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SYLLABUS

Candidates for the Fellowship of the College are expected to have a sound working knowledge of the structure and functions of the human body and the various mechanisms whereby these structures and functions are altered leading to diseased states. The emphasis in the FCPS Part-I examinations is on comprehension of the various mechanisms by which the body works and adjusts to external and internal changes. Concepts of the integration and interrelationship of various parts of the body are to be given more importance than finer details of structure and function.

The outline of various topics given in this syllabus is a guide to what at the moment are considered to be important topics which the candidate is expected to know. This is to help both the candidate and the examiner in defining the minimum boundaries of FCPS Part-I examination.

PAPER I

I. ANATOMY

1. General Features:
   - Muscles
   - Joints
   - Blood vessels

2. General Embryology - General aspects

3. Histology - General Features:
   - Epithelia
   - Muscles
   - Nerves
   - Blood vessels
   - Connective tissue
   - Lymphoid tissue

4. Brain and spinal cord - General Features:
   - Spinal nerves
   - Cranial nerves
   - Vertebral Column

5. Head and Neck - General Features:
   - Major blood vessels

6. Viscera: General Features: Blood and Nerve Supply:
   - Heart
   - Lung
   - Kidney
   - Liver

7. Endocrine glands – Gross structure and important relations of Pituitary,Thyroid, parathyroid and adrenal glands

II. PHYSIOLOGY,BIOCHEMISTRY AND PHARMACOLOGY

1. General Physiology:
   - Components of cell with their major functions. Transport across cell membrane
   - Action Potential, Muscle contraction
   - Classification and properties of nerve fibres
   - Receptors: types and functions
   - Somatic sensations, transmission of pain
   - Function of motor and sensory areas
   - Cerebrospinal fluid (CSF) - formation, functions, drainage
   - Autonomic nervous system: parts and their functions
   - General properties and composition of blood including Normal Cell counts and functions of RBCs, WBCs and platelets

- Mechanism of homeostatic coagulation factors and their actions
- Blood groups
- Conducting tissues of heart: generation and propagation of cardiac impulse
- Cardiac cycle (pressure, volumes, valvular changes).
- Blood pressure and its regulations
- Respiration: Ventilation, transport of gases and regulation of respiration
- Body fluids: compartments and regulation of osmotic equilibrium
- Regulation of E.C.F, blood volume and flow
- Peripheral circulation.
- General functions of kidney.
- Regulation of body temperature.

2. Biochemistry:
   - Requisites of a balanced diet
   - General principles of electrolyte balance
   - Role and function of endocrine hormones - feed back mechanism.
   - Metabolism of carbohydrates, proteins, fats and vitamins

3. Pharmacology:
   - Clinical Pharmacokinetics
   - Adverse reactions of common drugs
   - General principles of rational drug therapy

PAPER II
SURGERY & ALLIED (FCPS-I)

I. ANATOMY

Embryology:

- Development of musculoskeletal system.
- Liver.
- Bilary tract.
- Pancreas.
- Spleen.
- Urinary System.
- Rotation of Gut.
- Heart and Vessels.
- Respiratory passage
- Diaphragm
- Various congenital hernias and anomalies in the development of organ.

Histology:

Microscopic structure of the following organs:

- Liver
- Gall bladder
- Pancreas
- Spleen
- Bronchial tree
- Lung
- Heart
- Arteries
- Kidney
- Uterus
- Urinary Bladder

Gross Anatomy:

Features of the following structures / organs with special emphasis on applied aspects:

Skull and mandible:

- General description, age and sex differences, component bones, location of important foramina and entry/exit of structures through these foramina
- Nasal and orbital cavities
- Paranasal sinuses
- Movements of temporomandibular joint

Brain:

- Important cortical areas.
- Ventricular system.

Vertebral Column:

- Morphology
- Features of Vertebrae and movements at various levels

Breast:

- Structure, blood supply and lymphatic drainage.

Diaphragm:

- Structure and attachments.
- Nerve and blood supply.
- Function and structures transmitted at various levels.

Extremities:

- Neurovascular arrangements
- Formation and distribution of branchial plexus
- Lumbar and sacral plexus
- Course and distribution of important nerves and vessels of the extremities
- Anastomosis of arteries at various points and their importance
- Pattern of venous drainage in upper and lower limbs
- Arrangements of lymph vessels and lymph nodes and their area of drainage

Upper limb:

- Shoulder girdle - muscles, nerve supply and action
- Nerve supply and group action, muscles of the flexor and extensor compartments of arm and forearm
- Mechanism of pronation and supination
- Brachial plexus

Axilla:

- Walls and contents

Cubital fossa:

- Boundaries and contents

Hand - Functional Anatomy:

- Nerve supply & group action of muscles of Hand
- Palmar spaces

Osteology:

- Scapula, Clavicle, Humerus, radius and ulna - Salient Features

Lower limb:

- Muscles of rotators of hip - Nerve supply and group actions
- Femoral triangle, boundaries and contents
- Sub-sartorial canal
- Quadriceps, adductors of the thigh and hamstrings - nerve supply, action in walking.
- Popliteal fossa - boundaries and contents.
- Intermuscular septa and formation of compartments in the thigh and leg and their significance

- General disposition of leg muscles, anterior, posterior and lateral group of muscles - Nerve supply and action. Muscles of the foot - nerve supply and functions, maintenance of the arches of foot
- Posture of the body and anatomical factors for its maintenance

Thoracic cage and Intercostal muscles

Thoracic Inlet and outlet:

- Boundaries and structures passing through it

Thoracic Cavity:

Mediastinum:

- Boundaries and divisions
- Disposition of the contents

Major blood vessels:

- Formation, course and relations

Lungs and pleura:

- Surface marking of pleura and lungs including fissures
- Blood supply, nerve supply and lymphatic drainage of lungs and pleura
- Bronchopulmonary segments
- Arrangements of vessels at hilum

Heart and Pericardium:

- Parts and chambers
- Positions and surface projections
- Coronary arteries and their branches
- Vagus nerve, course and distribution
- Lymphatic drainage of the thorax
- Course of thoracic duct
- Sympathetic trunk

Abdomen:

1. Anterior abdominal wall
   - Dermatomes

2. Muscles of the abdominal wall:
   - Attachments, nerve supply and actions
   - Formation and contents of the rectus sheath

3. Anatomy of Inguinal and femoral canals:
   - Hernias

4. Surface Anatomy of the internal organs

Abdominal Cavity:

General disposition morphology and blood supply of the abdominal viscerae.

1. Peritonium:
   - Vertical and horizontal disposition, formation of omenta, mesentries and main ligament
   - Division of the peritoneal cavity along with their extent and boundaries
   - Formation of portal vein and sites of porto-systemic anastomosis

2 Posterior abdominal:
   - Muscles of the posterior abdominal wall-actions and nerve supply
   - Morphology of the retroperitoneal structures
   - Thoracolumbar fascia

3. Abdominal aorta, course, relations and branches

4. Inferior Vena Cava:
   - Course, relations and tributaries

5. Vagus Nerve:
   - Course and Distribution

6. Lymphatic drainage & main group of lymph nodes

7. Kidney and Ureter:
   - Structure
   - Blood and nerve supply

8. Lumbosacral plexus

Pelvis and Perineum:

1. Structures in the pelvis:
   - Male genital organs - Relations and Blood Supply
   - Female genital organs - Relations and blood supply
   - Urinary bladder - Structure, blood supply and sphincter control

2. Prostate:
   - Lobes
   - Blood supply
   - Lymphatic drainage

3. Pelvic diaphragm:
   - Structure
   - Opening
   - Functions and Nerve supply

4. Perineal region:
   - Male and Female external genitalia
   - Anal sphincter

Head and Neck:

1. Fascia of Neck:
   - Arrangement

2. Triangles of Neck:
   - Boundaries and contents

3. Muscles of the face:
   - Nerve supply and effects if paralyzed

4. Muscles of mastication:
   - Nerve supply and actions

5. Larynx - Muscles and Nerve Supply

6. Muscles of the tongue and pharynx:
   - Actions, nerve supply and lymphatic drainage
   - Mechanism of deglutition

7. Salivary glands:
   - Structure and Nerve supply

8. Thyroid and parathyroid glands:
   - Location, relation and blood supply.

9. Vessels in the neck and their supply
   - Carotid vessels, course and branches
   - Jugular vein

10. Cranial Nerves and sympathetic trunk

11. Cervical lymph drainage:
   - Nodes and area of drainage

12. Scalp layers
   - Blood supply and nerve supply

II. PHYSIOLOGY

Respiration:

1. Pulmonary volume and capacities:
   - Pulmonary Function Tests
   - Mechanics of Respiration
   - Transport of gases between the lungs & the tissues
   - Diffusion of oxygen and carbon dioxide through the respiratory membrane

2. Regulation of Respiration:
   - Neural Control of Breathing
   - Chemical Control of Breathing, Peripheral chemoreceptors

3. Respiratory adjustments:
   - Hypoxia
   - Hypercapina and Hypocapnia
   - Oxygen treatment
   - Artificial ventilation

4. Pulmonary circulation

Cardiovascular System:

1. Heart:
   - Physiology of cardiac muscle.
   - Regulation of heart pumping, cardiac output and Venous return
   - Electrical activity of the heart-electrocardiogram
   - Control of Rhythmicity, Cardiac arrhythmias.

2. Circulation:
   - Capillary fluid exchange
   - Exchange of water, nutrients between the blood and interstitial fluid; lymph flow
   - Nervous regulation of circulation and control of arterial pressure
   - Role of kidneys in long term regulation of arterial pressure
   - Renin-Angiotensin system

3. Gastro Intestinal:
   - Neural control of G.I.T. functions
   - Hormonal control of motility
   - Mastication and Swallowing - Mechanism
   - Regulation of movements of stomach and intestine
   - Secretary function of the alimentary tract
   - Principles of Gastro intestinal absorption
   - Metabolic frunctions of the liver
   - Secretion of bile from the liver

4. Renal:
   - Functions of kidneys in homeostasis
   - Glomerular filtration and regulation of tubular reabrosption
   - Filling of bladder and bladder wall tone - cystometry
   - Micturition reflex

5. Endocrinology:
   - Pituitary gland and its relation to hypothalamus - growth hormone
   - Formation and secretion of thyroid hormones
   - Regulation of secretion of thyroid hormones
   - Function of the Pancreas and Regulation of carbohydrate metabolism
   - Synthesis and Function of Adrenocortical Hormones
   - Regulation of Adrenal Medullary secretion
   - Role of Parathyroid Hormone in control of calcium metabolism. Physiology of bone and teeth

6. Reproductive System:
   - Control of testicular Function - Sex hormones, spermatogenesis
   - Control of ovarian function
   - Physiological changes during pregnancy
   - Lactation - Functions of prolactin

7. Nervous system:
   - Sensory and Motor Nervous System.
   - Central regulation of Visceral function
     Mechanism of Visceral Pain
   - Autonomic Nervous system - Autonomic reflexes
   - Control of Posture and movement.
   - Somatic sensations - pain, headache and thermal sensations
   - Functions of the thalamus
   - Referred Pain
   - Major levels of C.N.S Function
   - Motor cortex and corticospinal tract
   - Role of brain stem in controlling motor function
   - Extrapyramidal system
   - Contribution of cerebellum and basal ganglia to overall motor control
   - The limbic system and the hypothalamus
   - Spinal cord, functions and Reflexes

8. Special Senses:
   - Neurophysiology of Vision
   - Sense of hearing, smell and taste
   - Control of testicular function - Sex hormones spermatogenesis

III. PHARMACOLOGY

1. Antibiotics
2. Analgesics
3. Local and general anaesthetics
4. Diuretics
5. Anti thyroid drugs
6. Antiseptics and disinfectants

IV. PATHOLOGY

1. Disorders of R.B.C - Causes
2. Diminished erythropoiesis
3. Disorders of white cells - Non-neoplastic and Neoplastic
4. Bleeding disorders - thrombocytopenia, thrombocytosis, platelet function defects, Disseminated Intravascular Coagulation
5. Coagulation disorders
6. Pathology of lymphoid tissue
7. Immuno-deficiency and Autoimmune diseases
8. Hypersensitivity reactions
9. Transmission pattern of genetic disorders
10. Neoplasia - Epidemiology
11. Host defense against tumors
12. Characteristics of benign and malignant neoplasms

13. Effects of tumor, paraneoplastic syndromes
14. Grading and staging of cancer
15. Laboratory diagnosis of cancer
16. Causes of Sepsis - Sterilization
17. Microorganisms responsible for surgical infections
18. Hepatitis B and C infections - Transmission and Precautions
19. Common Viral, Chlamydial and fungal diseases and their mode of transmission
20. Modes of transmission and pathogenesis of common parasitic diseases in Pakistan including amaebiosis, malaria, hydatid diseases and worm infestations
21. Pathology of arterial and venous diseases Secondary hypertension due to renal pathology

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