**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

i) **The question paper has two parts A and B. Both the parts are compulsory.**

ii) **Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Anatomy Q P CODE: 5101

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Describe shoulder joint
2. Describe the anatomy of eye ball
3. Describe the popliteal fossa
4. Describe deltoid muscle
5. Describe the muscles of anterior abdominal wall

**II. Short answers 10 X 3 = 30 marks**

6. Classify connective tissue with examples
7. Give examples for long bones
8. Name the muscles in gluteal region
9. Give examples for synovial joints
10. Classify vertebrae
11. Name the extra ocular muscles
12. Name any 6 bones of skull
13. Name the contents of anterior triangle of neck
14. Name the carpal bones
15. Name the muscles in leg

## Subject: Physiology Q P CODE: 5102

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Functions of plasma proteins
2. Transport across cell membrane
3. Hypoxia
4. Draw a neat lablled diagram of cell. Add a note on varicose cell organelles
5. List types f clothing mechanisms add a note on anticoagulants and hemopHilia

**II. Short answers 10 X 3 = 30 marks**

6. Define bleeding time and clothing time. Give their normal valuco.
7. Define anemia. Normal value of hemoglobin and RBC count
8. List hormones of pituitary glands.
9. Define apnoea dyspnea tachypnea
10. Enumerate types of muscles
11. Surfactant
12. List 3 function of skin
13. List 3 function of blood
14. List priors of refraction
15. List 3 functions of liver

**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

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**Subject: Anatomy** **Q P CODE: 5101**

## I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks

1. Describe hip joint
2. Describe the anatomy of nose
3. Describe the cubital fossa
4. Describe scapula bone
5. Describe the muscles of intercostal space

## II. Short answers 10 X 3 = 30 marks

6. Give examples of cartilagenous joints
7. Give examples for flat bones
8. Name the muscles in front of arm
9. Name any 6 muscles of face
10. Name the muscles supplied by musculocutaneous nerve
11. Name the nerve supply of skin of hand
12. Name any 6 muscles attached to mandible
13. Name the contents of posterior triangle of neck
14. Name the tarsal bones
15. Name the branches of femoral artery

## Subject: Physiology Q P CODE: 5102

## I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks

1. Functions of skin
2. Functions of liver
3. Neuromuscular junction. Explain with a neat lebelled diagram
4. Defecation
5. Explain contraceptive methods in male and female

## II. Short answers 10 X 3 = 30 marks

6. Define GFR. Normal value of GFR
7. List the male reproductive hormones.
8. List the pregnancy tests
9. Define cardiac output.
10. List functions of saliva
11. List components of reflex arc
12. List types of neuroglial cells.
13. Define ESR and PCV. Give their normal values.
14. List muscles of ventilation
15. Define apnca tachypnea, Dyspnea

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# Medical Laboratory Technology

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**Subject: Anatomy** **Q P CODE: 5101**

## I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks

1. Write definition and classification of joints
2. Describe the anatomy of tongue
3. Describe the anatomy of breast
4. Describe the arteries of upper extremity
5. Describe the mandible bone

## II. Short answers 10 X 3 = 30 marks

6. Name the muscles of thigh
7. Name the muscles in neck
8. Name the arteries in lower extremity
9. Name any 6 muscles attached to scapula
10. Name the muscles supplied by radial nerve
11. Name the nerve supply of skin of foot
12. Name layers of eyeball
13. Name the muscles of anterior abdominal wall
14. Definition of anatomical position
15. Name the contents of femoral triangle

## Subject: Physiology Q P CODE: 5102

## I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks

1. Explain spermatogenesis
2. Functions of kidney. Define GFR and give its normal value
3. Respiratory and non respiratory functions of lungs
4. Transport of $CO_2$
5. Middle ear contents and lists the functions of middle ear

## II. Short answers 10 X 3 = 30 marks

6. Normal Constituents of urine
7. Define ESR. List the method of ESR estimation
8. Indications of blood transfusion
9. Muscle of ventilation
10. Surface tension and surfactant
11. Define hypoxia and cyanosis
12. List 3 actions of growth hormone
13. Give normal values of hemoglobin content platelet count, PCV
14. Define artificial respiration. List 2 indications for it
15. Define artificial respiration. List its indications

**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

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**GENERAL INSTRUCTIONS:**

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**Subject: Anatomy** **Q P CODE: 5101**

## I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks

1. Describe the anatomy of inguinal canal
2. Describe the knee joint
3. Describe the sternocleidomastoid muscle
4. Describe the veins of lower extremity
5. Describe the femur bone

## II. Short answers 10 X 3 = 30 marks

6. Name the nerves of upper extremity
7. Name the muscles in arm
8. Write about femoral canal
9. Name the joints of upper extremity
10. Name the muscles supplied by obturator nerve
11. Name the contents of popliteal fossa
12. Name the muscles of tongue
13. Write about elbow joint
14. Name the muscles of pectoral region
15. Name the contents of axilla

## Subject: Physiology Q P CODE: 5102

## I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks

1. Functions of blood
2. Functions of plasma proteins
3. Errors of refraction and explain their correction
4. Trace 01 factory pathways. Explain with a neat labeled diagram
5. Explain temperature regulation

## II. Short answers 10 X 3 = 30 marks

6. Define apnea, tachypnea & Dyspnea
7. Define Artificial respiration. List 2 indications for it.
8. Define Glomerular filteration rate. Give its normal value
9. List 3 actions of thyroid hormone
10. List 3 functions of saliva
11. Enumerate components of female reproductive system
12. List types of intestinal movements.
13. Give normal values of random blood sugar, fasting blood sugar and post prandial blood sugar
14. Give normal values of RBC, WBC and Platelets
15. List 3 functions of skin

**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

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**Subject: Anatomy** **Q P CODE: 5101**

## I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks

1. Classify bones with examples
2. Write about the ear
3. Describe the gluteus maximus muscle
4. Describe the veins of upper extremity
5. Describe the humerus bone

## II. Short answers 10 X 3 = 30 marks

6. Name the nerves of brachial plexus
7. Name the muscles in hand
8. Name parts of hip bone
9. Name the joints of lower extremity
10. Name the muscles supplied by femoral nerve
11. Name the contents of cubital fossa
12. Name the bones and cartilages of nose
13. Write about adductor canal
14. Name the contents of femoral sheath
15. Name the nerves of tongue

## Subject: Physiology Q P CODE: 5102

## I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks

1. Briefly explain passive transport
2. Functions of skin
3. Explain stages of erythropoiesis
4. Fate of Hemoglobin. Add a note on jaundice.
5. List types of clotting mechanisms. Add a note on anticoagulants and hemophilia.

## II. Short answers 10 X 3 = 30 marks

6. List the types of muscle
7. Muscles of ventilation
8. List the functions of kidney
9. Functions of WBC
10. Components of conducting system of Heart
11. Classify anemia
12. Write a note on hypoxia
13. Draw a neat labelled diagram of nephron
14. List pancreatic hormones
15. List adrenocortical hormones

**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

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**GENERAL INSTRUCTIONS:**

i) **The question paper has two parts A and B. Both the parts are compulsory.**

ii) **Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Anatomy Q P CODE: 5101

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Uterus
2. Kidney
3. Lungs
4. Heart
5. Spleen

**II. Short answers 10 X 3 = 30 marks**

6. Types of bone
7. Parts of pancreas
8. Joints of upper limb
9. Enumerate the bones of foot
10. Parts of stomach
11. Mention the different movements at Hip joint
12. Functions of Ovary
13. Types of Muscles
14. Mention the organs taking part in Pulmonary circulation
15. Parts of pituitary gland

## Subject: Physiology Q P CODE: 5102

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Describe different types of cell junctions with help of neat diagram
2. Composition and functions of Blood
3. Define receptors. Classify sensory receptors
4. Physiology of muscle contraction
5. Composition and functions of Bile

**II. Short answers 10 X 3 = 30 marks**

6. Functions of Respiratory system
7. Normal constituents of urine
8. List out all Hypothalamic hormones
9. Functions of Skin
10. Define Stroke volume and Cardiac output. Give their normal values
11. Functions of middle ear
12. Pregnancy tests
13. Differences between ICF and ECF
14. Name any six cranial nerves
15. Functions of CSF

**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

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**GENERAL INSTRUCTIONS:**

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ii) **Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Anatomy Q P CODE: 5101

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1.Stomach.
2.Kidney
3.Pituitary gland.
4.Spinal cord.
5.Fallopian tube.

**II. Short answers 10 X 3 = 30 marks**

6.Name the parts of cerebrum.
7. Name the bones of Thoracic cage.
8.Enumerate anatomical planes
9.Mention the steps of H&E staining
10.Name the joints of lower limb
11.Mention the muscles of arm.
12.Name different positions of human body.
13. Functions of CSF.
14. Name the chambers of heart.
15. Name the parts of small intestine.

## Subject: Physiology Q P CODE: 5102

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Renal function tests
2. Composition and functions of Surfactant
3. Functions of thyroid hormones
4. Spermatogenesis
5. Mechanism of transport across cell membrane

**II. Short answers 10 X 3 = 30 marks**

6. Functions of sKIN
7. Audiometry
8. Polycythemia
9. Types of Neuroglial cells
10. Functions of External ear
11. Vitamin D synthesis
12. Structure of Mitochondria
13. Functions of plasma proteins
14. Functions of Saliva
15. Normal Heart sounds and physiological basis of the same

**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

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## Subject: Anatomy Q P CODE: 5101

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1.Heart.
2.Spinal cord.
3.Pancreas
4.Urinary bladder .
5.Gall bladder.

**II. Short answers 10 X 3 = 30 marks**

6.Name the different functions of liver.
7.Name the parts of stomach.
8 .Enumerate the bones of skull.
9. Name the joints of upper limb.
10.Name the types of connective tissue.
11.Mention the parts of Compound microscope
12.What are the artefacts? Give examples
13.Mention the types of simple epithelium.
14.Mention the steps in H&E staining.
15. Enumerate the parts of vertebra

## Subject: Physiology Q P CODE: 5102

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Olfactory pathway
2. Define Anemia. Mention different types of anemia with examples
3. Neuromuscular junction
4. Define ECG. Explain recording of ECG with 12 lead electrode system
5. Transport of oxygen in blood

**II. Short answers 10 X 3 = 30 marks**

6. Functions of pancreatic juice
7. Facilitated diffusion
8. Temperature regulation by skin
9. Functions of Ovary
10. Functions of ADH
11. Renal clearance
12. Define apnea, dyspnea and tachypnea
13. Draw neat labeled diagram of normal ECG waves and give normal value of PR interval
14. Reflex arc
15. Define Bleeding time and Prothrombine time. Give their normal values

**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

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## Subject: Anatomy Q P CODE: 5101

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Liver.
2. Stomach.
3. Testis.
4. Thyroid .
5. Spleen.

**II. Short answers 10 X 3 = 30 marks**

6. Name any 3 steps of histology slide preparation
7. Mention any 3 bones of upper limb.
8. Mention any 3 types of epithelium.
9. Name any 3 anatomical terms related to movements.
10. Femur-parts
11. Mention any 3 differences between rt & lt lungs
12. Lumbar pucture
13. What are artefacts? Give examples.
14. Mention the parts of compound microscope
15. Enumerate anatomical planes

## Subject: Physiology Q P CODE: 5102

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Oxygen – Hemoglobin dissociation curve and factors causing right and left shift of the curve
2. Composition and functions of CSF
3. Composition and Functions of pancreatic juice
4. Conducting system of Heart
5. Renal function tests

**II. Short answers 10 X 3 = 30 marks**

6. Differences between skeletal and cardiac muscle
7. Structure of cell membrane
8. ESR
9. Define compliance. Give its normal value
10. Structure of Nephron
11. Temperature regulation by skin
12. Name Refractory errors and their corrections
13. Functions of Progesterone
14. Actions of Insulin
15. Cell aging

**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

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## Subject: Anatomy Q P CODE: 5101

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1.Uterus
2.Cerebellum
3.Urinary bladder.
4.Appendix
5.Suprarenal gland

**II. Short answers 10 X 3 = 30 marks**

6.Mention the parts of large intestine
7.Enumerate the carpal bones
8.Mentions different types of muscles
9.Parts of microtome
10. Mention few anatomical terms
11. Name the meninges
12. Name different positions of human body.
13.Name the bones of thoracic cage
14. Name any 3 anatomical terms related to movements
15. Mention different types of neurons.

## Subject: Physiology Q P CODE: 5102

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Steps involved in Clotting by Intrinsic pathway
2. Describe the structure of Synapse with the help of neat labeled diagram
3. Oogenesis
4. Differences between systemic and pulmonary circulation
5. Define Hypoxia. Classify Hypoxia with examples

**II. Short answers 10 X 3 = 30 marks**

6. PCV
7. Movements of small intestine
8. SAN
9. Functions of Surfactant
10. Diffusion
11. Functions of CSF
12. Contraceptive Methods in males
13. Audiometry
14. Functions of skin
15. Normal constituents of urine

**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

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## Subject: Anatomy Q P CODE: 5101

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Hyaline cartilage
2. Classify bones with examples
3. Lungs
4. Stomach
5. Deltiod muscles

**II. Short answers 10 X 3 = 30 marks**

6. Name 3 cell organelles
7. Name 3 muscles of upper limb
8. Parts of pharynx
9. Functions of gall bladder
10. Coverings of brain
11. Hormones secreted by Pancreas
12. Name 3 lymphoid organs
13. Name 3 Nerves of lower limb
14. Name 3 tarsal bones
15. Synovial joint

## Subject: Physiology Q P CODE: 5102

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. What is the difference between diffusion and osmosis? Give an example for each.
2. Explain the basis for classification of blood groups.
3. Describe the taste pathways with neat diagram
4. Describe the effects of hypersecretion of growth hormone.
5. Describe hypoxia. Classify hypoxias

**II. Short answers 10 X 3 = 30 marks**

6. Buffer mechanism of kidney.
7. Diuretics
8. Diabetes insipidus (basis, lesion, features).
9. Asphyxia.
10. waves of ECG.
11. State Landsteiner`s law.
12. Muscle proteins & their functions
13. What is the normal calcium level in blood?
14. Four actions of thyroxin
15. Coagulation factors.

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## Subject: Anatomy Q P CODE: 5101

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Broncho Pulmonary segments
2. Gluteus Maximus
3. Spleen
4. Classify joints with examples
5. Right Atrium

**II. Short answers 10 X 3 = 30 marks**

6. Name 3 Upper limb arteries
7. Name 3 Paranasal air sinuses
8. Superior venacava
9. Name carpal bones
10. Name 3 salivary glands
11. Epididymus
12. Name 3 types of vertebrae
13. Sesamoid bone
14. Name 3 ear ossicles
15. Name 3 lower limb muscles

## Subject: Physiology Q P CODE: 5102

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Describe the various methods of transport across the cell membrane.
2. Describe the different steps of phagocytosis.
3. Describe the mechanism of formation of concentrated urine
4. Enumerate the posterior pituitary hormones. Describe their actions
5. Describe conducting system of the heart. Explain the pathway of spread of cardiac impulse

**II. Short answers 10 X 3 = 30 marks**

6. Enumerate various structures present in a cell. Give their functions.
7. Name four immunoglobulins. Which one is concerned with allergy?.
8. What is bradycardia?
9. Actions and secretion of parathormone
10. Ejection fraction.
11. Baroreceptor reflexes
12. Diabetes insipidus (basis, lesion, features).
13. List the methods of contraception in female.
14. Draw and label a synapse.
15. Tests for pregnancy.

**PARAMEDICAL BOARD, BENGALURU**

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## Subject: Anatomy Q P CODE: 5101

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Liver
2. Classify Epithelium with examples
3. Lymph node
4. Brachial artery
5. Blood supply of heart

**II. Short answers 10 X 3 = 30 marks**

6. Name 3 upper limb nerves
7. Name 3 Carpal bones
8. Name 3 lower limb arteries
9. Name 3 Dural venous sinuses
10. Name types of cartilage
11. Ovary
12. Hormones secreted by Thyroid gland
13. Parts of compound microscope
14. Portal vein
15. Ureter

## Subject: Physiology Q P CODE: 5102

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Classify never fibers based on velocity &diameter. Mention the factors influencing condition of velocity of nerve impulse.
2. Describe the pathway for temperature sensation.
3. Describe the structure of neuromuscular junction & the mechanism of transmission of impulse across neuromuscular junction in skeletal muscle.
4. Describe steps in hemoglobin synthesis. Add a note on disorders of hemoglobin synthesis. Mention two types of hemoglobinopathies
5. Describe the role of chemoreceptors in regulation of blood pressure.

**II. Short answers 10 X 3 = 30 marks**

6. Describe steps in Renal clearance.
7. Structure of Nephron.
8. Presbiopia and its correction.
9. Thyroid function tests.
10. Ovulation.
11. Explain synaptic fatigue.
12. List the functions of liver.
13. List the types of B lymphocytes.
14. Waves of ECG.
15. Asphyxia.

**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

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## Subject: Anatomy Q P CODE: 5101

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Uterus
2. Stratified epithelium
3. Classify glands with example
4. Arch of Aorta
5. Lungs

**II. Short answers 10 X 3 = 30 marks**

6. Parts of Pharynx
7. Mitochondria
8. Parts of Male Reproductive system
9. Blood supply of long bones
10. Cerebro spinal fluid
11. Fallopian tube
12. Tributaries of inferior venacava
13. Parts of Lymphatic system
14. Spermatogenesis
15. Branches of celiac trunk

## Subject: Physiology Q P CODE: 5102

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Enumerate plasma proteins. Describe the functions of plasma proteins
2. What is erythropoiesis? Name the sites of erythropoiesis in an adult.
3. Glomerular filtration rate ( normal value, factors influencing, measurement)
4. Enumerate the posterior pituitary hormonesDescribe their actions
5. Describe conducting system of the heart. Explain the pathway of spread of cardiac impulse

**II. Short answers 10 X 3 = 30 marks**

6. Name two anticoagulants with their mechanism of action
7. List six functions of kidneys.
8. Enumerate various structures present in a cell. Give their functions.
9. Name four immunoglobulins. Which one is concerned with allergy?
10. Describe the mechanism of action of insulin.
11. What is bradycardia?
12. Ejection fraction.
13. Describe the different steps of phagocytosis.
14. Name the tests for detecting hearing loss
15. Tests for pregnancy.

**PARAMEDICAL BOARD, BENGALURU**

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## Subject: Anatomy Q P CODE: 5101

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Urinary bladder
2. Thyroid gland
3. Elastic cartilage
4. Classify neuron with example
5. Tonsils

**II. Short answers 10 X 3 = 30 marks**

6. Fertilization
7. Branches of external carotid artery
8. Name 3 axial bones
9. Name chambers of heart
10. Hormones secreted by Adrenal gland
11. Gametogenesis
12. Name 3 muscles of larynx
13. Maxillary air sinus
14. Tongue
15. Parts of central Nervous system

## Subject: Physiology Q P CODE: 5102

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Describe oxygen dissociation curve with labeled diagram and factors affecting it. Give the significance of its shape
2. Describe the role of chemoreceptors in regulation of blood pressure.
3. What is erythropoiesis? Name the sites of erythropoiesis in an adult.
4. Glomerular filtration rate ( normal value, factors influencing)
5. Mention the functions of Mitochondria, Golgi apparatus, Ribosomes, Lysosomes

**II. Short answers 10 X 3 = 30 marks**

6. Actions and secretion of parathormone
7. List six functions of kidneys.
8. SA node as pacemaker
9. Describe the mechanism of action of insulin.
10. Name Coagulation factors.
11. Heart sounds and murmurs.
12. What is blind spot? Why is it blind?
13. Functions of ovary.
14. Tests for pregnancy.
15. Presbiopia and its correction.

**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Explain the principle and components of Colorimeter. Write about Beer Lambert's law.
2. Centrifuge.
3. Enumerate the safety precautions to be taken in the laboratory. What will you do if any of your co workers gets an accidental needle stick injury?
4. Ion selective Electrodes.
5. Describe about the use, care and maintenance of Water Distillation Plant and water Deioniser.

**II. Short answers 10 X 3 = 30 marks**

6. Cold Box.
7. Weighing of hygroscopic compounds.
8. How to use a Reflux condenser?
9. Write about cleaning of plastic ware in laboratory.
10. Name the different types of flasks with one use of each.
11. Biological importance of fats .
12. EDTA tubes.
13. Cuvettes.
14. Calibration of glass pipettes.
15. Significance of Borosilicate glassware in laboratory.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Classification of Amino acids.
2. Factors affecting Enzyme velocity.
3. Write about the components of lipid profile with the normal reference range. Add a note on significance of LDL.
4. Write about the sources, RDA and absorption of Vitamin B12.
5. Classify carbohydrates. Add a note on Lactose intolerance.

**II. Short answers 10 X 3 = 30 marks**

6. Rancidity of fats.
7. Internal Quality control.
8. Transamination.
9. Name the organic constituents of normal urine and tests used to detect them.
10. Write the Henderson Hasselbalch equation. Differentiate between weak and strong acid.
11. Night Blindness.
12. Write about the rationale of colour change of any indicator in acidic and basic conditions.
13. Hygroscopic salts.
14. Normal values of serum Sodium, Potassium and Chloride.
15. What is Hemolysis? Name any two serum parameters whose estimation is affected by Hemolysis.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. How do you combat Electric and fire hazards to ensure laboratory safety?
2. Preparation, use and storage of reagent grade water.
3. Describe Venipuncture with respect to preliminary steps, location, preparation of site and blood collection.
4. Spectrophotometer.
5. Principle and use of pH meter. Add a note on sodium error and electrode contamination.

**II. Short answers 10 X 3 = 30 marks**

6. Micropipettes.
7. Deep freezer.
8. Sodium fluoride vacutainers.
9. Incubator.
10. Define a) Molarity. b) Molality. c) Normality.
11. Volumetric flasks.
12. Types of Centrifuges.
13. Define Hemolysis. Enumerate the causes of hemolysis of blood sample.
14. Cleaning solutions of glassware.
15. Briefly describe types of balances.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Differentiate between Myocardial Ischemia and Infaraction. Write about the cardiac profile Enzymes and proteins in Myocardial Infaraction.
2. Metabolism of Chylomicrons.
3. RDA, Sources, Active form and functions of Vitamin D.
4. Classification of Proteins with suitable examples.
5. Heteropolysaccharides.

**II. Short answers 10 X 3 = 30 marks**

6. Albumin.
7. Essential components in a requisition form.
8. Differentiate between serum and plasma. Which is a better sample for glucose estimation and why?
9. Define pH. What is the normal pH of blood and urine?
10. Functions of Calcium.
11. What is a Nucleotide? Name the purine and pyrimidine Nitrogen bases.
12. Name the diseases from which lab technicians can protect themselves by the use of Gloves while handling blood and other body fluids in the laboratory.
13. Scurvy.
14. Amphipathic Lipids.
15. Define a) Acid. b)Base. c)Buffer.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Centrifuge.
2. Describe specimen collection with respect to patient registration, collection and transport of sample to laboratory.
3. Precautions and measures to be taken to prevent Chemical hazards in laboratory.
4. Anticoagulants. Add a note on different types of vacutainers.
5. Colorimeter.

**II. Short answers 10 X 3 = 30 marks**

6. Internal Quality control.
7. Dessicator.
8. Fume cupboard.
9. Different types of Pipettes.
10. Define a) Solute. b) Solvent. c) Solution.
11. Reflux Condenser.
12. Deionised water.
13. Significance of Borosilicate glassware in laboratory.
14. Different types of funnels and their uses.
15. Name the diseases from which lab technicians can protect themselves by the use of Gloves while handling blood and other body fluids in the laboratory.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Classification of Enzymes.
2. Polysaccharides.
3. Describe the metabolism of VLDL.
4. Functions of Vitamin C.
5. List the five classes of Plasma proteins as separated by Electrophoresis. Write in brief about Albumin.

**II. Short answers 10 X 3 = 30 marks**

6. EQUAS (External Quality Assurance Scheme).
7. Molarity, Molality and Normality.
8. Essential Amino Acids.
9. Normal values of Urea, Creatinine and Uric acid in blood.
10. What is a Buffer? Name the different buffer systems in our body.
11. Rickets.
12. Define a Nucleoside. Name the purine and Pyrimidine Nucleosides.
13. Denaturation of Proteins.
14. Name the organic and inorganic constituents of normal urine.
15. Beriberi.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

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**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Spectrophotometer.
2. Laboratory rules and regulations to prevent Biological hazards.
3. Centrifuge.
4. Preparation, use and storage of reagent grade water.
5. Principle and use of pH meter. Add a note on sodium error and electrode contamination.

**II. Short answers 10 X 3 = 30 marks**

6. Dilution.
7. EQUAS(External Quality Assurance Scheme).
8. EDTA Vacutainers.
9. Cold Box.
10. Lyophilization.
11. Define a) Molarity. b) Molality. c) Normality.
12. Differentiate between Calibration and Standardization.
13. Define a) Acid. b) Base. c) Buffer.
14. Measuring Cylinder.
15. Micropipette.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. RDA, Sources, Active form and any four functions of iron. Briefly describe about Iron Deficiency Anaemia with respect to blood investigations and peripheral blood smear.
2. Classification of Amino acids.
3. Phospholipids.
4. Define carbohydrates. Classify them along with suitable examples. Differentiate between Glycogen and Starch.
5. Isoenzymes.

**II. Short answers 10 X 3 = 30 marks**

6. Cis and Trans fatty acids.
7. What is Hemolysis? Name any two serum parameters whose estimation is affected by Hemolysis.
8. Differentiate between DNA and RNA.
9. Km and Vmax.
10. EQUAS (External Quality Assurance Scheme).
11. Normal values of total proteins, Albumin and Globulins in Serum.
12. Hygroscopic salts.
13. Transamination.
14. Pellagra.
15. Name the abnormal constituents of urine.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

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**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Explain the principle and components of Colorimeter. Write about Beer Lambert's law.
2. Ion selective Electrodes.
3. Describe Venipuncture with respect to preliminary steps, location, preparation of site and blood collection.
4. Anticoagulants. Add a note on different types of vacutainers.
5. Precautions and measures to be taken to prevent hazards from Volatile substances and compressed gases in laboratory.

**II. Short answers 10 X 3 = 30 marks**

6. Dessicator.
7. Define Hemolysis. Enumerate the causes of hemolysis of blood sample.
8. Deep Freezer.
9. Internal Quality Control.
10. Deionized water.
11. Write about cleaning of plastic ware in laboratory.
12. Name the diseases from which lab technicians can protect themselves by the use of Gloves while handling blood and other body fluids in the laboratory.
13. Volumetric Flasks.
14. Types of Centrifuges.
15. Define a) Solute. b) Solvent. c) Solution.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. RDA, Sources, Active form and any six functions of Calcium. Add a note on Rickets.
2. List the five classes of Plasma proteins as separated by Electrophoresis. Write in brief about Albumin.
3. Write about the components of lipid profile with the normal reference range. Add a note on significance of LDL.
4. Classification of Enzymes.
5. Polysaccharides.

**II. Short answers 10 X 3 = 30 marks**

6. Scurvy.
7. External quality control.
8. Differentiate between serum and plasma. Which is a better sample for glucose estimation and why?
9. Name the abnormal constituents of urine.
10. Polyunsaturated fatty acids.
11. Name the Pyrimidines. Differentiate between Nucleoside and Nucleotide.
12. Essential Amino Acids.
13. Name the diseases from which lab technicians can protect themselves by the use of Gloves while handling blood and other body fluids in the laboratory.
14. Define a) Acid. b)Base. c)Buffer.
15. Km and Vmax.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. What are the types of specimen? How they are preserved? Mention some preservatives and anticoagulants.
2. Define centrifugation. Types of centrifuges with their clinical approach.
3. Write in detail about colorimeter with diagram.
4. Write about the preparation of 0.1 N NaCl from 1N NaCl.
5. How standard solutions are prepared? What is the significance of volumetric flask?

**II. Short answers 10 X 3 = 30 marks**

6. What are the laws of laboratory? How it is regulated?
7. What are the types of pipettes? Mention about different volumes of pipettes.
8. Significance of cuvettes for UV and visible range.
9. What is the importance of borosil glass ware in laboratory?
10. What are the types of balance? What is the significance of electrical balance?
11. Define pH. How pH is measured?
12. Define standard units.
13. Write about the preparation of saturated solution.
14. What are the different types of cleaning solutions for glass ware?
15. Significance of glass water distillation.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Write about physical and chemical properties of acids and bases.
2. What are the acid base indicators? How the pH is determined? Write the principle and applications of pH meter.
3. Classify carbohydrates with examples.
4. Write briefly about DNA with neat labeled diagram.
5. Write the sources, biochemical functions, and disorders of calcium.

**II. Short answers 10 X 3 = 30 marks**

6. What are the different types of salts?
7. List some commonly used indicators and their pH value.
8. Starch.
9. Name acidic and basic amino acids.
10. Reference values of plasma proteins and how they are separated?
11. Draw a neat labeled diagram of t-RNA
12. Classify enzymes with examples
13. Name purines and pyrimidines.
14. Biochemical functions of vitamin-A
15. Name the test to detect bile salts and bile pigments in urine and write the procedure.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

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## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Write in detail about the following – Laboratory maintenance, Laboratory safety, Laboratory waste management
2. Classify pipettes, beakers and volumetric flask. Add a note on their laboratory significance.
3. What are the different types of samples? How they are collected and processed in the laboratory?
4. Write in detail about variable and fixed type of pipettes with their range
5. Name any five most important glass ware and their usage in laboratory.

**II. Short answers 10 X 3 = 30 marks**

6. Define centrifugation. What is RPM?
7. Enumerate the applications of spectrophotometer.
8. Name any three cleaning solutions of plastic ware.
9. Define ion selective electrodes.
10. Add a note on the usage of tripod and porcelain dish.
11. Significance of cuvettes for UV and visible range.
12. Significance of E.D.T.A. and sodium fluoride in clinical laboratory.
13. Use of distilled water and deionized water in laboratory.
14. How biological fluids are disposed?
15. Mention some measuring cylinders with different range.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. What are acids and bases? Write about the Lowry – Bronsted theory of acids and bases.
2. Classify amino acids with specific examples of each class.
3. Define nucleic acids. Write the difference between DNA and RNA.
4. Define complex lipids. Name any two from each class with brief note.
5. Write in detail about vitamin – C.

**II. Short answers 10 X 3 = 30 marks**

6. Write the different types of salts and their storage.
7. Define hydrogen ion concentration. How buffer solution is prepared?
8. What are acid base indicators? Name them.
9. Define carbohydrates. Write the biochemical functions of carbohydrates.
10. Biuret test. Principle and procedure.
11. Name the enzyme inhibitors.
12. Clinically important enzymes of myocardial infarction.
13. What are the normal constituents of urine?
14. Describe briefly about data management in laboratory.
15. What are the disorders of calcium deficiency?

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Define pH. How pH is determined. Add a note on principle of pH meter and ion selective electrodes.
2. Classify cuvettes. What is their significance with colorimeter and spectrophotometer? What is their absorption capacity at UV Infrared and visible rays?
3. Draw a neat labeled diagram of glass distillation water plant. Add a note on its usage in clinical laboratory.
4. What are the different types of glass and plastic ware used in laboratory? Mention any three from each and their usage.
5. Importance of oven and incubator. Add a note on its application in clinical laboratory.

**II. Short answers 10 X 3 = 30 marks**

6. Define beer Lamberds law.
7. Draw a neat labeled diagram of photometer.
8. Reflux condenser and its uses.
9. What is the instrument used to measure the chemicals, salts and liquids. Add a note on its significance.
10. Laboratory importance of refrigerator
11. Significance and usage of Borosil glass ware.
12. What is the usage of stop watch and timer in laboratory?
13. What are the types of flasks. Mention their usage.
14. What is the importance of sodium citrate and heparin in laboratory?
15. How a quality of clinical laboratory is maintained?

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Classify lipids. Explain briefly each class with suitable example.
2. Write the sources, RDA, biochemical functions and deficiency manifestations of vitamin – A.
3. Define isoenzymes. Add a note on isoenzymes of ALP, LDH and Transaminases.
4. How calcium is regulated? Add a note on hypercalcemia and hypocalcemia.
5. Write about normal and abnormal constituents of urine. Add a note on their clinical importance.

**II. Short answers 10 X 3 = 30 marks**

6. Write the properties of acids and bases.
7. Name any three commonly used indicators and their pH range.
8. Draw a neat diagram of IgG and label the parts.
9. Write briefly about starch and inulin.
10. How proteins are precipitated? Name any two precipitating agents.
11. What are the record books to be maintained in clinical laboratory?
12. Define a buffer. How a standard buffer solution is prepared.
13. Define nucleotides and nucleosides with suitable examples.
14. Structure of t-RNA and label the parts.
15. Define essential fatty acids. Name them.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

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**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Write in detail about External Quality Control (EQC) and Internal Quality Control (IQC)
2. Write in detail about sample collection, transport, storage and disposal.
3. Classify laboratory balance. What is its significance? Add a note on guidelines to be followed to use weighing machine.
4. What are the types of cleaning solutions? Add a note on cleaning of plastic and glass ware.
5. Classify test tubes. Add a note on each test tube with specific volume.

**II. Short answers 10 X 3 = 30 marks**

6. What is the importance of oven and incubator?
7. Classify centrifuge.
8. Write the principle and application of colorimeter.
9. Add a note on different types of beakers with volume.
10. Classify reagent bottles with specific volume.
11. What is the usage of anticoagulants in laboratory?
12. What is the usage of distilled water in clinical laboratory?
13. Use of funnels in laboratory.
14. Draw a neat diagram of Bunsen burner and label the parts.
15. Applications of pH meter.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Draw a neat labeled diagram of DNA. Add a note on it.
2. Define pH and buffer. How a standard buffer solution is prepared? Explain with example.
3. Define acids and bases. Write any three pHysical and chemical properties of acids and bases.
4. Write the sources, RDA, biochemical functions and deficiency disorders of vitamin – D
5. Write about iron metabolism. Add a note on its deficiency disorders.

**II. Short answers 10 X 3 = 30 marks**

6. Benedict's test.
7. Sucrose.
8. Define lipoproteins. Name them.
9. What is transamination? Name any two transaminases enzymes.
10. Define acid base reaction with suitable example.
11. What are hygroscopic salts? Name any three of them.
12. What is titration reaction? Give any one example.
13. Write different types of DNA and RNA.
14. Define coenzymes name any two of them.
15. What is Wilson's disease due to?

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Explain the principle and components of Colorimeter. Write about Beer Lambert's law.
2. Ion selective Electrodes.
3. Describe Venipuncture with respect to preliminary steps, location, preparation of site and blood collection.
4. Anticoagulants. Add a note on different types of vacutainers.
5. Precautions and measures to be taken to prevent hazards from Volatile substances and compressed gases in laboratory.

**II. Short answers 10 X 3 = 30 marks**

6. Dessicator.
7. Define Hemolysis. Enumerate the causes of hemolysis of blood sample.
8. Deep Freezer.
9. Internal Quality Control.
10. Deionized water.
11. Write about cleaning of plastic ware in laboratory.
12. Name the diseases from which lab technicians can protect themselves by the use of Gloves while handling blood and other body fluids in the laboratory.
13. Volumetric Flasks.
14. Types of Centrifuges.
15. Define a) Solute. b) Solvent. c) Solution.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Define isoenzymes. Write in detail isoenzymes of LDH, ALP and CPK.
2. Define heteropolysaccharides. Add a note on each one with its significance.
3. Classify plasma proteins. Add a note on biochemical functions of each class.
4. Write in detail about vitamin –K
5. Define micro-minerals. Add a note on any two micro-minerals and their clinical significance.

**II. Short answers 10 X 3 = 30 marks**

6. What are strong acids and strong bases?
7. Classify different types of salt.
8. Define buffers. How standard buffer solution is prepared?
9. Inulin and its clinical significance.
10. Define essential amino acids and name them.
11. Structure of IgG and label the parts.
12. Define purines and pyramidines and name them.
13. Define metalo-enzymes and metal activated enzymes with on example.
14. Name the test to determine normal constituents of urine.
15. In which condition sugar and ketone bodies are seen in urine? Name the tests to determine them.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Anticoagulants.
2. Pipettes.
3. Reflux condenser.
4. Write uses, care and maintenance of water bath.
5. Define normality. Describe preparation of 1N sodium chloride solution. (MW=58)

**II. Short answers 10 X 3 = 30 marks**

6. Define buffer, give two examples.
7. Write three uses of photoelectric colorimeter.
8. List the types of cleaning solutions in laboratory.
9. List different types of glass tubes used in laboratory.
10. Phlebotomy.
11. Dispensers.
12. Svedberg unit.
13. Care and maintenance of single pan balance.
14. Principle of Spectrophotometer.
15. Tripod stand.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Describe determination of pH in a given solution with help of standard buffer and indicators.
2. Polysaccharides.
3. Classify lipids with examples.
4. Factors affecting enzyme activity.
5. Normal constituents of urine.

**II. Short answers 10 X 3 = 30 marks**

6. Maintenance of statistics in clinical biochemistry laboratory.
7. Universal indicators.
8. Define acids give one example each for monoprotonic and polyprotonic acids.
9. Give three examples of reducing carbohydrate.
10. Write the normal range of Total protein, Albumin and Globulins in blood.
11. Benedict's test.
12. Name essential amino acids.
13. Significance of amylase.
14. Name the lipoproteins present in blood.
15. Define nucleoside give two examples.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

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**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Phlebotomy.
2. Measuring cylinders.
3. Single pan balance.
4. Centrifuge.
5. Define molar solution. Describe preparation of 1M sodium hydroxide solution. (MW= 40)

**II. Short answers 10 X 3 = 30 marks**

6. How are liquids measured in laboratory. What is SI unit of volume.
7. Write three uses of water bath in clinical biochemistry laboratory.
8. Briefly describe cleaning and maintenance of glassware in laboratory.
9. List types of pipettes used in laboratory.
10. EDTA
11. Desiccators.
12. Define centrifugal and centripetal forces.
13. Micropipettes.
14. Principle of pH meter.
15. Care and maintenance of glass water distillation plant.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Describe preparation of a buffer solution with help of pH meter.
2. Plasma proteins.
3. Classify carbohydrates with examples.
4. Clinical significance of enzymes.
5. Abnormal constituents of urine.

**II. Short answers 10 X 3 = 30 marks**

6. Importance of recording patient data in clinical biochemistry laboratory.
7. Briefly explain colour change of an indicator in acidic and basic conditions.
8. Define bases. Give two examples.
9. Polysaccharides.
10. Write the normal range of Total cholesterol, Triglycerides and High density lipoprotein cholesterol in blood.
11. Rothera's test.
12. Precipitation of proteins.
13. Name essential fatty acids.
14. Significance of alkaline phospHatase.
15. Define nucleotides give two examples.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Laboratory hazards and safety precautions.
2. Cuvette.
3. Photoelectric colorimeter.
4. Describe preparation of 1% sodium carbonate solution.
5. Water distillation plant.

**II. Short answers 10 X 3 = 30 marks**

6. How are solids weighed in laboratory. What is SI unit of weight.
7. Refrigeration in clinical biochemistry laboratory.
8. Significance of borosilicate glassware.
9. List types of measuring cylinders.
10. Sodium fluoride.
11. Bunsen burner.
12. Principle of centrifugation.
13. Care and maintenance of oven.
14. Water deionizer.
15. Ion selective electrode.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Define acids. Add a note on pHysical and chemical properties of acids.
2. Reducing properties of carbohydrates.
3. Chylomicrons.
4. Isoenzymes.
5. Normal constituents of urine.

**II. Short answers 10 X 3 = 30 marks**

6. Importance of equipment maintenance registers and log books in laboratory.
7. Define indicators give two examples with pH range.
8. Define buffers give two examples.
9. Sucrose.
10. Write normal range of Creatine Phosphokinase-MB, Aspartate aminotransferase and Alanine aminotransferase.
11. Heat and acetic acid test.
12. Enumerate plasma proteins.
13. Phospholipids.
14. Significance of Acid phospHatase.
15. Name the pyrimidines present in DNA and RNA.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Sodium citrate.
2. Flasks
3. Refrigeration in clinical biochemical laboratory.
4. Spectrophotometer.
5. Define normality. Describe preparation of standard glucose solution of 100mg/dL strength.

**II. Short answers 10 X 3 = 30 marks**

6. Reagent dilution techniques.
7. Enumerate balances used in clinical biochemistry laboratory.
8. Advantages and disadvantages of using glassware in laboratory.
9. List different types of funnels.
10. Heparin.
11. Cap colour code of blood collection tube for estimation of a) glucose b) aPTT c) Bilirubin
12. Care and maintenance of centrifuge.
13. Reagent bottles.
14. Burettes.
15. List three sites for venous blood sample collection.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Define bases. Add a note on pHysical and chemical properties of bases.
2. Write a short note on chemical properties of carbohydrates.
3. Phospholipids
4. Classify enzymes with examples.
5. Abnormal constituents of urine.

**II. Short answers 10 X 3 = 30 marks**

6. Laboratory information system.
7. Briefly describe use of standard buffer and indicators for determination of pH.
8. Define salts. Give one example each for deliquescent and hygroscopic salts.
9. Write the normal range of serum sodium, potassium and chloride.
10. Hay's test.
11. Give three examples of aromatic amino acids.
12. Fatty acids.
13. Significance of creatine phosphokinase.
14. Homopolysaccharides.
15. Definition of DNA. List the nucleotides present in DNA.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Laboratory mathematics.
2. Reagent rack.
3. Incubator.
4. pH meter.
5. Define molar solution. Describe preparation of 0.1N sodium chloride solution from stock standard of 1N solution.

**II. Short answers 10 X 3 = 30 marks**

6. What is meant by a saturated solution. Explain with example.
7. List the types of centrifuges.
8. Cleaning solution of plastic ware in laboratory. Advantages and disadvantages of plastic ware in laboratory.
9. List different types of refrigerators.
10. Double oxalate.
11. List different types of balances.
12. Care and maintenance of water bath.
13. Describe blood sample collection in neonates.
14. Cuvette.
15. DemograpHics of patient collected in laboratory.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Define pH. Add a note on determination of pH of a solution.
2. Classify amino acids with examples.
3. Lipoproteins.
4. Enzymes in analytical biochemistry.
5. Normal constituents of urine.

**II. Short answers 10 X 3 = 30 marks**

6. Role of technician in receipt, storage and maintenance of reagent kits in clinical biochemistry laboratory.
7. Give three examples of indicators with pH range.
8. Differentiate bases and alkali.
9. Heteropolysaccharides.
10. Write the normal range of Serum calcium, blood pH and Fasting blood glucose.
11. Fouchet's test.
12. Give three examples of branched chain amino acids.
13. Polyunsaturated fatty acids.
14. Significance of Adenosine deaminase.
15. Define RNA. List nucleotides present in RNA.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Explain colorimeter with its principle and parts.
2. Laboratory safety measures.
3. Principle of centrifuges with applications
4. pHmeter principle and applications
5. Anticoagulants

**II. Short answers 10 X 3 = 30 marks**

6. Dessicator
7. Water bath care and maintainance
8. Cold box
9. Define normality
10. Precautions to be taken while weighing
11. Reagent bottles
12. Pipettes
13. cleaning and maintainance of glass wares
14. applications of spectrophotometer
15. SI unit

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Explain in detail about Bronsted lowry theory of acids and bases.
2. What are salts? Classify them with examples.
3. Polysaccharides
4. Aminoacid classification with examples .
5. Mention the abnormal constituents of Urine. Write the principles of tests done for proteinuria.

**II. Short answers 10 X 3 = 30 marks**

6. Diagnostic importance of enzymes
7. Fat soluble vitamins.
8. Indicators
9. Name any three plasma proteins with functions
10. Iso electric pH
11. Schiffs test
12. Functions of calcium.
13. Reagent stock books.
14. Reducing sugars
15. Essential fatty acids

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. What are Normal and Molar solutions. How do you prepare 3N naoh?
2. What is a photometer. Name its parts. Give the principle and applications.
3. Principle of centrifuges with applications
4. What are the steps involved in drawing a blood sample from a patient?
5. Digital weighing balance

**II. Short answers 10 X 3 = 30 marks**

6. Cold box applications.
7. Water bath care and maintainance
8. Reflux condenser uses
9. Types of centrifuges with applications
10. Calibration of glass pipettes
11. EDTA
12. General approach to patient identification.
13. cleaning and maintainance of glass wares
14. laboaratory hazards
15. Conventional units.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. What are the normal constituents of urine. Write about the tests done for organic constituents.
2. What are salts? Classify them with examples.
3. Define an enzyme. Classify them.
4. Write in brief about Clinical laboratory records to be maintained
5. Phospholipds

**II. Short answers 10 X 3 = 30 marks**

6. Glycosuria
7. Water soluble vitamins.
8. Universal indicators
9. C-reactive protein
10. Disaccharides
11. Heat coagulation test
12. Nucleotides
13. Differences between Acids and bases
14. Essential Amino acids
15. Define pH.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Explain colorimeter with its principle and parts.
2. Laboratory hazards and safety measures.
3. Principle of hot air oven with care, maintainance and applications.
4. Centrifuges – definition, principle,applications.
5. pHmeter principle. Precautions to be taken while handling pH meter.

**II. Short answers 10 X 3 = 30 marks**

6. Prepare 100ml of 0.1nacl from 3N nacl.
7. Standard solution
8. Deep freezer.
9. Define Molarity
10. Draw a neat diagram of tripod stand, wire guaze, Bunsen burner.
11. Mention different types of flasks.
12. water deionizer uses
13. Define Svedberg unit and centrifugal force.
14. applications of colorimeter
15. Heparin

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. What is a buffer? How do you prepare using a pH meter.?
2. What are salts? Classify them with examples.
3. What are the factors affecting enzyme activity? Explain any two.
4. Functional classification of proteins.
5. Classify Lipoproteins

**II. Short answers 10 X 3 = 30 marks**

6. Proteinuria
7. Measurement of specific gravity of urine.
8. Indicators used in titration.
9. Functions of Iron.
10. Essential amino acids.
11. Hellers test.
12. DNA functions.
13. Laboratory statistics.
14. Co enzymes
15. Define pH.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Use, Care and maintainance of double pan balnce.
2. How do you prepare a standard solution of glucose of 100mg/dl
3. Write in detail about the use, care and maintainance of refrigerator.
4. pHmeter principle and applications
5. How is the sample collected in a pHlebotomy section transported, stored and disposed.

**II. Short answers 10 X 3 = 30 marks**

6. Write one use for each . – petridish, burette, reagent rack.
7. Water bath care and maintainance
8. Saturated solution
9. Define percent solution.
10. Precautions to be taken while using pH meter
11. Care and maintainance of a centrifuge
12. Glasswares in laboratory.
13. Beer Lamberts law
14. applications of hot air oven
15. SI unit

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. What are the normal constituents of urine. Write about the pHysical characteristics of urine.
2. Isoenzymes.
3. Discuss indicators with respect to concept, mechanism of dissociation and colour change.
4. Differences between DNA and RNA.
5. Briefly explain about the functions and deficiency manifestation of Iron.

**II. Short answers 10 X 3 = 30 marks**

6. Haematuria
7. Night blindness
8. Deliquescent salts
9. Albumin functions
10. Arrhenius concept of Acids and bases.
11. Fouchets test
12. Nucleosides
13. Differences between Acids and bases
14. Define denaturation with example.
15. Electronic records

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Biochemistry Q P CODE: 5103

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Explain spectrophotometer with its principle and parts.
2. Draw a neat labeled diagram of Analytical balance. How do you measure liquids?
3. Principle of centrifuges with applications
4. What are the different types of pipettes? How is the calibration of glass and automated pipette done?
5. What is the significance of volumetric flask in preparing standard solution?

**II. Short answers 10 X 3 = 30 marks**

6. Laboratory laws and regulations
7. Applications of colourimeter
8. Supersaturated solution
9. Define molarity with an example
10. Precautions to be taken while weighing hygroscopic compounds.
11. Water deionizer care and maintainance
12. significance of borosilicate glassware.
13. Reagent bottles
14. Patient identificant in pHlebotomy
15. Uses, care and maintainance of electrodes of a pH meter.

## Subject: Biochemistry Q P CODE: 5104

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Classification of Amino acids.
2. Factors affecting Enzyme velocity.
3. Write about the components of lipid profile with the normal reference range. Add a note on significance of LDL.
4. Write about the sources, RDA and absorption of Vitamin B12.
5. Classify carbohydrates. Add a note on Lactose intolerance.

**II. Short answers 10 X 3 = 30 marks**

6. Rancidity of fats.
7. Internal Quality control.
8. Transamination.
9. Name the organic constituents of normal urine and tests used to detect them.
10. Write the Henderson Hasselbalch equation. Differentiate between weak and strong acid.
11. Night Blindness.
12. Write about the rationale of colour changeof any indicator in acidic and basic conditions.
13. Hygroscopic salts.
14. Normal values of serum Sodium, Potassium and Chloride.
15. What is Hemolysis? Name any two serum parameters whose estimation is affected by Hemolysis.

**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

i) **The question paper has two parts A and B. Both the parts are compulsory.**

ii) **Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Pathology Q P CODE: 5105

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Write in detail about different types of tests for protein in urine along with principles.
2. Write in detail about different Methods of collection of blood in haematology.
3. Enumarate blood indices, write in detail about their calculation & importance .
4. Name the conditions where blood is present in stool. Write in detail about test done for occult blood in stool along with principle.
5. Hematology Cell counters.

**II. Short answers 10 X 3 = 30 marks**

6. Write in detail about composition of urine.
7. Absolute Eosinophil count.
8. Enumerate abnormal RBCS along with Microscopy.
9. Enumerate Romanowsky Stains.
10. How do you calculate specific gravity of urine by using urine meter.
11. Blood group system types.
12. Methods of estimation of Haemoglobin .
13. Enumarate different methods of testing of urine sugar along with principle.
14. List all abnormal WBCS.
15. Physical examination of stool.

## Subject: Pathology Q P CODE: 5106

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Decalcification methods.
2. Semen analysis.
3. Merits & Demerits of formalin.
4. Demonstration of Barr body.
5. Hematoxylin .

**II. Short answers 10 X 3 = 30 marks**

6. Preservation & transport of body fluid.
7. Cell count in CSF fluid.
8. Sputum microscopy.
9. Advantages of wei mount preparation of urine.
10. Describe fixation methods of cytology smear.
11. Equipments used in Histopathology.
12. End point decalcification.
13. Labeling in Histopathology.
14. Stains used in Histopathology.
15. Master Register.

**PARAMEDICAL BOARD, BENGALURU**

# Medical Laboratory Technology

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

i) **The question paper has two parts A and B. Both the parts are compulsory.**

ii) **Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Pathology Q P CODE: 5105

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Write in detail about it tests done for sugar in urine along with principle.
2. Write in detail about Physical examination of urine.
3. Write in detail about anticoagulants used in hematology.
4. Preparation & composition of Leishman stain .
5. Enumerate the microscopic findings of stool examination.

**II. Short answers 10 X 3 = 30 marks**

6. Describe Dipstick method of urine analysis.
7. Enumerate ketone bodies in urine. write about test done for ketone bodies along with principle.
8. Methods of collection of urine sample.
9. Mention various abnormal RBC's
10. Merits& demerits of Drabkin's method of Hemoglobin estimation.
11. Peripheral smear staining.
12. Principle & Procedure of Reticulocyte count .
13. Methods of blood grouping.
14. Maintainance of glassware in hematology .
15. Methods of collection of stool sample

## Subject: Pathology Q P CODE: 5106

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Merits and Demerits of various fixatives used in histopathology.
2. Write btiefly about specimen collection, numbering and giving tissue bits in histopathology.
3. Semen analysis.
4. PAP staining.
5. Cytological fixatives.

**II. Short answers 10 X 3 = 30 marks**

6. Abnormal forms of sperms.
7. PHysical examination of CSF.
8. Collection of sputum.
9. Staining of Cytology smears.
10. Quality control in Cytology.
11. End point Decalcification
12. Master Register in Histopathology
13. Preparation Haematoxylin
14. Mention various decalcifying agents
15. Equipments used in histopathology.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Pathology Q P CODE: 5105

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1.Write in detail about casts & crystals in urine.

2.Anticoagulants used in different hematology tests, Mechanism of action, advantages & disadvantages.

3.Define Romanowsky stains and write in detail about preparation of leishman stain .

4.Write in detail about quality control in hematology with regards to hemoglobin estimation by sahlis methods.

5.Causes of occult blood in stool and procedure of test with principle.

**II. Short answers 10 X 3 = 30 marks**

6.Methods of collection of blood in hematology.

7. WBC diluting fluid.

8. Giemsa stain.

9. Abnormal RBCS.

10. Urine tests in Jaundice.

11. Principle of Rothera's test.

12. PHysical examination of urine.

13. Ova & Cyst in stool.

14.Blood Indices.

15. Write a note on Blood group systems.

## Subject: Pathology Q P CODE: 5106

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Complete semen analysis.
2. Fixatives used in cytology.
3. Merits & demerits of fixatives used in Histopathology.
4. Decalcification methods.
5. Method of Haematoxylin and Eosins staining.

**II. Short answers 10 X 3 = 30 marks**

6. Preservation & transport of body fluids .
7. Collection methods of CSF.
8. Sputum microscopy.
9. Barr body.
10. Pap stain.
11. Grossing.
12. Mention the various types of haematoxylin.
13. Preparation of Formalin solution.
14. End point Decalcification.
15. Equipments used in Histopathology.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Pathology Q P CODE: 5105

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Write in detail about collection, Processing and physical examination of stool.
2. Physical examination of urine .
3. Name Romonosky stains & write in detail about preparation & staining by Leishman stain.
4. Enumerate Instruments &Equipments used in hematology laboratory.
5. Mention methods of hemoglobin estimation, write in detail about Drabkins method along with merits & demerits.

**II. Short answers 10 X 3 = 30 marks**

6. Methods of preservation of urine.
7. Automation in blood cell counts.
8. Blood cell indices.
9. Describe methods of reticulocyte staining .
10. Packed cell volume.
11. Various reducing substances in stool.
12. Leishman stain preparation.
13. Write Principle of Benedicts test.
14. Microscopic examination of urine.
15. Urine analysis by dip sticks.

## Subject: Pathology Q P CODE: 5106

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Fixatives used in Cytology.
2. Describe the collection, Preparation and staining sputum sincere.
3. Grossing in histopathology.
4. Merits & Demerits of fixatives used in histopathology.
5. Describe the collection & physical examination of semen..

**II. Short answers 10 X 3 = 30 marks**

6. PHysical examination of CSF.
7. Sperm morphology and abnormal forms of sperm.
8. Preservation & transport of body fluids.
9. Stains used in cytopathology.
10. Barr body demonstration.
11. Equipments used in histopathology.
12. Advantages & disadvantages of formalin.
13. Hematoxylin preparation & H & E staining.
14. End point decalcification.
15. Master register in histopathology.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Pathology Q P CODE: 5105

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Describe the collection and physical examination of stool.
2. Tests done for protein in urine along with principle of each test.
3. Anticoagulants used in hematology laboratory with merits & demerits of them.
4. Merits and demerits of sahlis method of hemoglobin estimation.
5. Preparation & staining of peripheral smear with a note on ideal smear.

**II. Short answers 10 X 3 = 30 marks**

6. Rothera's test with principle.
7. Microscopy of urine.
8. Methods of collection of urine.
9. Instruments used in hematology lab.
10. Different methods of collection of blood sample.
11. Test for reducing substance in stool with its principle.
12. RBC diluting fluid.
13. Abnormal WBCS.
14. Types of blood groups system.
15. Absolute eosinophil count.

## Subject: Pathology Q P CODE: 5106

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Write in detail about semen analysis.
2. PAP stain.
3. Fixatives used in Histopathology with advantages & disadvantages.
4. Decalcifying methods.
5. Mention different types of Haematoxylin and write about routine Haematoxylin stain preparation.

**II. Short answers 10 X 3 = 30 marks**

6. Methods of collection of sputum for analysis.
7. Preservatives used in preservation of body fluids.
8. Methods of collection of CSF.
9. Barr body.
10. Advantages of dry and wet smears
11. Grossing in histopathology.
12. End point decalcification.
13. Equipments used in histopathology.
14. Stains used in cytology.
15. Master Register.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

i) **The question paper has two parts A and B. Both the parts are compulsory.**

ii) **Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Pathology Q P CODE: 5105

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Describe the various methods of urine collection for laboratory test.
2. Describe the procudere of Phlebotomy. Mention the various types vacutainers used in hematology lab?
3. Describe the procedure of reticulocyte staining and mention the normal range of reticube
4. Describe the collection of physical examination of stool sample.
5. Importance of blood cell indices with normal values?

**II. Short answers 10 X 3 = 30 marks**

6. Anticoagulants used in hematology.
7. Types of Romanowsky stains?
8. WBC diluting fluid.
9. Advantages of Sahli's method of HB estimation?
10. Types of blood group system
11. AEC
12. Test of occult blood in stools?
13. Advantages of dip stick method in urine examination.
14. Benedict's test?
15. Test for ketone bodies in urine?

## Subject: Pathology Q P CODE: 5106

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Write in detail about pHysical & microscopic examination of sputum?
2. Advantages of dry & wet smears ?
3. Decalcification ?
4. Preparation &staining of PAP surcar.
5. Embedding & blocking.

**II. Short answers 10 X 3 = 30 marks**

6. Barr body?
7. Sperm morphology and abnormal forms
8. ZN staining
9. Physical examination of CSF
10. Types of microtomes (any 3)
11. Any 3 types of Hematoxylin
12. Master register in histopathology
13. Types of auto logical fixatives
14. end print decalcification.
15. Semen diluting fluid.?

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

i) **The question paper has two parts A and B. Both the parts are compulsory.**

ii) **Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Pathology Q P CODE: 5105

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Write in detail the morphology of RBC's & WBC's with neat labelled diagram.
2. Write principle & procedure of Drabkin's method HB estimation.
3. Write chemical examination of stool?
4. Write in detail pHysical examination of urine
5. What is glycosuria? Add a note on qualitative & quantitative estimation of urine sugar?

**II. Short answers 10 X 3 = 30 marks**

6. Stool microscopy
7. Different method of collection of blood?
8. Diluting fluid for platelet count?
9. Types of Romanowsky stain?
10. WBC diluting fluid.
11. Packed cell volume estimation.
12. EDTA-advantages & disadvantages ?
13. Tests for protienuria?
14. Name different crystals in abnormal urine?
15. Dipstick method advantages & disadvantages?

## Subject: Pathology Q P CODE: 5106

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Write in detail the microscopic examination of semen
2. Preparation & staining of sputum smear.
3. What are advantages of Rotary microtome . Add a note on different types of microtomes.
4. Name fixatives used in histopathology. Advantages of formalin.
5. Advantages of dry & wet fixation.

**II. Short answers 10 X 3 = 30 marks**

6. Cell count in CSF analysis.
7. Physical examination of pleural fluid..
8. Ideal fixative in histopathology
9. Decalcifying agents.
10. Types of hematoxylins
11. Leukhart's mould
12. Labelling and Registration of Biopsy sample
13. Sperm count and motility
14. Barr body
15. PAP stain

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

i) **The question paper has two parts A and B. Both the parts are compulsory.**

ii) **Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Pathology Q P CODE: 5105

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Describe in detail principle and procedure of WBC count?
2. Mention various method of hemoglobin estimation? Add a note on advantages & disadvantages of sahli's method.
3. Regarding urine collection and physical examination of Urine
4. Write in detail about stool microscopy
5. Discuss about the peripheral blood smear preparation and staining

**II. Short answers 10 X 3 = 30 marks**

6. Add a note on stool collection?
7. Uses of pev
8. Automation in hematology?
9. RBC diluting fluid?
10. Tests for protein in urine?
11. Preservatives used in urine examination?
12. ESR estimation?
13. RBC indicates with normal values.
14. Reticulo cyte count.
15. Test for ketone bodies.

## Subject: Pathology Q P CODE: 5106

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Write in detail the cell counts & cell type examination of ascitic fluid.
2. Embedding & blocking.
3. Write types of microtomes. Add a note on advantages of Rotary microtome
4. Write various decalcifying agents. Add a note on end point of decalcification.
5. Preparation and staining of PAP sinner.

**II. Short answers 10 X 3 = 30 marks**

6. Stain used in cytopathology.
7. Sputum collection
8. Physical examination of ESF
9. Sperm morphology with abnormal forms
10. Name 3 types of hematoxylins
11. Advantages of automatic tissue processor
12. Numbering and givimg tissue bits of specimen.
13. Quality control in histopathological lab
14. Types of knives
15. PHysical examination of synovial fluid .

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Pathology Q P CODE: 5105

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Collection and Physical examination of urine
2. Merits & dements of shells method of hem otology estimation
3. Haematology cell counters
4. What is glycosuria? Add a note on qualitative and quantitative estimation Of urine sugar
5. Causes of occult blood in stood & Procedure of test with Principle

**II. Short answers 10 X 3 = 30 marks**

6. Abnormal RBCS
7. Oval and cyst in stool
8. Blood group System types
9. Microscopy of urine
10. EDTA advantages & DisAdavanteacheges
11. Wbc diluting fluid
12. Physical examination of stool
13. Blood indices
14. Giemsa stain
15. Rothera's test with Principal

## Subject: Pathology Q P CODE: 5106

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Hematoxylin
2. PAP Staining
3. Fixatives used in cytology
4. Embedding & blocking
5. Advantages of dry & wet fixation

**II. Short answers 10 X 3 = 30 marks**

6. Decalcifying agents
7. Semen diluting fluid
8. Physical examination of plural fluid
9. Quality control in histopathological lab
10. Master Register
11. Sputum microscopy
12. Grossing
13. Preparation of formalin solution
14. End Point decalcification
15. Barr body

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Pathology Q P CODE: 5105

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Test for Protein in urine with principle
2. Physical examination of urine
3. Preparation & Composition of Leishman stain
4. Stool microscopy
5. Importunes of blood c ell indices with normal values

**II. Short answers 10 X 3 = 30 marks**

6. Types of romanowsky stains
7. AEC
8. Benedict's test –Principle
9. Packed cell volume
10. Urine analysis by dipsticks
11. Methods of blood grouping
12. Peripheral near staining
13. ESR estimation
14. Test for ketene bodies in urine
15. Maintenance of glassware in haematology

## Subject: Pathology Q P CODE: 5106

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. PAP Staining
2. Semen analysis
3. Embedding & blocking
4. Decalcification
5. Grossing in histopathology

**II. Short answers 10 X 3 = 30 marks**

6. Barr body demonstration
7. Collection of Sputum
8. Types of Knives
9. Physical examination of CSF
10. ZN Staining
11. Types of Microforms (any3)
12. Stains used in histopathology
13. H& E Staining
14. Quality control in cytology
15. Master register

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Louis Pasteur
2. Autoclave
3. Gram's stain
4. Bacterial growth curve
5. Define selective media with 3 examples

**II. Short answers 10 X 3 = 30 marks**

6. Labelled diagram of compound microscope
7. Name gaseous disinfectants
8. Streak culture
9. Sterilisation by radiation
10. Glutaraldehyde
11. Koch's postulates
12. Sterilisation control in hot air oven
13. Fimbriae
14. Urease test
15. Articles sterilised by filtration

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Composition and preparation of chocolate agar
2. Structure of antibody
3. Type 1 hypersensitivity
4. Laboratory acquired infections
5. Compliment fixation test

**II. Short answers 10 X 3 = 30 marks**

6. Preparation of Leishman stain
7. Define agglutination with example
8. Types of hospital acquired infections
9. Uses of monoclonal antibody
10. Local immunity
11. Antibody specificity
12. Opsonisation
13. Natural active immunity
14. Segregation and disposal of anatomical waste
15. Body fluid spill management

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

**GENERAL INSTRUCTIONS:**

**i) The question paper has two parts A and B. Both the parts are compulsory.**

**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Robert Koch
2. Hot air oven
3. Acid fast staining
4. Bacterial capsule
5. Define enrichment media with 3 examples

**II. Short answers 10 X 3 = 30 marks**

6. Dark ground microscopy
7. Negative staining technique
6. Stab culture
7. Cold sterilisation
8. Catalase test
9. Formaldehyde
10. Define indicator media with one example
11. Gas pack
12. Sterilisation control in autoclave
13. Properties of ideal disinfectant
14. Incineration

Define and classify culture media

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Composition and preparation of Blood agar
2. Personnel protective equipments
3. Active immunity
4. AnapHylaxis
5. Immediate hypersensitivity

**II. Short answers 10 X 3 = 30 marks**

6. Preparation of JSB stain
7. Labelled diagram of IgM
8. Organisms causing hospital acquired infections
9. Define precipitation with example
10. Type 2 hypersensitivity
11. Hybridoma technology
12. HeteropHil antigen
13. Body fluid spill management
14. Neutralisation test
15. Natural passive immunity

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

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## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Bacterial cell wall
2. Add a note on Microscope – its parts, types and uses.
3. Define and classify moist heat sterilisation with examples
4. Define enriched media with 3 examples
5. Antibiotic sensitivity testing

**II. Short answers 10 X 3 = 30 marks**

6. PHase contrast microscopy
7. Contributions of Robert Koch
8. Tyndallisation
9. Fumigation
10. Articles sterilised by ETO steriliser
11. Coagulase test
12. Uses of Chlorine in disinfection
13. Define differential media with one example
14. Methods of demonstration of bacterial motility
15. Testing of disinfectants

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Composition and preparation of Albert's stain reagents
2. Agglutination reaction
3. Passive immunity
4. Monoclonal antibodies
5. Complement pathways

**II. Short answers 10 X 3 = 30 marks**

6. Washing of glass materials
7. Type 3 hypersensitivity
8. Labelled diagram of IgG antibody
9. Factors affecting antibody production
10. Biological functions of compliment
11. Preparation of 1% and 5% hypochlorite solution from stock solution
12. Principle and use of indirect immunofluoroscence
13. Herd immunity
14. Neutralisation test
15. Articles sterilised by autoclave

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Labelled diagram of bacterial cell
2. Filtration
3. Albert's stain
4. Define transport media with 3 examples
5. Define disinfection. Write a note on testing of disinfectants

**II. Short answers 10 X 3 = 30 marks**

6. Electron microscopy
7. Contributions of Louis pasture
8. Low level disinfection
9. Flagella
10. Indole test
11. Articles sterilised by autoclave
12. Pasteurisation
13. Uses of pHenolic compounds in disinfection
14. Anaerobic culture Medias
15. Quaternary ammonium compounds

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Composition and preparation of Gram's stain reagents
2. Precipitation reaction
3. Innate immunity
4. Cell mediated immunity
5. Type 4 hypersensitivity

**II. Short answers 10 X 3 = 30 marks**

6. Packing of glass materials for sterilisation
7. Type 4 hypersensitivity
8. Labelled diagram of IgA antibody
9. Segregation of infective biomedical waste
10. Nosocomial infection
11. Principle and use of Coomb's test
12. Artificial active immunity
13. Define and classify hypersensitivity
14. Use of ELISA
15. Preparation and methods of collection of various sample.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Bacterial spore
2. Alcohols
3. Anaerobic culture methods
4. TSI media
5. Kirby bauer disc diffusion method

**II. Short answers 10 X 3 = 30 marks**

6. Handling and maintenance of compound microscope
7. Differences between prokaryotes and eukaryotes
8. High level disinfection
9. Citrate utilisation test
10. Uses of Iodine in disinfection
11. Articles sterilised by hot air oven
12. Lawn culture
13. Macintosh field's jar
14. MR test
15. Bacterial growth curve

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Composition and preparation of ZN stain reagents
2. Composition and preparation of MacConkey agar
3. ELISA
4. Mechanisms of innate immunity
5. Universal precautions in infection control

**II. Short answers 10 X 3 = 30 marks**

6. Classify hypersensitivity
7. IgE antibody
8. Define and classify antigen
9. Prozone pHenomenon and its application
10. Artificial passive immunity
11. Atopy
12. Difference between active and passive immunity
13. Western blot test
14. Principle and use of radioimmunoassay
15. Articles sterilised by hot air oven

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Anaerobic culture methods.
2. Gaseous disinfectants.
3. Fimbriae(Pili).
4. Enumerate different staining techniques; write about Gram's staining method.
5. Autoclave.

**II. Short answers 10 X 3 = 30 marks**

6. Mention three contributions of Louis Pasteur.
7. Koch's Postulates.
8. Acid fast stain.
9. Mention three examples of motile bacteria.
10. Negative staining method.
11. Mention three instruments sterilized by Hot air Oven.
12. Cold sterilization.
13. Mention three examples of liquid media.
14. Enrichment media.
15. Mention three inoculation methods on solid media.

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Active immunity
2. Write the principle, types and uses of ELISA Test
3. Type I hypersensitivity
4. Preparation of Gram's stain
5. Agglutination reaction

**II. Short answers 10 X 3 = 30 marks**

6. Draw a neat labelled diagram of IgM
7. Classify immunity
8. Haptens
9. Name 3 methods of biomedical waste treatment
10. Name 3 Gram positive bacteria
11. HeteropHile agglutination test
12. Define and enumerate different types of antibody
13. Mention the methods of sterilisation of: Inoculation loop, test tubes and
14. Give examples of 3 buffers used in microbiology laboratory and mention one use of each
15. Pasteurisation

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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**ii) Write neat diagrams wherever necessary, Handwriting should be legible.**

## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Bacterial spore.
2. Bacterial growth curve.
3. Hot air Oven.
4. Classify Culture media, Write briefly about Enriched media.
5. Name different types of pHysical agents of Sterilization, write briefly about Hot air Oven.

**II. Short answers 10 X 3 = 30 marks**

6. Name three different types of Microscopy.
7. Koch's Postulates.
8. Negative Staining.
9. Name three anaerobic culture methods.
10. Name three chemical disinfectants.
11. Name three items sterilized by Autoclave.
12. Name any three biochemical reactions in identification of bacteria.
13. Name three gram Positive cocci.
14. Simple stain.
15. Name three different types of Filters.

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Preparation of Blood agar
2. Coombs test
3. Passive immunity
4. Define antigen. Explain the factors influencing antigenicity
5. Classify hypersensitivity

**II. Short answers 10 X 3 = 30 marks**

6. Herd immunity
7. Artificial active immunity
8. Draw a neat labelled diagram of IgA
9. Name 3 articles sterilised in Autoclave
10. Principle of ELISA. Give 3 uses of ELISA
11. Principle of Dark ground Microscope
12. Preparation and fixation of smear from a colony
13. What are the methods of sterilisation for: Swabs, liquid paraffin and inoculation loop
14. Define precipitation
15. Washing and packing of glassware for sterilisation

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Draw a neat labelled diagram of Microscope.
2. Chemical disinfectants.
3. Flagella.
4. Classify Culture media. Write briefly on Selective media.
5. Define Sterilization. Write briefly on Autoclave.

**II. Short answers 10 X 3 = 30 marks**

6. Name three Contributions of Louis Pasteur.
7. Name the Gram negative bacilli.
8. Pasteurisation of milk.
9. Name three items sterlized by Hot air Oven.
10. Transport media.
11. Lawn culture method.
12. Name three contributions of Robert Koch.
13. Mention different steps on Acid Fast Staining.
14. Robertson's Cooked meat medium(RCM).
15. Mention three anaerobic Culture method.

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1.Define and Classify immunity with examples
2. Prozone pHenomenon
3. Passive immunity
4. Define antigen. Explain the factors influencing antigenicity
5. Classify hypersensitivity

**II. Short answers 10 X 3 = 30 marks**

6. Herd immunity
7. Artificial active immunity
8. Draw a neat labelled diagram of IgA
9. Name 3 articles sterilised in Autoclave
10. Principle of ELISA. Give 3 uses of ELISA
11. Principle of Dark ground Microscope
12. Preparation and fixation of smear from a colony
13. What are the methods of sterilisation for: Swabs, liquid, Paraffin, culture media
14. Define precipitation
15. Washing and packing of glassware for sterilisation

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Enumerate different types of moist heat Sterilization.
2. Bacterial Growth curve.
3. Bacterial spore.
4. Define and Classify Culture media. write briefly on selective media
5. Preparation of Blood agar.

**II. Short answers 10 X 3 = 30 marks**

6. Name two examples of Enrichment media
7. Mention different steps on Gram's staining method.
8. Mention three Flagellated bacteria.
9. Pasteurization of milk.
10. Negative staining method
11. Name the items sterilized by filtration method.
12. Name the three anaerobic culture methods.
13. Name three gram positive cocci.
14. Name three chemical disinfectants
15. Agar-Agar

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Define precipitation. Give an account of precipitation in gel.
2. IgM
3. Complement fixation test
4. Passive immunity
5. Type III Hypersensitivity

**II. Short answers 10 X 3 = 30 marks**

6. Name 3 laboratory acquired infections
7. Adjuvants
8. Principle of Autoclave. Mention 3 uses
9. Inoculation technique for disc diffusion antibiotic susceptibility testing
10. Paul –Bunnell test
11. Methods of Disposal of Microbiological waste
12. Draw a neat labelled diagram of IgA
13. Describe the method of cleaning blood spills
14. Preparation of Concentrated CarbolFuchsin for ZN stain
15. Cleaning and sterilisation of test tubes

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Classify Sterilisation. Write briefly about Hot air Oven
2. Bacterial Capsule
3. Classify Culture media. Write briefly on Enriched media.
4. Anaerobic culture methods.
5. Draw a neat labelled diagram of Microscope

**II. Short answers 10 X 3 = 30 marks**

6. Louis Pasteur.
7. Name two different staining methods.
8. Name three different types of Flagellar Arrangements
9. Name three spore bearing bacteria.
10. Inspissation.
11. Name three Gram negative bacteria.
12. High level disinfectant.
13. Mention three items sterilised by Autoclave.
14. IMViC reactions
15. Transport media

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Preparation of Chocolate agar.
2. Define antibody. Enumerate types of antibodies and their functions in the body
3. Principle, uses and sterility control of Autoclave.
4. Define and classify immunity. Give 3 examples each for live and killed vaccines
5. Standard precautions / Good laboratory practices

**II. Short answers 10 X 3 = 30 marks**

6. Differences between immediate and delayed Hypersensitivity
7. Name 3 solidifying agents
8. What are the precautions to be taken while using Hot air oven
9. Name 3 disinfectants used in microbiology laboratory
10. HeteropHile agglutination test
11. Describe the method of disinfecting and disposing culturemedia used for culture
12. Draw a neat labelled diagram of IgM
13. Principle and uses of ELISA
14. Preparation of polychrome methylene blue stain
15. Disposal of liquid waste in laboratory

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Robert koch
2. Moist heat sterilization
3. Dark ground microscope
4. Differences between prokaryotes and eukaryotes
5. Selective media

**II. Short answers 10 X 3 = 30 marks**

6. Bacterial growth curve
7. Indole test
8. formalin
9. collection of blood for c/s
10. Hanging drop preparation
11. Uses of bacillocid
12. Preservation of stock culture
13. standardisation of inoculum for AST
14. Adjustment of phof culture media
15. Uses of Gram staining

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Features of a good antigen
2. Preparation of AFB stain
3. Preparation of pHadjustment solutions
4. Type-1 Hypersensitivity
5. ELISA

**II. Short answers 10 X 3 = 30 marks**

6. Washing of flasks used to prepare culture media
7. Herd immunity
8. Slide agglutination test
9. Special staining
10. Acidic pH and Basic PH
11. Method of washing new glass ware
12. Bleaching powder dilution and contact time
13. Fluroscent staining FOR MALARIAL PARASITE
14. LEISHMAN'S staining
15. Decolorizes used in microbiology staining procedures.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

**Time: 3.00 HRS** **Max Marks:100**

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## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Louis pasteur
2. Dry heat sterilization
3. Illumination system of a microscope
4. Capsule
5. Enriched media

**II. Short answers 10 X 3 = 30 marks**

6. Inoculation methods
7. Oxidase test
8. Glutaraldehyde
9. collection of pus for c/s
10. Hand wash
11. uses of microshield
12. preservation of specimens before processing
13. cleaning of incubators
14. storage of antibiotic discs
15. Definition and examples for thermopHilic,capnopHilic and fastidious organisms

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Local immunity
2. Preparation of LPCBstain
3. Preparation of PHOSPHATE BUFFER
4. Washing of test tubes with blood
5. tube agglutination test

**II. Short answers 10 X 3 = 30 marks**

6. Passive immunization for Rabies
7. Washing of floor with HIV contaminated blood
8. Preparation of stain for corynebacterium dipHtheria
9. Stains for stool sample
10. Precipitation reaction
11. Differential stain
12. Cryptococci
13. Disinfectant with sporicidal action
14. Titre
15. Decolorizes used in microbiology staining procedures.

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

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## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Nobel laurettes in microbiology
2. Sterilization by radiation
3. optical system of a microscope
4. Flagella
5. Enrichment Media

**II. Short answers 10 X 3 = 30 marks**

6. special staining methods
7. Catalase test
8. Iodine
9. Collection of sputum for c/s
10. Hand rub
11. Uses of dettol
12. Inoculation wires
13. OT fumigation
14. Uses of candle jar
15. Disposal of used culture media

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Method of packing of articles for sterilization in autoclave
2. Preparation ofgram stain
3. Specificity and sensitivity of a test
4. Washing of test tubes used for fungal growth
5. Quantitative test and dilution of sera for the test

**II. Short answers 10 X 3 = 30 marks**

6. Combined immunity
7. Washing of floor with HIV contaminated blood
8. Prozone pHenomena
9. Adjustment of phof culture media
10. Stains for fungi
11. Precipitation reaction with example
12. Modified acid fast staining with example
13. candida and cryptococci staining
14. Decolorizes used in microbiology staining procedures.
15. Acid fast staining

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

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## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Kochs postulates
2. Inspissator
3. Fluroscent microscope
4. Cell wall of bacteria
5. Transport media

**II. Short answers 10 X 3 = 30 marks**

6. incubator
7. imvic reactions
8. PHenolic disinfectants
9. collection of CSF for c/s
10. Uses of sterillium
11. sterilization control of Autoclave
12. Adjustment for oil immersion and dry objective
13. Agar agar
14. Disposal of sputum sample after laboratory use
15. How serum and plasma are collected from patient

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Method of packing of articles for sterilization in hot air oven
2. Preparation of Lugol's iodine
3. Negative staining
4. Latex agglutination test
5. Qualitative test and how to obtain the sera for the test

**II. Short answers 10 X 3 = 30 marks**

6. Staining for microfilaria and its preparation
7. M' fadyeans stain
8. Prevention of nosocomial infection
9. preparation of fontanas stain for spirochetes
10. Stains for fungi
11. Flocculation test with example
12. Waysons staining
13. rapid staining of malarial parasite
14. adoptive and herd immunity
15. washing of test tubes used for biochemical test

**PARAMEDICAL BOARD, BENGALURU**

**Medical Laboratory Technology**

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## Subject: Microbiology Q P CODE: 5107

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Sterilization by filtration
2. Electron microscope
3. Bacterial spore
4. Anaerobic media
5. Inoculation wires

**II. Short answers 10 X 3 = 30 marks**

6. Sodium hypochlorite
7. Alcohol
8. Collection of urine for c/s
9. Uses of cidex
10. Sterilization control of hot air oven
11. Preparation of Mc farlands standard solution
12. Labelled diagram of a bacterial cell
13. Modified AFB staining
14. TSI media
15. Different methods of AST

## Subject: Microbiology Q P CODE: 5108

**I. Short notes, answer any FOUR questions. 4 X 5 = 20 marks**

1. Composition and preparation of ZN stain reagents
2. Composition and preparation of MacConkey agar
3. ELISA
4. Mechanisms of innate immunity
5. Universal precautions in infection control

**II. Short answers 10 X 3 = 30 marks**

6. Classify hypersensitivity
7. IgE antibody
8. Define and classify antigen
9. Prozone pHenomenon and its application
10. Artificial passive immunity
11. Atopy
12. Difference between active and passive immunity
13. Western blot test
14. Principle and use of radioimmunoassay
15. Articles sterilised by hot air oven