification of fixatives:
  a) Simple fixatives and their properties.
  b) Micro anatomical fixatives.
  c) Cytological fixatives.

**5. Tissue Processing:**
- Collection of Specimen.
- Labeling and Fixation.
- Dehydration.
- Cleaning
- Impregnation.

**6. Section Cutting:**
- Microtomes and their knives.
- Techniques of Section Cutting.
- Mounting of Sections.
- Frozen Section.

**7. Staining.**
- Dyes and their properties.
- Theory of Staining.
- Staining Techniques with haemotoxlin and cosin.
- Mounting of Sections.
- Common Special Stains.

**8. Decalification.**
- Fixation.
- Decalification
- Detection of end point.
- Neutralization and processing.

**9. Exfoliative Cytology:**
- Types of Specimen and preservation.
- Preparation and fixation of Smears.
- Papanicolaou Staining Technique.
- Sex Chromatin Staining.

**10. Museum Technique.**

- Reception of Specimen.
- Preparation of Fixation.
- Restoration of Colour.
- Preservation.
- Presentation.

**11. Autopsy Technique:**

- Assisting in Autopssy.
- Preservation of Organs & Processing of Tissues.

**12. Waste disposal and safety in Laboratory.**

## LABORATORY MANAGEMENT AND ETHICS 06 Marks

**1. Role of the Laboratory in the Health Care Delivery System:**

- General
- Human Health & Diseases.
    a. Types of Diseases.
    b. Process of Diagnosis
    c. Laboratory at different levels.
    d. Duties and responsibilities of Laboratory personnel.

**2. Laboratory Service in the Health Care Delivery System in India.**

- Laboratory Service in India.
- The Health Administration System in India.
    a. At the National Level.
    b. At the State Level.
    c. At the District Level.
    d. At the Village Level.
    e. Voluntary health Organizations in India.

**3. Laboratory Planning:**

- General Principals.
- Laboratory Goals.
- Operational Data.
    a. Market Potential
    b. Hospital/Laboratory relatives.
    c. Competitions.
    d. Laboratory Trends.
    e. Planning at different levels.
    f. Guiding Principles for planning Hospital laboratory Services:
        - Factors.
        - Guiding Principles for Planning.
        - Functional Criteria.
        - Operational demand.
        - Sections of a Hospital Laboratory.
        - Common area.
        - Design aspect.
        - Space requirement.
    g. Planning for a basic health Laboratory.

**4. Laboratory Organization (Laboratory Management Techniques):**

- General Principles.
- Components and functions of a laboratory.
- Staffing the Laboratory.
- Job Descriptions.
- Job Specification
- Work schedule
- Personnel re-arrangement and work load assessment.

**5. Care of Laboratory Glassware, Equipments and Instruments and Chemicals etc.**

- General Principles.
- Care and cleaning of glassware.
- Making simple glass wares in Laboratory.
- Care of equipments, instruments and apparatus etc.
- Laboratory Chemicals, their proper use and care.
- Labelling.

**6. Specimen Handeling**

- General Principles.
- Collection Techniques and containers for specimen.
- Types of Specimens.
- Specimens entry.
- Specimens transfer and distribution and re-assignment.
- Specimens disposal.
- Specimens Preservation.

**7. Laboratory Safety.**

- General Principles
- Laboratory Hazards.
- Safety Programmes.
- First-Aid

## 8. Blood Bank. 10 Marks

i) Introduction and Historical aspects.
ii) Human Blood Group Antigens, their inheritance and antibodies.
iii) ABO Blood Group System.
   a) Sub-Group
   b) Source of Antigens, types of antibodies.

**iv) Rh. Blood Group System.**
   a) Nomenclature and types of Antigens.
   b) Mode of inheritance.
   c) Types of Antibodies.

V) Other Blood Group System.
Vi) Techniques of Grouping and Cross Matching.

**Vii) Blood Collection.**
   a) Selection and screening of Donor.
   b) Collection of Blood.
   c) Various anticoagulants used.
   d) Storage of Blood.

**Viii) Blood Transfusion:**
   a) Procedures and Complications.

b) Blood Transfusion Reaction, Types, Investigation and Presentation of Transfusion Reaction.

**IX) Coomb's Test.**

**X) Organization, Operation and Administration and Blood Bank.**

Secretary,
J&K Services Selection Board,
Jammu.