

## **GROUP-44 RADIOGRAPHER**

### **(LEVEL- MATRIC+ DIPLOMA IN RADIOGRAPHY)**

1) General awareness, Reasoning, Mathematics, Science, History including Haryana related history, current affairs, literature, Geography, Civics, Environment, Culture etc.- **(Weightage 20%)**

2) Computer terminology, Fundamentals, word software, excel software, Power point, internet, web browsing, Communication, emails, downloading and uploading data on websites etc. -

**(Weightage 10%)**

3) Subject related syllabus-

**(Weightage 70%)**

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### **Human Anatomy - & Physiology**

Scope of Anatomy and Physiology - Definitions and Terms in Anatomy and Physiology-

Structure and function of human cell - Elementary tissues of human body- Brief account

on Composition of Blood - functions of blood elements - Blood Group and coagulation of blood.

1. Cardio Vascular System (Structure and functions of various parts of the heart, arterial and venous system, brief account on common cardiovascular disorders).

2. Respiratory System (Various parts of respiratory system and their functions, Physiology of Respiration).

3. Digestive System (Names and various parts of digestive system-Liver, Spleen, Gall Bladder, Pancreas, Buccal Cavity, Pharynx, Oesophagus, Stomach, intestine etc.-physiology of digestion and absorption)

4. Urinary System (various parts of urinary system and its function-structure and function of kidneys-physiology of urine formation - pathophysiology of renal disease and oedema.)

5. Reproductive System (Physiology and anatomy of Male & Female reproductive system-Prostate & Uterus & Ovaries etc.)

6. Musculoskeletal System (Classification of bones & joints, structure of skeleton –structure of skeletal muscle – physiology of muscle contraction)

7. Nervous System (various parts of nervous system- Brain and its parts –functions of nervous system - Spinal Cord & Nerves).

8. Ear, Nose, Throat and Eye (Elementary knowledge of structure and functions of organs of taste, smell, hearing, vision.)

9. Endocrine System (Endocrine glands, their hormones and functions-Thyroid, Parathyroid, Suprarenal, Pituitary, pituitary and Thymus)

10. Haemopoietic and Lymphatic System (Name of the blood vessels & lymph gland locations).

11. Surface Anatomy & Surface Markings of Human Body.

### **Radiology Physics, Radiation Physics & Physics of Diagnostic Radiology**

Basic concepts of power, work, force, energy, electricity, magnetism and their units and measurements- Einstein's formula – electromagnetic induction – Atomic structure – radioactivity- ionization and excitation - electromagnetic waves – X-rays production and properties – X-ray tube - quality of x-rays – factors affecting quality and intensity of x-rays. X-ray circuits - interaction of X and gamma rays - X-radiation measurements etc. Principles of Radiation detection and measurements – TLD, Pocket Dosimeter, Radiation Survey meter and radiation zone monitor.

### **X-Ray Machines & Accessories and their Maintenance**

X-ray machines – Anode & Cathode - Thermionic diode – X-ray valves and tubes – principle and practical aspects – semiconductors – triode valves – cathode ray oscilloscopes – X-ray circuits – self rectifying circuits – half wave pulsating voltage circuits – full valve pulsating voltage circuits - measurement of high voltage – control of KV circuit – mA circuit. X-ray beam quality.

## **X-ray Film / Image processing Techniques**

X-ray Films- X-ray cassettes - Intensifying screens X-ray films types – basic film structure & quality – choosing films for different studies - basics on hard copies of radiographic images – dry & wet processing – Fixer –Developer –film processing methods - manual and automatic processing – conventional & modern image processing rooms – image processing equipment – types & maintenance – day light systems advantages & disadvantages – processing faults – glossy prints, paper prints etc – production of best quality images. Intensifying screen- Fluorescence - structure of Intensifying screens – Cassette types – screen un-sharpness etc.

## **Clinical Radiography-Positioning**

Radiological Equipment – X-ray machine - transformers, x-ray units, fluoroscopy, grids and filters - Positional Radiography - Radiographic views of different parts of the body – Chest, Abdomen, Upper Limb, Cervical & Thoracic Spine, Lumbar Spine, Sacrum & Coccyx, Bony thorax - Sternum & Ribs, Skull and cranial bones, facial bones, paranasal sinuses, Mastoids & Temporal bones etc. Upper & Lower GIT, Gall Bladder & Biliary duct, GUT etc.

## **Equipment, basic Techniques of modern Imaging Modalities**

C.R (principle, equipment & imaging) Digital Radiography (principle, equipment & imaging) Mammography (basic principle, equipment & image acquisition) CT (Basic physics – Tomography principle - basics of plain studies, contrast studies, special procedures) MRI (basic principle – imaging methods - slice section- plain & contrast studies – image contrast – factors affecting image quality) USG (Basic acoustics - ultrasound terminologies – Interaction of US with matter – Ultrasound display modes etc).

## **Contrast & Special Radiography procedures**

Barium swallow - barium meal - barium enema (single and double contrast), Enterocolitis PTBD, Sinograms, Fistula-grams, IVU, AUG, MCU, HSG, Sialo-gram, T-tube Cholangiogram –Fluoroscopy, Image intensifiers - Tomography basics, etc.

## **Quality Control in Radiology & Radiation Safety**

Quality control procedure in Radiology as per NABH. Biological effects of Radiation – Radiation dose – Effects of time, distance and shielding – personnel and area monitoring – Planning of X-ray rooms, dark rooms – Evaluation of workload versus radiation factors – Radiation safety instruments - ICRP / AERB recommendations.

**Important Note: The Weightage as mentioned against the syllabus is tentative & may vary.**