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## Original Anesthesiology Syllabus Given By CPSP

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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 examinations.

### 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



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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 & 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





### III. PATHOLOGY INCLUDING MICROBIOLOGY

1. Effects of injury on cell by physical, chemical and biological agents
2. Inflammation
  - Acute
  - Chronic including granulomatous
3. Regeneration and Repair
4. Metabolic Response to Trauma
5. Disturbance of homeostatic mechanism
  - Haemorrhage and Shock - mechanism and types
  - Oedema
  - Disturbance of fluids and electrolytes
6. Thrombosis and embolism, Infarction and gangrene
7. Disorders of growth - Atrophy, hypertrophy, hyperplasia
8. Carcinogens and pre-malignant lesions
9. Neoplasia: Types and spread of tumor
10. General characteristics of bacteria, viruses, parasites and fungi
11. Immune system: General principle
12. Medical genetics - basic concept
13. Interpretation of routine Biochemical tests e.g. liver function tests, glucose, urea, creatinine
14. Nutritional diseases, disorders due to deficiency of vitamins and minerals

#### IV. RESEARCH AND BIostatISTICS BASIC CONCEPTS

##### Epidemiology:

- An introduction to Epidemiology and its role in understanding distribution and determinants of disease.
- Measures of disease occurrence
- Study designs, their advantages / disadvantages
- Measures of association
- Chances, Bias and Confounding
- Screening

##### Biostatistics:

- Introduction to Biostatistics
- Data and its kinds
- Summarization of data
- Measures of Central Tendency and Dispersion
- Normal Distribution
- Point and Interval estimation and Probability
- Hypothesis testing, significance level and power
- Sampling and its Techniques

#### V. BEHAVIOURAL SCIENCE AND MEDICAL ETHICS - GENERAL PRINCIPLES

- Medical Ethics
- Communication skills including Doctor Patient relationship and counseling
- Psycho social aspect of general health care



**PAPER II**  
**ANESTHESIOLOGY (FCPS-I)**

**I. ANATOMY**

**Respiratory System:**

- Mouth, nose, pharynx, larynx, trachea, main bronchi, segmental bronchi, structure of bronchial tree

**Nervous System:**

- Cervical plexus, Brachial plexus, nerves of arm
- Intercostal nerves
- Lumbar plexus, nerves of abdominal wall
- Sacral and coccygeal plexuses, nerves of leg
- Autonomic nervous system, sympathetic innervations, sympathetic chain, ganglia & plexuses
- Stellate ganglion
- Parasympathetic innervations. Coeliac plexus

**Cerebral Cortex:**

- Gross organization of the cortex, location of motor and sensory cortical "areas" location of internal capsule.
- Functions of various regions.
- Blood supply.

**Hypothalamus and thalamus:**

- Afferent and efferent connections and their functional correlations nuclear groups.

**Basal Ganglia:**

- Subdivisions, connections and functions and effects of lesions.

**Limbic System:**

- Core structure function of the limbic system.
- Other nuclei and pathways associated with limbic system.



### Vertebral Column:

- Cervical, thoracic and lumbar vertebrae
- Sacrum, Sacral hiatus
- Ligaments of vertebral column

### Musculo Skeletal:

- Identification of bony outlines on plain x-ray.
- Vertebral column, features of vertebrae of different regions.
- Thoracic cage, general form, parts of ribs and morphology of a typical rib.
- Respiratory movements of thorax.
- Morphology of the sternum. Muscles of the thorax, arrangement of intercostal muscles and their nerve supply.
- Diaphragm: development, functions, structures and attachments, openings and structures transmitted, nerve and blood supply, lymphatic drainage.

### Gastro Intestinal System:

- Anatomy of oesophagus stomach, small and large intestine and rectum, liver spleen and pancreas

### Areas of special interest:

- Base of skull
- The thoracic inlet and 1st rib
- Intercostals spaces including paravertebral space
- Abdominal wall (including the inguinal region)
- Antecubital fossa
- Large veins of neck
- Large veins of leg
- Diaphragm and muscles of respiration and their innervations
- Anatomy of tracheotomy, cricothyrotomy
- Axilla



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## II. PHYSIOLOGY

1. Body fluids and their functions and constitutions:
  - Capillary dynamics and interstitial fluid.
  - Osmolarity, osmolality, partition of fluids across membranes
  - Lymphatic system
  - Special fluids especially cerebrospinal fluid and ocular fluids. Also pleural, pericardial and peritoneal fluids
2. Muscle:
  - Action potential generation and its transmission
  - Neuromuscular junction and transmission
  - Muscle types
3. Gastrointestinal:
  - Gastric function; secretions, nausea and vomiting
  - Gut motility, sphincters and reflex control
  - Digestive functions
4. Vascular System:
  - Laws of haemodynamics governing flow, pressure and resistance in blood vessels. Arterial blood pressure measurement and regulation. Vasomotor system and control of blood vessels. Characters of arterial pulse and venous pulse. Significance of central venous pressure. Structure and functions of the arteries, arterioles, capillaries and veins.
  - Mechanism of haemorrhage and shock coronary, cutaneous, splanchnic and peripheral circulation.
5. Respiration:
  - Pulmonary ventilation: volumes, flows, dead space. Effect of IPPV on Lungs Mechanism of respiration: ventilation/perfusion abnormalities.

6. Nervous System:

Motor function: spinal and peripheral

- Senses: receptors, nociception
- Pain: afferent nociceptive pathways, dorsal horn, peripheral and central mechanisms, Neuromodulatory system, supraspinal mechanisms, visceral pain, neuropathic pain

7. Pregnancy:

- Physiological changes associated with normal pregnancy
- Functions of the placenta: dynamic of placental transfer
- Fetus: changes at birth

### III. PHARMACOLOGY

1. IV/Volatile anaesthetic agents
2. Local anaesthetics
3. Hypnotics, Sedatives
4. Opioids and other Analgesics
5. Non-steroidal anti-inflammatory drugs
6. Neuromuscular blocking agents/Anti cholinesterases
7. Drugs acting on the autonomic nervous system: Cholinergic & Adrenergic agonists and Antagonist
8. Drugs acting on the heart (antiarrhythmics, chronotropes and ionotropes) cardiac glycosides
9. Vasodilators
10. Antihypertensive
11. Anticonvulsants
12. Antibiotic



13. Corticosteroids and other hormone preparations
14. Antacids. Drugs influencing gastric secretion & motility
15. Antiemetic agents
16. IV fluids and Plasma volume expanders
17. Diuretics
18. Antidepressants
19. Anticoagulants
20. Drugs acting on the respiratory system
21. Drugs interaction
22. Anti-Diabetic drugs
23. Thyroid, anti-thyroid drugs
24. Disinfectants and antiseptics

#### **IV. PHYSICS & CLINICAL MEASUREMENT**

1. Fundamental and derived units: Simple mechanics  
Mass, force, work and Power Heat: conduction,  
convection, radiation. Laws of thermodynamics,  
physics of gases. Absolute and relative pressure.  
The gas laws triple point: critical temperature/pressure.  
Density and viscosity of gases. Laminar and  
turbulent flow. The Bernoulli principles freezing  
point, melting, latent heat. Vapour pressure.  
colligative properties



2. Defibrillator, Diathermy, Electrical hazards: causes and prevention
3. Measurement of Blood pressure: Direct & indirect methods, Measurement of pulmonary pressure
4. Measurement of volume and flow in gases and liquids. The pneumotachograph and other respirometers, Peak flow measurement spirometry cardiac output absolute and relative pressure
5. Measurement of temperature and humidity
6. Measurement of gas concentrations, especially oxygen, carbon dioxide, volatile anaesthetic agents, capnography, pulse oximetry
7. Basic Concepts of Electricity, magnetism and resistance, capacitance, Sources and methods of reducing electrical interference and light sources





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