पाटन स्वास्थ्य विज्ञान प्रतिष्ठान सेवा आयोग

प्राज्ञिक सेवा, शरिर रचना समूह, सहप्राध्यापक दशौं (१०) तहको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

Paper II: Technical Subject

1. General Anatomy

1.1 Classification of the bone.
1.2 Parts of a long bone.
1.3 Different types of epiphysis.
1.4 Ossification and different types of ossification centres.
1.5 Blood supply of the typical long bone and appraise its significance in osteomyelitis.
1.6 Steps of ossification and the significance of law of ossification.
1.7 Different types of joints.
1.8 Features of a typical synovial joint.
1.9 Basic organization of nervous system and its functional significance.
1.10 Organization of a spinal nerve and overview of its distribution.

2. General Histology

2.1 Principles of routine histological techniques.
2.2 Types of Tissues, Epithelium, Connective, Muscle and Nerve Tissue and classification and their functional significance
2.3 Features and functional significance of cartilage
2.4 Structural organization of bone and its macroscopic and microscopic features
2.5 Types, properties and distribution of collagen fibers.

3. Musculoskeletal and Integumentary System

3.1 Development of face and associated common birth defects.
3.2 Organization, curvatures and postnatal developmental changes of spinal column.
3.3 Anatomy of intervertebral articulations and intervertebral discs.
3.4 Role of principal group of muscles and ligaments of the spinal columnin its stability and movement.
3.5 Anatomy of spinal column with common back problems.
3.6 Scalp its layers, blood supply, innervations and applied aspects.
3.7 Sensory and motor supply of face and consequences of injury to nerves supplying the muscles of facial expression.
3.8 Boundaries, subdivisions and contents of anterior and posterior triangle of neck.
3.9 Deeper structures in the neck.
3.10 Triangles of neck, boundaries and contents.
3.11 Disposition of deep cervical fascia and its clinical significance.
3.12 Formation, course, tributaries and applied anatomy of external jugular vein.
3.13 Origin, course and branches of common carotid artery including external carotid artery.
3.14 Formation, course, tributaries and termination of internal jugular vein.

3.15 Anatomy of atlantooccipital and atlantoaxial joints and the movements at these joints.
3.16 Parotid region, Temporal fossa, Infratemporal fossa andSubmandibular Region
3.17 Parotid gland and its relation with facial nerve.
3.18 Temporomandibuilar joint, its movements and the muscles acting up on the joint including their innervation.
3.19 Muscles of mastication and their nerve supply.
3.20 Cranial duramater, its main reflections within the cranial cavity and the arrangement of the dural venous sinuses.
3.21 Relationship between dural venous sinuses and extracranial veins in spreading intracranial infection.
3.22 Boundaries and contents of orbit.
3.23 Extraocular muscles its action and nerve supply
3.24 Arrangement of the lymphatic drainage of the head and neck, the major groups of lymph nodes and the potential routes for the spread of infection and malignant disease.
3.25 Surface landmark and surface anatomy of major structures in head and neck.
3.26 Skull and individual bones of skull.
3.27 Sutural joints and fontanelles of the fetal skull.
3.28 Major foramina in a skull and list the structures passing through it.
3.29 Types and features of cervical vertebra.
3.30 Position and features of hyoid bone.
3.31 Radiological features of head on standard diagnostic images
3.32 Normal developmental process of skin and its appendages
3.33 Histological features of skin and hair follicle.
3.34 Suprahyoid and infrahyoid group of muscles, their actions and innervations.
3.35 Cervical plexus and their distribution.
3.36 Cervical lymph nodes and their area of drainage.
3.37 Triangles of neck.

4. Upper Limb

4.1 Anatomical landmarks of the clavicle, scapula, humerus, radius and ulna.
4.2 Bones in an articulated hand.
4.3 Regions, fascia and fascial compartment in upper limb.
4.4 Origin, course and distribution of the major arteries of upper limb.
4.5 Formation, courses and tributaries of the main veins of the upper limb.
4.6 Formation of the brachial plexus
4.7 Origin, course and distribution of the axillary, radial, musculocutaneous, median and ulnar nerves in the arm, forearm, wrist and hand.
4.8 Muscles and muscle groups that these nerves supply as well as their sensory distribution.

4.9 Axillary, musculocutaneous, radial, median and ulnar nerves injury.
4.10 Boundaries of axilla and list its contents.
4.11 Axillary lymph nodes including their area of drainage and applied aspect.
4.12 Shoulder joint, factors maintaining its stability, movements at this joint and muscles responsible for these movements with their attachment and nerve supply.
4.13 Elbow joint, movements at this joint and muscles responsible for these movements with their main attachment and nerve supply.
4.14 Radioulnar joint and movements at this joint and name the muscles responsible for these movements including their main attachments and nerve supply.
4.15 Wrist joint and movements at this joint and name the muscles group responsible for these movements.
4.16 Attachment and function of retinacula at wrist.
4.17 Carpal tunnel and the cause and manifestation of carpal tunnel syndrome.
4.18 Major surface landmark in upper limb.
4.19 Surface anatomy of major vessels and nerves of upper limb.
4.20 Radiological features of upper limb on standard diagnostic images.
4.21 Intrinsic muscles of hand.
4.22 Development of upper limb and related congenital anomalies.

5. Lower Limb

5.1 Major features and surface landmarks of bones of lower limb.
5.2 Regions, fascia and fascial compartment in lower limb.
5.3 Origin, course and branches of the major arteries that supply the hip, gluteal region, thigh, leg, ankle and foot and their functional significance
5.4 Formation, course and tributaries of major veins of lower limb.
5.5 Role of the perforator vein connections between the superficial and deep veins and the function of the 'muscle pump' for venous return to the heart.
5.6 Formation of lumbar and lumbosacral plexus and its major branches.
5.7 Origin, course and function of the sciatic, femoral, obturator, common peroneal and tibial nerves, sural and saphenous nerves and summarize the muscles and muscle groups that each supply as well as their sensory distribution.
5.8 Femoral triangle and the anatomical relationships of the femoral nerve, artery, vein and lymph nodes to each other in the triangle, femoral herniation.
5.9 Gluteal region.
5.10 Hip joint, its movements and the muscles responsible for these movements with their innervation and main attachments.
5.11 Boundaries and contents of the popliteal fossa.
5.12 Knee joint and movements at knee joint and s the muscles responsible for these movements with their innervation and main attachments.

5.13 Menisci, ligaments, the locking and unlocking mechanism of knee joint.
5.14 Bursae around knee joint and its applied aspect.
5.15 Ankle joint and movements of it, the muscles responsible for these movements with their innervation and main attachments.
5.16 Movements of inversion and eversion at the subtalar joint, the muscles responsible, their innervation and main attachments.
5.17 Attachment of retinacula around the ankle joint.
5.18 Arches of the foot and the bony, ligamentous and muscular factors that maintain them.
5.19 Lymphatic drainage of the lower limb.
5.20 Major radiological features of lower limb on standard diagnostic images.
5.21 Development of lower limb and related congenital anomalies.

6. Lymphatic System

6.1 Lymphoid organs (central and peripheral) with examples.
6.2 Location, position, gross features, relation, ligaments and blood supply of spleen relating with common diseases.
6.3 Histological features of spleen.
6.4 Histological features of thymus and location and age-related changes of thymus.
6.5 Types of tonsil, histological features of palatine tonsil
6.6 Waldeyer's ring.
6.7 Histological features of lymph node.
6.8 MALT, BALT, GALT

7. General Embryology

7.1 Gametogenesis--spermatogenesis and oogenesis
7.2 Process of ovulation.
7.3 Fertilization
7.4 Corpus leutum.
7.5 Site of normal implantation, ectopic pregnancy
7.6 Bilaminar germ discs.
7.7 Uteroplacental circulation.
7.8 Gastrulation-trilaminar germ disc
7.9 Derivatives of different germ layers.
7.10 Normal development of notochord formation and neural tube formation.
7.11 Division of mesoderm and its derivatives.
7.12 Changes in embryo and fetus at different stages of development.
7.13 Placenta, formation and its components
7.14 Fetal membrane.
7.15 Twins pregnancy
7.16 Teratogenesis

8. Medical Genetics

8.1 Importance of genetics in medicine.
8.2 Different mode of inheritance of genetic diseases and appraise the chance of inheritance in offspring.
8.3 Chromosome and its structure, various types of chromosomal abnormalities
8.4 Phenotypic and karyotypic features of common chromosomal disorders.
8.5 Karyogram.
8.6 Pedigree analysis.
8.7 Indications for chromosomal analysis.
8.8 Prenatal diagnostic modalities, its advantage and limitations/disadvantages.
8.9 Genetic counseling.
8.10 Genomic imprinting

9. Respiratory System

9.1 Pharyngeal apparatus and its derivatives.
9.2 Developmental sources for various parts of respiratory system, developmental basis for the various congenital anomalies related with respiratory system.
9.3 Developmental sources of diaphragm and pleura.
9.4 Nasal cavity- medial and lateral wall, nasal septum, its blood supply.
9.5 Paranasal sinuses and their relationships to the nasal cavities and sites of drainage on its lateral wall with applied aspect.
9.6 Larynx including its skeletal components and their interrelationship.
9.7 Functional significance of intrinsic muscles of larynx in relation to regulating laryngeal inlet, controlling vocal cord position and tension and phonation.
9.8 Motor and sensory nerve supply of the larynx and the functional consequences of injury to them.
9.9 Trachea and tracheobronchial tree.
9.10 Lung and the structures in the hilum including mediastinal relations of each lung.
9.11 Blood and nerve supply and lymph drainage of the lungs.
9.12 Bronchopulmonary segment and its clinical significance.
9.13 Pleura, its innervation and pleural recesses it's the clinical significance.
9.14 Diaphragm- attachment, position and movement during respiration, motor and sensory nerve supply
9.15 Microscopic structure of parts of respiratory systems.
9.16 Thoracic vertebra, ribs and sternum.
9.17 Thoracic cage and boundaries of its inlet and outlet.
9.18 Muscle involved in respiration.
9.19 Intercostals space, intercostals muscles, neurovascular bundle in a typical intercostal space.
9.20 Surface landmark on thoracic wall.
9.21 Surface markings of pleura and lungs

10. Cardiovascular System

10.1 Formation of heart tube and cardiac loop.
10.2 Developmental process of different parts of heart, the basis for major congenital heart anomalies.
10.3 Derivatives of arches of aorta.
10.4 Developmental sources of inferior venacava, superior venacava and brachiocephalic vein.
10.5 Developmental basis of congenital anomalies of major vessels.
10.6 Embryonic circulation, fetal circulation and changes after birth.
10.7 Heart and its conducting system.
10.8 Origin, course and main branches of the left and right coronary arteries and the functional consequences of their obstruction.
10.9 Coronary dominance.
10.10 Pericardium, its relationship with heart and innervation.
10.11 Histological features of heart, blood vessels and lymphatics.
10.12 Boundaries, subdivision and contents of mediastinum.
10.13 Course of the ascending aorta, the arch of the aorta and the descending thoracic aorta, major branches and the structures they supply.
10.14 Formation, course and relationships of the brachiocephalic veins, superior vena cava and the azygos venous system.
10.15 Course and distribution of the vagus nerve on both the right and left sides of the thorax.
10.16 Origin, course and distribution of the phrenic nerve on both the right and left sides of the thorax.
10.17 Sympathetic trunk.
10.18 Thoracic duct.
10.19 Heart and major blood vessels on standard diagnostic images.
10.20 Surface marking for heart, major great vessels, valves and auscultatory areas.

11. Gastrointestinal and Hepatobiliary System

11.1 Developmental sources of tongue and innervation and common congenital abnormalities.
11.2 Developmental basis of cleft palate.
11.3 Establishment of gut tube.
11.4 Derivatives of foregut, midgut and hindgut.
11.5 Development process of parts of gastrointestinal tract, hepatobiliary organs, pancreas and associated structures and various congenital anomalies.
11.6 Oral cavity in terms of parts and contents.
11.7 Gross features of tongue including its intrinsic and extrinsic muscles and their action and its sensory and motor nerve supply.

11.8 Pharynx - the constrictors and longitudinal muscle of pharyngeal wall, nerve supply of pharynx (Motor & Sensory).
11.9 Esophagus-gross feature, course and major relation.
11.10 Stomach, its position, parts, sphincters, blood supply, nerve supply, lymphatic drainage and key relations to other abdominal organs.
11.11 Duodenum, its parts, position, blood supply and key relations with other abdominal organs and their significance in relation to peptic ulcer disease.
11.12 Small and large intestine, the mesentery
11.13 Appendix-anatomical variations in the position of the appendix
11.14 Sigmoid colon and rectum and their anatomical relationships including peritoneal.
11.15 Anal canal including its innervation, blood supply and lymphatic drainage.
11.16 Pancreas and its relationships to other abdominal organs.
11.17 Liver, the lobes of the liver and their key anatomical relations including peritoneal reflections and other ligaments.
11.18 Portal vein and portocaval anastomosis and their significance in portal hypertension.
11.19 Gall bladder and biliary tree; their relations in the abdomen and the significance of these relations in relation to gall bladder inflammation and biliary stones.
11.20 Histological features of organs of GI system including tongue, hepatobiliary apparatus and pancreas.
11.21 Peritoneum- parietal and visceral peritoneum, lesser and greater sacs, mesenteries and peritoneal 'ligaments'.
11.22 Epiploic foramen and its significance.
11.23 Inguinal canal, its contents in male and female, direct and indirect inguinal hernias.
11.24 Describe the contents of the inguinal canal in both males and females.
11.25 Abdominal region, Anterior abdominal wall.
11.26 Lumbar vertebra.
11.27 Surface landmark on anterior abdominal wall.
11.28 Surface anatomy of viscera of GI tract, hepatobiliary apparatus, pancreas and vessels (abdominal aorta, its major branches, inferior venacvava and portal vein).
11.29 GI tract and hepatobiliary apparatus and their features on standard diagnostic images.

12. Urinary System

12.1 Developmental sources for various parts of urinary system.
12.2 Developmental basis for the various congenital anomalies related with urinary system.

12.3 Gross features of kidney, ureter, urinary bladder, urethra and their relationships.
12.4 Histological features of organs of urinary system.
12.5 Surface anatomy and radiological features of urinary system on standard diagnostic images.
12.6 Factors related during development of urinary system.

13. Endocrine, Reproduction and Metabolism

13.1 Developmental sources of different endocrine organs/glands and developmental basis for various congenital anomalies.
13.2 Thyroid gland-the gross features, arterial supply and venous drainage, significance of its relation with laryngeal nerve.
13.3 Parathyroid glands, pituitary gland, suprarenal gland-location and features.
13.4 Microscopic structure of endocrine glands/organs.
13.5 Bony pelvis, pelvic inlet and pelvic outlet; difference between male and female pelvis.
13.6 Pelvic floor and its functional significance.
13.7 Developmental process of male and female reproductive organs with various anomalies.
13.8 Developmental process of external genitalia in male and female with various anomalies.
13.9 Female reproductive organs.
  13.9.1 Position and gross features of the ovary, uterine tubes, uterus (including supports of uterus), cervix and vagina and their anatomical relationships, including any peritoneal coverings.
  13.9.2 Gross anatomy of breast, its blood supply and lymphatic drainage.
  13.9.3 Histological features of ovary, uterine tube, uterus, vagina and breast.
13.10 Male reproductive organs.
  13.10.1 Gross anatomy of testis and epididymis.
  13.10.2 Arterial supply in relation to torsion, their venous drainage in relation to varicocoele and their lymphatic drainage in relation to tumour spread.
  13.10.3 Spermatic cord and vas deferens.
  13.10.4 Postate gland, seminal vesicles and their anatomical relations, the changes in prostate gland with age.
  13.10.5 Histological features of testes, epididymis, vas deferens, seminal vesicle and prostate gland.
13.11 Perineum including male and female external genitalia.
13.12 Ischiorectal fossa and its applied importance.
13.13 Radiological feature of female reproductive system on standard diagnostic images.
13.14 Pelvic diaphragm, urogenital diaphragm

14. Nervous System and Special Senses

14.1 Formation of neural tube and the developmental source of the different parts of the brain
14.2 Developmental anomalies related with nervous system.
14.3 Different parts of central nervous system.
14.4 Major sulci (lateral, central, parieto-occipital and calcarine) and illustrate the lobes of cerebral hemisphere with its demarcation.
14.5 Cerebral hemisphere subserving major special function: Motor, Sensory, auditory, visual, speech (Sensory and motor), personality, and intelligence.
14.6 Functional areas of cerebral hemisphere to explain the manifestation of related disorders.
14.7 Cerebral dominance.
14.8 Histological features of cerebral cortex.
14.9 White fibres (commissural, association and projection).
14.10 Corpus callosum, internal capsule.
14.11 Blood supply of the brain and the functional deficit resulted by injury to arteries.
14.12 Thalamus, hypothalamus, Basal ganglia- location, relation, parts, nuclei and important connections.
14.13 Brainstem, disposition of cranial nerves nuclei within it and important tracts/fasciculus passing through it.
14.14 Cerebellum and its division, deeper nuclei of cerebellum, the important connection in cerebellum, diseases and disorders
14.15 Histological features of cerebellum.
14.16 Spinal cord and the tracts (ascending and descending tracts with their functional significance). arrangement of nuclei within the grey matter of spinal cord, blood supply of the spinal cord and its applied aspects.
14.17 Manifestation of spinal cord injuries/diseases.
14.18 Ventricles.
14.19 Meninges and its relation with brain and spinal cord.
14.20 Circulation and drainage of cerebrospinal fluid.
14.21 Major features of brain on coronal, horizontal and sagittal sections and on standard diagnostic images.
14.22 Functional component, nuclei of origin, course, distribution and functional significance of cranial nerves and their clinical conditions.
14.23 Eyeball, development of eye and the basis for retinal detachment of eye.
14.24 Visual pathway and clinical conditions.
14.25 External ear and external auditory meatus.
14.26 Tympanic membrane and applied aspect.
14.27 Middle ear, internal ear.
14.28 Auditory pathway and related clinical conditions.
14.29 Microscopic structure of cornea and retina.

14.30 Microscopic structure of organ of Corti.
14.31 Autonomic nervous system
14.32 Neurotransmitters
14.33 Synapses-types
