

VIJAYASREE
SFI TDMC



SELECTION TOPICS FOR FIRST YEAR MBBS
ANATOMY | PHYSIOLOGY | BIOCHEMISTRY



ANATOMY

GENERAL ANATOMY

- ✓ CLASSIFICATION OF EPITHELIUM
- ✓ CONNECTIVE TISSUE: Cells, fibers, types and sites
- ✓ CARTILAGE
- ✓ MUSCLES
- ✓ BONE
- ✓ NERVOUS TISSUE
- ✓ VASCULAR TISSUE
- ✓ LYMPHOID TISSUE

GENERAL EMBRYOLOGY

- ✓ SPERMATOGENESIS AND OOGENESIS
- ✓ FERTILISATION
- ✓ IMPLANTATION
- ✓ DECIDUA
- ✓ PRIMITIVE STREAK
- ✓ GASTRULATION
- ✓ NOTOCORD
- ✓ NEURAL CREST AND DERIVATIVES
- ✓ INTRA-EMBRYONIC MESODERM
- ✓ SOMITES AND DERIVATIVES
- ✓ PLACENTA (including placenta previa)
- ✓ TWINNING



GENETICS

ESSAY

- ✓ KARYOTYPING
- ✓ CHROMOSOMAL ABERRATIONS
- ✓ MENDELIAN INHERITANCE

SHORT NOTE

- ✓ BARR BODY
- ✓ LYON'S HYPOTHESIS
- ✓ CLASSIFICATION OF CHROMOSOMES (DENVER CLASSIFICATION)
- ✓ TRANSLOCATION – Types and Examples
- ✓ DOWN'S SYNDROME
- ✓ TURNER'S SYNDROME
- ✓ KLINEFELTER'S SYNDROME
- ✓ PRE-NATAL SCREENING; TRIPLE ASSAY
- ✓ MULTIFACTORIAL INHERITANCE
- ✓ MUTATION
- ✓ MOSAICISM AND CHIMERISM
- ✓ TERATOLOGY

OSTEOLOGY

- ✓ CLASSIFICATION OF BONES AND OSSIFICATION
- ✓ CLASSIFICATION OF JOINTS
- ✓ BLOOD SUPPLY OF TYPICAL LONG BONE
- ✓ PROCESSES OF SCAPULA
- ✓ ORDER OF OSSIFICATION OF CARPEL BONES
- ✓ LINEA ASPERA
- ✓ INTERCONDYLAR AREA OF TIBIA



UPPER LIMB

ESSAY

- ✓ BRACHIAL PLEXUS
- ✓ SHOULDER JOINT
- ✓ BREAST
- ✓ MEDIAN, RADIAL AND ULNAR NERVES
- ✓ INTERMUSCULAR SPACES – Boundaries and contents
- ✓ BRACHIAL ARTERY
- ✓ AXILLARY NERVE

SHORT ESSAY

- ✓ SPACES OF HAND – Mid-palmar and Thenar spaces
- ✓ LYMPHATIC DRAINAGE OF BREAST
- ✓ CUBITAL FOSSA
- ✓ SUPERFICIAL AND DEEP PALMAR ARCHES
- ✓ MEDIAN CUBITAL VEIN
- ✓ AXILLARY LYMPH NODES
- ✓ SUPINATION AND PRONATION
- ✓ FLEXOR RETINACULUM
- ✓ EXTENSOR RETINACULUM
- ✓ AXILLARY ARTERY

SHORT NOTE

- ✓ ROTATOR CUFF
- ✓ PALMAR APONEUROSIS
- ✓ CLAVIPECTORAL FASCIA AND STRUCTURES PIERCING IT
- ✓ SCAPULAR ANASTOMOSIS
- ✓ ERB'S POINT AND ERB'S PALSY
- ✓ RADIO-ULNAR JOINT
- ✓ FIRST CARPO-METACARPAL JOINT
- ✓ CORACOID PROCESS OF SCAPULA
- ✓ CUBITAL ANASTOMOSIS

MUSCLES AND BONES

- ✓ DELTOID
- ✓ SERRATUS ANTERIOR
- ✓ TRICEPS BRACHII
- ✓ BICEPS BRACHII
- ✓ HEAD OF HUMERUS



LOWER LIMB

ESSAY

- ✓ HIP JOINT
- ✓ KNEE JOINT
- ✓ GREAT SAPHENOUS VEIN
- ✓ ARCHES OF FOOT (Medial, Lateral and Transverse)

SHORT ESSAY

- ✓ FEMORAL TRIANGLE
- ✓ POPLITEAL FOSSA
- ✓ STRUCTURES UNDER THE COVER OF GLUTEUS MAXIMUS
- ✓ SCIATIC NERVE
- ✓ FLEXOR, EXTENSOR AND PERONEAL RETINACULUM
- ✓ INVERSION AND EVERSION OF FOOT
- ✓ FEMORAL ARTERY

SHORT NOTE

- ✓ FEMORAL SHEATH
- ✓ GREATER AND LESSER SCIATIC FORAMINA
- ✓ DORSALIS PEDIS ARTERY
- ✓ INGUINAL LYMPH NODES
- ✓ LOCKING AND UNLOCKING OF KNEE JOINT
- ✓ TENDOCALCANEUS
- ✓ ADDUCTOR CANAL
- ✓ FEMORAL CANAL
- ✓ PLANTAR APONEUROSIS
- ✓ TIBIAL NERVE
- ✓ FEMORAL NERVE
- ✓ OBTURATOR NERVE
- ✓ POPLITEAL ARTERY
- ✓ ISCHIAL TUBEROSITY

MUSCLES AND BONES

- ✓ ADDUCTOR MAGNUS
- ✓ HAMSTRING MUSCLES
- ✓ LINEA ASPERA
- ✓ HEAD OF FEMUR



THORAX

ESSAY

- ✓ BLOOD SUPPLY OF HEART – Arterial, venous supply, Development and applied aspects
- ✓ LUNGS – External and Internal features, CONTENTS OF ROOT, lobes, blood and nerve supply, applied aspects
- ✓ BRONCHO-PULMONARY SEGMENTS
- ✓ ARCH OF AORTA
- ✓ PLEURA (layers, types, blood and nerve supply) AND PLEURAL RECESSES
- ✓ RIGHT ATRIUM/ RIGHT VENTRICLE
- ✓ AZYGOUS, HEMIAZYGOUS AND ACCESSORY HEMIAZYGOUS VEINS
- ✓ OESOPHAGUS (especially constrictions)

SHORT ESSAY

- ✓ TYPICAL INTERCOSTAL SPACE (THORACIC WALL – the muscles)
- ✓ TYPICAL INTERCOSTAL NERVES AND VESSELS
- ✓ INTERNAL THORACIC ARTERY
- ✓ PERICARDIUM - Sinuses
- ✓ CORONARY SINUS
- ✓ CORONARY ARTERIES
- ✓ RIGHT ATRIUM AND ITS DEVELOPMENT
- ✓ THORACIC DUCT
- ✓ SUPERIOR VENA CAVA
- ✓ DEVELOPMENT OF HEART/ INTERATRIAL / INTERVENTRICULAR SEPTUM
- ✓ DEVELOPMENT OF LUNGS

DIAGRAM

- ✓ SECTION OF THORAX AT LEVEL OF T4
- ✓ MEDIASTINAL SURFACES OF BOTH LUNGS
- ✓ THORACIC INLET



ABDOMEN, PELVIS AND PERINEUM

ESSAY

(Features, peritoneal and other relations, blood and nerve supply, lymphatics, development, applied aspects, etc.)

- ✓ KIDNEY
- ✓ PANCREAS
- ✓ UTERUS
- ✓ LIVER
- ✓ SPLEEN
- ✓ URINARY BLADDER
- ✓ INGUINAL CANAL
- ✓ STOMACH
- ✓ DUODENUM
- ✓ TESTES
- ✓ BILIARY CANAL
- ✓ ANAL CANAL

PERINEUM:

- ✓ ISHIOANAL/ ISHIORECTAL FOSSA

SHORT ESSAY

- ✓ RECTUS SHEATH
- ✓ DIRECT AND INDIRECT HERNIA/ INGUINAL HERNIA
- ✓ PORTO-CAVAL ANASTOMOSES
- ✓ LYMPHATIC DRAINAGE OF STOMACH
- ✓ COELIAC TRUNK
- ✓ SUPPORTS OF UTERUS
- ✓ APPENDIX
- ✓ SPERMATIC CORD AND CONTENTS
- ✓ DIAPHRAGM - DEVELOPMENTS AND STRUCTURES PIERCING

PERINEUM:

- ✓ PUDENTAL CANAL
- ✓ UROGENITAL TRIANGLE – SUPERFICIAL AND DEEP PERINEAL POUCHES
- ✓ PERINEAL BODY
- ✓ STRUCTURES PIERCING PERINEAL MEMBRANE

SHORT NOTE

- ✓ STRUCTURES CROSSING ROOT OF MESENTERY
- ✓ STRUCTURES FORMING STOMACH BED
- ✓ EPIPLOIC FORAMEN

DIAGRAMS

- ✓ ANTERIOR AND POSTERIOR RELATIONS OF KIDNEY
- ✓ SECTION OF ABDOMEN AT T12, L1 - L4 LEVELS



HEAD AND NECK

ESSAY

- ✓ THYROID GLAND
- ✓ PAROTID GLAND (Secretomotor Innervation)
- ✓ LARYNX
- ✓ MIDDLE EAR
- ✓ CAVERNOUS SINUS
- ✓ FACIAL NERVE
- ✓ SUBMANDIBULAR GLAND
- ✓ TEMPOROMANDIBULAR JOINT
- ✓ SCALP

SHORT ESSAY

- ✓ CAROTID TRIANGLE
- ✓ POSTERIOR TRIANGLE
- ✓ SUBMENTAL TRIANGLE
- ✓ SUB-OCCIPITAL TRIANGLE

SHORT NOTES

- ✓ NASAL SEPTUM
- ✓ MIDDLE MEATUS
- ✓ ANSA CERVICALIS
- ✓ PHARYNGOTYMPANIC TUBE
- ✓ TONGUE – MUSCLES, DEVELOPMENT, BLOOD AND NERVE SUPPLY
- ✓ NASOPHARYNX
- ✓ OTIC GANGLION
- ✓ CHORDA TYMPANI

EMBRYOLOGY

- ✓ DEVELOPMENT OF TONGUE
- ✓ DEVELOPMENT OF PALATE
- ✓ DEVELOPMENT OF FACE

MUSCLES AND BONES

- ✓ EXTRA-OCULAR MUSCLES
- ✓ MUSCLES OF MASTICATION
- ✓ CONSTRUCTORS OF PHARYNX
- ✓ ORBICULARIS OCULI



NEUROANATOMY

ESSAY

- ✓ **SULCI AND GYRI; AND FUNCTIONAL AREAS OF BRAIN**
- ✓ **BLOOD SUPPLY OF BRAIN**
- ✓ **INTERNAL CAPSULE**
- ✓ **FOURTH VENTRICLE – FLOOR OF FOURTH VENTRICLE DIAGRAM**
- ✓ **LATERAL VENTRICLE**
- ✓ **WHITE MATTER OF CEREBRUM – CORPUS CALLOSUM**
- ✓ **SPINAL CORD**
- ✓ **DURAL VENOUS SINUSES AND DURAL FOLDS**

SHORT ESSAY

- ✓ **CIRCLE OF WILLIS**
- ✓ **CEREBELLUM (especially connections and nuclei)**
- ✓ **THALAMUS (including thalamic syndrome)**
- ✓ **DEVELOPMENT OF CNS**

SHORT NOTES

- ✓ **PIAL MODIFICATIONS**
- ✓ **VISUAL CORTEX**
- ✓ **FACIAL COLLICULUS**
- ✓ **BASAL GANGLIA**
- ✓ **DEVELOPMENT/ HISTOLOGY OF PITUITARY GLAND**



PHYSIOLOGY

GENERAL PHYSIOLOGY

- ✓ SODIUM POTASSIUM ATPase – SUBUNITS, FUNCTIONS, DIAGRAM, INHIBITORS, APPLIED ASPECTS
- ✓ INTERCELLULAR CONNECTIONS/ COMMUNICATION
- ✓ CELL JUNCTIONS
- ✓ RMP AND ITS IONIC BASIS
- ✓ TYPES OF TRANSPORT
- ✓ PRIMARY AND SECONDARY ACTIVE TRANSPORT

NERVE AND MUSCLE PHYSIOLOGY

ESSAY

- ✓ ACTION POTENTIAL – NERVE, SKELETAL MUSCLE, SMOOTH MUSCLE AND CARDIAC MUSCLE
- ✓ ACTION POTENTIAL VS GRADED POTENTIAL
- ✓ NEUROMUSCULAR JUNCTION AND IMPULSE CONDUCTION
- ✓ MOLECULAR BASIS OF SKELETAL MUSCLE CONTRACTION
- ✓ EXCITATION-CONTRACTION COUPLING/ CROSS-BRIDGE FORMATION
- ✓ TYPES OF NEURONS (EHRLANGER AND GASSER CLASSIFICATION)
- ✓ TYPES OF SKELETAL MUSCLE (WHITE VS RED FIBERS)
- ✓ LENGTH-TENSION RELATIONSHIP OF MUSCLES

SHORT NOTE

- ✓ MYASTHENIA GRAVIS
- ✓ REFRACTORY PERIOD – ABSOLUTE AND RELATIVE
- ✓ CARDIAC MUSCLE CANNOT BE TETANISED – PHYSIOLOGICAL BASIS
- ✓ CHRONAXIE AND RHEOBASE
- ✓ DENERVATION HYPERSENSITIVITY
- ✓ SACROTUBULAR SYSTEM



HEMATOLOGY

ESSAY

- ✓ ERYTHROPOESIS – Diagrams and Flow Chart, FACTORS AFFECTING ERYTHROPOESIS
- ✓ ANAEMIA – Classification, different types
- ✓ INNATE AND ACQUIRED IMMUNITY
- ✓ CELL-MEDIATED AND HUMORAL IMMUNITY
- ✓ HEMOSTASIS – PRIMARY AND SECONDARY
- ✓ BLOOD COAGULATION CASCADE – INTRINSIC AND EXTRINSIC PATHWAYS' CHART
- ✓ FIBRINOLYTIC SYSTEM
- ✓ HEMOPHILIA (AND OTHER BLEEDING DISORDERS)
- ✓ LYMPH AND TISSUE FLUID – Mechanism of formation and function
- ✓ STARLINGS FORCES/ HYPOTHESIS (with diagram)
- ✓ BLOOD GROUPING
- ✓ CROSS-MATCHING AND TRANSFUSION REACTIONS

SHORT NOTE

- ✓ ABO, Rh, BOMBAY BLOOD GROUP
- ✓ LANDSTEINER'S LAWS
- ✓ COMPLICATIONS OF BLOOD TRANSFUSION
- ✓ ERYTHROBLASOSIS FOETALIS – Cause, Symptoms and Treatment/ NEONATAL JAUNDICE
- ✓ STRUCTURE, FUNCTIONS AND PROPERTIES OF PLATELETS
- ✓ RETICULOENDOTHELIAL SYSTEM
- ✓ PURPURA
- ✓ PROPERTIES AND FUNCTIONS OF DIFFERENT LEUKOCYTES
- ✓ STEPS OF PHAGOCYTOSIS
- ✓ NEUTROPHILS AND RESPIRATORY BURST
- ✓ FOETAL HEMOGLOBIN
- ✓ DESTRUCTION OF RBC/ FATE OF HEMOGLOBIN
- ✓ HAEMOGLOBINOPATIES
- ✓ FOLATE DEFICIENCY LEADING TO MEGALOBlastic ANAEMIA
- ✓ IRON DEFICIENCY ANAEMIA
- ✓ FUNCTIONS OF PLASMA PROTEINS
- ✓ ALBUMIN-GLOBULIN RATIO AND SIGNIFICANCE
- ✓ OEDEMA IN HYPOPROTEINEMIA



CVS

ESSAY

- ✓ ECG – WAVES, SEGMENTS, INTERVALS: Normal duration and significance, clinical aspects
- ✓ ECG LEADS
- ✓ CARDIAC CONDUCTION SYSTEM
- ✓ MYOCARDIAL INFARCTION – ECG CHANGES IN MI
- ✓ CARDIAC CYCLE – Phases, duration, diagram, pressure changes, etc.
- ✓ REGULATION OF BLOOD PRESSURE – SHORT, INTERMEDIATE AND LONG TERM
- ✓ SHOCK – definition, causes, stages, classification, COMPENSATORY MECHANISMS and management
- ✓ HYPO/HYPERTENSION – FEATURES, CAUSE, MANAGEMENT
- ✓ CARDIAC OUTPUT – definition, methods to determine, FACTORS AFFECTING
- ✓ REGULATION OF HEART RATE
- ✓ CARDIOVASCULAR ADJUSTMENTS IN EXERCISE
- ✓ VARIATION IN SBP AND DBP IN EXERCISE

DIAGRAMS

- ✓ LEAD II IN ECG
- ✓ WIGGER'S DIAGRAM - LEFT VENTRICULAR PRESSURE CHANGES
- ✓ JVP TRACING
- ✓ VENTRICULAR P-V HYSTERESIS LOOP
- ✓ CARDIAC MUSCLE ACTION POTENTIAL GRAPH AND IONIC BASIS
- ✓ VENTRICULAR MUSCLE CONTRACTION GRAPH

SHORT NOTES

- ✓ PACE MAKER POTENTIAL AND PRE-POTENTIAL
- ✓ VAGAL INHIBITION AND ESCAPE
- ✓ MEAN ARTERIAL AND PULSE PRESSURES
- ✓ SPECIAL FEATURES OF CORONARY CIRCULATION
- ✓ KOROTKOFF SOUNDS – PHASES
- ✓ AUSCULTATORY GAP
- ✓ AV NODAL DELAY
- ✓ HEART SOUNDS
- ✓ EDV AND FACTORS AFFECTING IT
- ✓ STROKE VOLUME AND REGULATION
- ✓ FICK'S PRINCIPLE AND APPLICATION
- ✓ FRANK-STARLING'S LAW
- ✓ SINO-AORTIC REFLEX
- ✓ CUSHING REFLEX
- ✓ WINDKESSEL EFFECT
- ✓ TRIPLE RESPONSE
- ✓ REGIONAL CIRCULATIONS – especially CORONARY, CEREBRAL, RENAL AND ENTEROHEPATIC CIRCULATIONS
- ✓ CARDIAC MUSCLE CANNOT BE TETANISED



RESPIRATORY SYSTEM

ESSAY

- ✓ LUNG VOLUMES AND CAPACITIES (STATIC AND DYNAMIC) – NORMAL SPIROGRAM
- ✓ RESTRICTIVE VS OBSTRUCTIVE LUNG DISORDERS
- ✓ INTRAPLEURAL AND PULMONARY PRESSURE CHANGE GRAPH; TRANSMURAL PRESSURE
- ✓ REGULATION OF RESPIRATION – NEURAL AND CHEMICAL
- ✓ OXYGEN TRANSPORT
- ✓ CARBON DIOXIDE TRANSPORT AND CHLORIDE SHIFT
- ✓ OXYGEN-HEMOGLOBIN DISSOCIATION CURVE
- ✓ SURFACTANT – FORMATION, FUNCTIONS, IRDS
- ✓ HYPOXIA
- ✓ PHYSIOLOGICAL ADJUSTMENTS IN DEEP SEA AND ALTITUDE
- ✓ RESPIRATORY ADJUSTMENTS IN EXERCISE

SHORT NOTE

- ✓ RESPIRATORY DEAD SPACES
- ✓ PHYSIOLOGICAL AND PATHOLOGICAL SHUNT
- ✓ VITAL CAPACITY
- ✓ RESIDUAL VOLUME AND ITS IMPORTANCE
- ✓ CAISSON'S DISEASE
- ✓ MOUNTAIN SICKNESS
- ✓ H₂-He MIXTURE USED BY SCUBA DIVERS - BASIS
- ✓ RESPIRATORY AND NON-RESPIRATORY FUNCTIONS OF LUNGS
- ✓ VENTILATION-PERFUSION RATIO (EFFECTS ON LUNG APEX)
- ✓ RESPIRATORY MEMBRANE
- ✓ PERIODIC BREATHING – CHEYNE-STOKE AND BIOT
- ✓ FEATURES OF PULMONARY CIRCULATION

GASTROINTESTINAL PHYSIOLOGY

ESSAY

- ✓ MECHANISM OF HCl SECRETION
- ✓ PEPTIC ULCER (GASTRIC VS DUODENAL ULCER)
- ✓ GASTRIC JUICE SECRETION – PHASES AND REGULATION
- ✓ MOVEMENTS OF GIT
- ✓ DIGESTION AND ABSORPTION – OF CARBOHYDRATES, FATS, PROTEINS, VITAMINS AND MINERALS

SHORT NOTE

- ✓ ENTERIC NERVOUS SYSTEM
- ✓ SALIVARY SECRETION – composition, function, mechanism and regulation
- ✓ GI HORMONES – MAINLY GASTRIN
- ✓ POST-PRANDIAL ALKALINE TIDE
- ✓ PANCREATIC JUICE - composition, function, mechanism and regulation
- ✓ ENTEROHEPATIC CIRCULATION
- ✓ DEGLUTITION; PERISTALSIS



RENAL SYSTEM

ESSAY

- ✓ JUXTA GLOMERULAR APPARATUS
- ✓ GLOMERULAR FILTRATION RATE – normal value, factors affecting, etc.
- ✓ REABSORPTION OF: GLUCOSE, SODIUM, WATER AND UREA
- ✓ CONCENTRATION AND DILUTION OF URINE – COUNTER CURRENT EXCHANGER AND MULTIPLIER
- ✓ ACIDIFICATION OF URINE
- ✓ SHORT NOTE
- ✓ RENAL SPLAY
- ✓ INNERVATION OF BLADDER AND ASSOCIATED DISORDERS
- ✓ MICTURITION REFLEX AND DISORDERS
- ✓ RENAL CLEARANCE
- ✓ SPECIAL FEATURES OF RENAL CIRCULATION
- ✓ TUBULO-GLOMERULAR FEEDBACK
- ✓ GLOMERULO-TUBULAR BALANCE
- ✓ CYSTOMETROGRAM
- ✓ DIFFERENCE BETWEEN JUXTAMEDULLARY AND CORTICAL NEPHRONS

REPRODUCTIVE SYSTEM

ESSAY

- ✓ SPERMATOGENESIS – definition, stages, factors affecting
- ✓ TESTOSTERONE – action, regulation, fetal testosterone
- ✓ MENSTRUAL CYCLE – especially OVARIAN CYCLE; endometrial, ovarian, mammary, cervical and vaginal changes, hormonal changes (GRAPH/DIAGRAM), abnormalities
- ✓ PLACENTA/ FETOPLACENTAL UNIT
- ✓ CONTRACEPTION

SHORT NOTE

- ✓ MECHANISM AND REGULATION OF HORMONE SECRETION: TESTOSTERONE, ESTROGEN, LH AND FSH
- ✓ TESTS FOR OVULATION
- ✓ PREGNANCY TESTS
- ✓ CRYPTOCHIDISM
- ✓ BLOOD-TESTES BARRIER
- ✓ SEX-DETERMINATION
- ✓ PARTURITION REFLEX
- ✓ LACTATION/ MILK-EJECTION REFLEX
- ✓ LACTATIONAL AMENORRHOEA
- ✓ PROGESTERONE AND ESTROGEN
- ✓ LSH AND FSH
- ✓ PLACENTAL HORMONES



ENDOCRINOLOGY

ESSAY

(Synthesis, secretion, structure, physiological functions, abnormalities, regulation)

- ✓ GROWTH HORMONE – functions, disorders due to hyposecretion (pituitary dwarfism) and hypersecretion (gigantism, acromegaly), regulation
- ✓ GROWTH AND DEVELOPMENT – CURVES: General, Neural, Reproductive and Lymphoid Growth Curves
- ✓ THYROID HORMONE – Biosynthesis (5 STEPS), PHYSIOLOGICAL ACTIONS, regulation (TRH, TSH, T3, T4; hypo and hyperthyroidism, anti-thyroid drugs)
- ✓ ALDOSTERONE – (MINERALOCORTICOIDS – Aldosterone escape, RAAS, Adrenogenital Syndrome)
- ✓ CORTISOL – (GLUCOCORTICOIDS – Cushing's syndrome, reasons for moon face, purple striae, buffalo hump, etc.)
- ✓ INSULIN
- ✓ DIABETES MELLITUS (Type I and II)
- ✓ CALCIUM HOMEOSTASIS – PARATHORMONE, CALCITONIN AND CALCITRIOL
- ✓ POSTERIOR PITUITARY HORMONES (vasopressin and oxytocin; milk-ejection reflex)

SHORT NOTE

- ✓ MECHANISMS OF ACTION OF HORMONES – STEROID VS PEPTIDE
- ✓ INTRACELLULAR AND EXTRACELLULAR ACTIONS WITH EXAMPLES
- ✓ SECOND MESSENGERS
- ✓ SOMATOMEDINS
- ✓ CVS AND CNS FUNCTIONS OF THYROID HORMONE
- ✓ THYROID FUNCTION TESTS
- ✓ DIFFERENCE BETWEEN CRETIN AND PITUITARY DWARVES
- ✓ EXOPHTHALMOS IN GRAVES DISEASE
- ✓ REASON FOR POLYURIA, POLYPHAGIA AND POLYDIPSIA IN DM
- ✓ ACTIONS OF INSULIN AND GLUCAGON
- ✓ ALDOSTERONE ESCAPE
- ✓ CUSHING'S SYNDROME: REASONS FOR MOON FACE, PURPLE STRIAE, BUFFALO HUMP, ETC.
- ✓ NEURO ENDOCRINE REFLEX - MILK-EJECTION REFLEX
- ✓ ADH
- ✓ RAAS
- ✓ TETANY – CHOIVSTEK AND TROSSEAU SIGNS
- ✓ CARPOPEDAL SPASM IN HYPOPARATHYROIDISM



CNS

ESSAY

- ✓ SYNAPSE: Definition, classification, functional anatomy, conduction
- ✓ PROPERTIES OF SYNAPSE
- ✓ PRE AND POST SYNAPTIC INHIBITION
- ✓ ALL PATHWAYS: draw midline division, written under headings: Receptor, first order neuron, second order neuron, third order neuron, etc.)
- ✓ SENSORY PATHWAYS:
- ✓ DORSAL COLUMN PATHWAY
- ✓ ANTERIOR SPINOTHALAMIC TRACT
- ✓ LATERAL SPINITHALAMIC TRACT
- ✓ MOTOR PATHWAYS:
- ✓ ANTERO-LATERAL CORTICOSPINAL/ PYRAMYDAL TRACTS
- ✓ NAMES AND GENERAL PATHWAY OF EXTRA PYRAMYDAL TRACTS

- ✓ THEORIES ON REFERRED PAIN
- ✓ SLOW VS FAST PAIN
- ✓ THEORIES ON CONTROL OF PAIN
- ✓ UMN VS LMN LESIONS
- ✓ MUSCLE SPINDLE
- ✓ STRETCH AND INVERSE STRETCH REFLEX
- ✓ TRANSECTION OF SPINAL CORD AND STAGES OF SPINAL SHOCK
- ✓ BASAL GANGLIA AND PARKINSONISM: Direct and indirect pathways, function, features of parkinsonism
- ✓ THALAMUS: Connections and functions, anatomical and physiological divisions of nuclei, THALAMIC SYNDROME
- ✓ CEREBELLUM: Anatomical and functional lobes, connections, functions, CEREBELLAR LESIONS: FEATURES AND BASIS
- ✓ HYPOTHALAMUS: Nuclei and functions; HUNGER, THIRST AND TEMPERATURE REGULATION FUNCTIONS
- ✓ RETICULAR FORMATION: ARAS – Components, functions, significance
- ✓ SLEEP AND EEG: EEG Waves, variations and applications; changes in EEG during sleep stages; Stages of sleep

SHORT NOTE

- ✓ GATE CONTROL THEORY OF PAIN
- ✓ SENSORY AND MOTOR HOMUNCULUS
- ✓ EPSP AND IPSP – IONIC BASIS
- ✓ SYNAPTIC INHIBITION
- ✓ BROWN-SEQUARD SYNDROME
- ✓ POLYSYNAPTIC REFLEX
- ✓ ALPHA-BETA COACTIVATION
- ✓ FUNCTIONS OF RETICULOSPINAL TRACT
- ✓ DIFFERENCE BETWEEN REM AND NREM SLEEP
- ✓ ALPHA BLOCK



SPECIAL SENSES

ESSAY

- ✓ VISUAL PATHWAY AND EFFECT OF LESIONS AT DIFFERENT PARTS
- ✓ AUDITORY PATHWAY
- ✓ FUNCTIONS OF MIDDLE EAR
- ✓ GUSTATORY PATHWAY
- ✓ OLFACTORY PATHWAY

SHORT NOTE

- ✓ PHOTOTRANSDUCTION
- ✓ VISUAL DEFECTS AND CORRECTION
- ✓ VISUAL CYCLE
- ✓ PUPILLARY REFLEX
- ✓ ACCOMODATION REFLEX
- ✓ LIGHT AND DARK ADAPTATION
- ✓ THEORIES OF COLOUR VISION
- ✓ AUDITORY TRANSDUCTION
- ✓ TYMPANIC REFLEX
- ✓ IMPEDENCE MATCHING
- ✓ VESTIBULAR APPARATUS – different parts and functions

SKIN AND TEMPERATURE REGULATION

- ✓ MECHANISMS OF ADAPTATION TO COOL AND WARM ENVIRONMENTS
- ✓ MALIGNANT HYPERTHERMIA
- ✓ PATHOPHYSIOLOGY OF PYREXIA/ FEVER



BIOCHEMISTRY

GENERAL BIOCHEMISTRY

- ✓ MARKER ENZYMES
- ✓ ENDOPLASMIC RETICULUM
- ✓ MITOCHONDRIA
- ✓ LYSOSOMES
- ✓ PEROXISOMES
- ✓ FLUID MOSAIC MODEL
- ✓ AQUAPORINS
- ✓ ACTIVE TRANSPORT

ENZYMOLGY

- ✓ DEFINITION AND IUBMB CLASSIFICATION
- ✓ ENZYME INHIBITION WITH EXAMPLES AND GRAPHS
- ✓ REGULATION OF ENZYME ACTIVITY
- ✓ FACTORS INFLUENCING ENZYME ACTION
- ✓ MECHANISM OF ENZYME ACTION
- ✓ ISOENZYMES – especially LDH, CK, ALP
- ✓ MICHAELIS-MENTON THEORY
- ✓ COENZYMES, COFACTORS AND PROSTHETIC GROUPS
- ✓ METALLOENZYMES
- ✓ USES OF ENZYMES – DIAGNOSTIC AND THERAPEUTIC: CARDIAC MARKERS, ENZYMES IN LIVER DISEASE, etc.



CARBOHYDRATE CHEMISTRY AND METABOLISM

CHEMISTRY

- ✓ CLASSIFICATION OF CARBOHYDRATES
- ✓ ISOMERISM IN MONOSACCHARIDES – EPIMERISM AND MUTAROTATION
- ✓ MUCOPOLYSACCHARIDES AND DISORDERS
- ✓ POLYSACCHARIDES: GLYCOGEN AND STARCH
- ✓ DIETARY FIBERS

METABOLISM

ESSAY

- ✓ GLYCOLYSIS: Steps, regulation and energetics
- ✓ GLUCONEOGENESIS: Steps, regulation and energetics
- ✓ HMP SHUNT AND SIGNIFICANCE
- ✓ GLYCOGEN METABOLISM: GLYCOGENESIS AND GLYCOGENOLYSIS – Steps, regulation
- ✓ GLYCOGEN STORAGE DISORDERS
- ✓ REGULATION OF BLOOD GLUCOSE
- ✓ DIABETES MELLITUS

SHORT ESSAY

- ✓ DIGESTION AND ABSORPTION OF GLUCOSE
- ✓ FATE OF PYRUVATE
- ✓ PDH COMPLEX
- ✓ CORI'S CYCLE
- ✓ GLUCOSE-ALANINE CYCLE
- ✓ GALACTOSEMIA
- ✓ SIGNIFICANCE OF BPG SHUNT
- ✓ LACTOSE INTOLERANCE



PROTEIN CHEMISTRY AND METABOLISM

CHEMISTRY

- ✓ CLASSIFICATION OF AMINO ACIDS
- ✓ PRIMARY, SECONDARY, TERTIARY AND QUATERNARY STRUCTURES WITH EXAMPLES
- ✓ STRUCTURE OF INSULIN, COLLAGEN, HEMOGLOBIN
- ✓ DIFFERENCE BETWEEN ALPHA HELIX AND BETA PLEATED SHEET
- ✓ DENATURATION AND HEAT COAGULATION OF PROTEINS

METABOLISM

ESSAY

- ✓ FORMATION AND DETOXIFICATION OF AMMONIA
- ✓ UREA CYCLE – DIAGRAM AND DISORDERS
- ✓ GLYCINE METABOLISM
- ✓ CYSTEINE-METHIONINE METABOLISM
- ✓ PHENYL-ALANINE AND TYROSINE METABOLISM
- ✓ TRYPTOPHAN METABOLISM

SHORT NOTE

- ✓ ISOELECTRIC POINT
- ✓ MIESTER CYCLE
- ✓ TRANSAMINATION
- ✓ CREATINE METABOLISM
- ✓ TRANSMETHYLATION
- ✓ CYSTEINURIA
- ✓ HOMOCYSTEINURIA
- ✓ MAPLE SYRUP URINE DISEASE
- ✓ PHENYLKETONURIA
- ✓ ALKAPTONURIA
- ✓ ALBINISM
- ✓ HARTNUP'S DISEASE
- ✓ CARCINOID SYNDROME
- ✓ POLYAMINES AND BIOGENIC AMINES
- ✓ GLUTATHIONE, FIGLU, PAPS STRUCTURE
- ✓ NITRIC OXIDE
- ✓ ONE CARBON METABOLISM



LIPID CHEMISTRY AND METABOLISM

CHEMISTRY

- ✓ CLASSIFICATION OF LIPIDS
- ✓ PHOSPHOLIPIDS
- ✓ GLYCOLIPIDS

METABOLISM

ESSAY

- ✓ BETA OXIDATION OF FATTY ACIDS
- ✓ LIPOPROTEIN METABOLISM – Classification, metabolism and functions
- ✓ KETONE BODY METABOLISM
- ✓ CHOLESTEROL – STRUCTURE AND METABOLISM
- ✓ FATTY ACID SYNTHASE COMPLEX
- ✓ DE NOVO SYNTHESIS OF FATTY ACIDS
- ✓ DIGESTION AND ABSORPTION OF LIPIDS

SHORT NOTE

- ✓ CARNITINE SHUTTLE
- ✓ LIPOTROPIC FACTORS
- ✓ REVERSE CHOLESTEROL TRANSPORT BY HDL
- ✓ ESSENTIAL FATTY ACIDS
- ✓ BILE SALTS AND ACIDS
- ✓ METABOLIC KETOACIDOSIS/ KETOSIS
- ✓ METABOLIC SYNDROME
- ✓ NUCLEOTIDE CHEMISTRY AND METABOLISM
- ✓ PURINE SYNTHESIS
- ✓ PYRIMIDINE SYNTHESIS
- ✓ SALVAGE PATHWAY OF PURINES AND PYRIMIDINES AND SIGNIFICANCE – Lesch Nyhan Syndrome
- ✓ DEGRADATION OF PURINES AND URIC ACID FORMATION
- ✓ GOUT
- ✓ DISORDERS OF PURINE METABOLISM
- ✓ OROTIC ACIDURIA



HEME METABOLISM

ESSAY

HEME SYNTHESIS: STEPS, REGULATION, KEY ENZYMES, DISORDERS
PORPHYRIAS
HEME CATABOLISM
JAUNDICE – CLASSIFICATION AND CLINICAL FINDINGS (TABLE)

SHORT NOTE

HYPERBILIRUBINEMIAS
HEMOGLOBIN DERIVATIVES
HEMOGLOBINOPATHIES

BIOLOGICAL OXIDATION: TCA AND ETC

ESSAY

TCA CYCLE: Steps, Regulation, energetics, INHIBITORS
ORGANISATION OF ELECTRON TRANSPORT CHAIN: Steps, energetics, INHIBITORS

SHORT ESSAY

AMPHIBOLIC ROLE OF TCA CYCLE
ANAPLEUROTIC ROLE OF TCA CYCLE
SUBSTRATE LEVEL PHOSPHORYLATION
CYTOCHROMES
UNCOUPLERS
COENZYME Q

FREE RADICALS AND XENOBIOTICS

- ✓ DETOXIFICATION – STEPS, ROLE OF GLYCINE
- ✓ FREE RADICALS – GENERATION, TYPES OF LIPID PEROXIDATION
- ✓ ANTI-OXIDANTS – DEFINITION AND CLASSIFICATION
- ✓ CYTOCHROME P450



NUTRITION

(VITAMINS, MINERALS AND ENERGY METABOLISM)

VITAMINS

(IN ORDER OF IMPORTANCE)

- ✓ VITAMIN A – CHEMICAL NATURE, SOURCES, RDA, ABSORPTION, TRANSPORT, BICHEMICAL ROLE, DEFICIENCY DISEASES (NIGHT BLINDNESS)
- ✓ VITAMIN D – CHEMICAL NATURE, RDA, SOURCES, BIOCHEMICAL EFFECTS, DEFICIENCY MANIFESTATIONS (RICKETS - TYPES)
- ✓ VITAMIN K – VITAMIN K CYCLE, GAMMA CARBOXYLATION
- ✓ VITAMIN C – CHEMICAL NATURE, RDA, SOURCES, BIOCHEMICAL EFFECTS, DEFICIENCY MANIFESTATIONS
- ✓ NIACIN - PELLAGRA
- ✓ ROLE OF VITAMIN A IN WALD'S VISUAL CYCLE
- ✓ ACTIVATION OF VITAMIN D
- ✓ CO ENZYME ROLE OF THIAMINE, RIBOFLAVIN, NIACIN
- ✓ FOLAIC ACID – including FOLATE ANTAGONISTS, FOLATE TRAP
- ✓ BIOCHEMICAL ROLE OF BIOTIN

MINERALS

(IN ORDER OF IMPORTANCE)

- ✓ IRON – RDA, ABSORPTION, TRANSPORT, METABOLISM, MUCOSAL BLOCK THEORY, STORAGE, DEFICIENCY MANIFESTATION, IRON TOXICITY
- ✓ CALCIUM - SERUM CALCIUM HOMEOSTASIS (Hypo and Hypercalcemia); Source, RDA, Functions, absorption, regulation
- ✓ COPPER - Source, RDA, Functions, absorption, regulation, CERULOPLASMIN, WILSON'S DISEASE, COPPER CONTAINING ENZYMES
- ✓ SODIUM AND POTASSIUM (FLUID ELECTROLYTE BALANCE)
- ✓ MAGNESIUM – RDA, Functions
- ✓ FLUORIDE - FLUOROSIS
- ✓ CHLORIDE – CHLORIDE SHIFT
- ✓ SELENIUM
- ✓ IODINE

ENERGY METABOLISM

- ✓ PROTEIN-ENERGY MALNUTRITION – KWASHIORKOR VS MARASMUS
- ✓ OBESITY
- ✓ BMR – DEFINITION, VALUE, CALCULATION
- ✓ SPECIFIC DYNAMIC ACTION
- ✓ DIETARY FIBERS



ACID-BASE AND FLUID-ELECTROLYTE BALANCE

ESSAY

- ✓ MAINTENANCE OF NORMAL BODY pH – BODY BUFFERS, RESPIRATORY AND RENAL MECHANISMS
- ✓ METABOLIC ACIDOSIS (HAGMA AND NAGMA)
- ✓ METABOLIC ALKALOSIS
- ✓ RESPIRATORY ACIDOSIS AND ALKALOSIS
- ✓ HYPO AND HYPER NATREMIA
- ✓ HYPO AND HYPER KALEMIA
- ✓ HYPO AND HYPER CHLOREMIA

SHORT NOTE

- ✓ HENDERSON-HASSELBACH EQUATION
- ✓ ANION GAP – NORMAL VALUE AND SIGNIFICANCE
- ✓ RENAL REGULATION OF pH
- ✓ DISTURBANCES OF FLUID ELECTROLYTE BALANCE
- ✓ DISTRIBUTION OF BODY WATER

MOLECULAR BIOLOGY

ESSAY

- ✓ DNA REPLICATION (IN PROKARYOTS AND EUKARYOTS, STEPS AND INHIBITORS)
- ✓ TRANSCRIPTION (IN PROKARYOTS AND EUKARYOTS, STEPS AND INHIBITORS)
- ✓ TRANSLATION (STEPS AND INHIBITORS)
- ✓ DNA REPAIR MECHANISMS AND DISORDERS
- ✓ MUTATION – DEFINITION, CAUSE, CLASSIFICATION; MUTAGEN
- ✓ REGULATION OF GENE EXPRESSION – LAC OPERON
- ✓ RECOMBINANT DNA TECHNOLOGY – DEFINITION, STEPS, APPLICATIONS IN GENE THERAPY
- ✓ POLYMERASE CHAIN REACTION STEPS

SHORT NOTE

- ✓ WATSON AND CRICK MODEL OF DNA
- ✓ BASE-PAIRING RULE
- ✓ SALIENT FEATURES OF GENETIC CODE
- ✓ TYPES OF RNA AND STRUCTURES – especially tRNA
- ✓ MITOCHONDRIAL DNA
- ✓ DNA POLYMERASE AND INHIBITORS
- ✓ TELOMERASE
- ✓ RESTRICTION ENDONUCLEASE
- ✓ VECTORS OF GENE THERAPY
- ✓ DNA FINGERPRINTING
- ✓ BLOTTING TECHNIQUES



BIOCHEMISTRY OF CANCER

- ✓ ONCOGENES
- ✓ ONCO-SUPPRESSOR GENES
- ✓ TUMOUR MARKERS
- ✓ MUTAGENS
- ✓ ANTI-CANCER DRUGS

IMMUNOGLOBULINS

- ✓ STRUCTURE AND FUNCTIONS OF IMMUNOGLOBULINS: IgG, IgA, IgM, IgE, IgD
- ✓ MONOCLONAL ANTIBODIES
- ✓ BENCE-JONES PROTEINS
- ✓ MULTIPLE MYELOMA

CLINICAL BIOCHEMISTRY AND MISCELLANEOUS

- ✓ LIVER FUNCTION TESTS
- ✓ RENAL FUNCTION TESTS
- ✓ VAN DEN BERG REACTION – DIFFERENTIAL DIAGNOSIS OF JAUNDICE
- ✓ UREA AND CREATININE CLEARANCE; BUN
- ✓ THYROID FUNCTION TESTS
- ✓ ELECTROPHORESIS – PRINCIPLE, TYPES, CLINICAL APPLICATIONS
- ✓ CHROMATOGRAPHY - PRINCIPLE, TYPES, CLINICAL APPLICATIONS
- ✓ ELISA – PRINCIPLE, TYPES, APPLICATIONS
- ✓ RIA AND CLIA
- ✓ PLASMA PROTEINS – TYPES, TRANSPORT PROTEINS, FUNCTIONS OF ALBUMIN
- ✓ A/G RATIO
- ✓ ACUTE PHASE PROTEINS
- ✓ PROSTAGLANDINS



**ALL THE BEST FOR YOUR
EXAMS!**