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St John Para Medical Institute

(Affiliated) To Para Medical Board of India, New Delhi)

:Campus: **K. S Saket P. G college Ayodhya faizabad**

SYLLABUS

X-Ray & ECG

Provided by

PARA MEDICAL BOARD OF INDIA
NEW DELHI

SYLLABUS
X-Ray & E.C.G. Technology (Yearly)

PAPER-I

1- ANATOMY & OESTEOLOGY

Introduction of Radiology

1. Anatomical Terms
2. Surface Anatomy – Marking of various Body Organs Over Skin
3. Digestive system
 - (a) Mouth (b) Oesophagus (c) Stomach
 - (d) Small Intestine (e) Large Intestine (f) Liver
 - (g) Gall Bladder (h) Pancreas
 - (i) Spleen
4. Respiratory System
 - (a) Nose (b) Lungs (c) Trachea
 - (d)Larynx (e)Bronchi
5. Urinary system
 - (a) Kidney (b) Urinary Bladders
 - (c) Prostrate (d) Uterus
6. Reproductive System – Male & Female Organs
7. Nervous System –
 - (a) Spinal cord (b) Meninges (c) Nerves
8. Musculo – Skeletal System
 - (a) Bones –
 - (i) Upper Limb (ii) Lower Limb
 - (iii) Bony Joints & Thoracic Cage
 - (b) Vertebral Column
 - (c) Shoulder girdle & Pelvic girdle
 - (d) Grain Muscles
9. Cardio – Vascular system
 - (a) Blood (b) Arteries (c) Vein
 - (d) Heart
10. Eye & Ear
 - (a) Structure of Eye & Ear
 - (b) Function of Eye & Ear

PAPER-II

2- Dark Room procedure –

1. Photographic Process
 - (a) Light emage
 - (b) Light Sensitive material
 - (c) Latent image formation
- 2.Rediographic Image
 - (a) Definition
 - (b) Sharpness & Contrast
 - (c) Viewing Condition
3. Films Materials

- (a) Type of films used in Radio – graphy
- (b) Structure of X-Ray Films
- 4.X-Ray Films Storage (Exposed & unexposed films)

- 5.Cassets & Screen
 - (a) Disilgns, Care, Definition, Structure and types
 - (b) Construction of intensifying Screens
 - (c) Care of intensifying Screen.
- 6.Film Processing
 - (a) Type of Developer and fixer
 - (b) Components of PQ & MQ developer and Fixer
 - (c) Efficiency of Developer & Fixer
- 7.Dark Room Design
 - (a) Safe Light, Ventilation
 - (b) Pass Box Construction of wall
 - (c) Wet & dry bench
- 8. Film Rinsing Washing & Drying
 - (a) Manual Method (b) Automatic Method
- 9. Identification of films
- 10. Records filling & Report Distribution

PAPER-III

3- RADIATION PHYSICS AND RADIOGRAPHY-I

1. Practical point of heat in X-Ray equipment
2. Electricity-
 - (a) Kinds of Electricity
 - (b) AC & DC
 - (c) Conductor & Resister
 - (d) RMS & Peak Value
3. production of X- Ray & its Properties
4. Stationary A- node & Rotating A- no9de and Relay and Timers
5. Ionisation (Quality and quantity of X-Rays)
6. Counters-
 - (a) G.M.Counter , Scintillation Counter
 - (b) TLD Counter
7. Filters. Cylinders, LBD, FFD, Focal spot, Size, Grid, Cones
8. Roentgen, Red & Ram (units)
9. Application in Radiology, Method used to reduce its effects
10. Details about Doses –
 - (a) Exposure Dose, Dose Rate, Depth Dose, Surface dose. Exit Dose
 - (b) Details about Radium, Cesium, Cobalt

PAPER IV
4-ECG

- 1. E.C.G.**
 - (a) Introduction & History
 - (b) Physiology basis of E.C.G.
 - (c) Pathway of Activation
 - (d) Conduction velocity
- 2. Normal Electrocardiogram**
 - (a) T – wave & U- wave
 - (b) Electrical Axis
 - (c) Hear Positions
 - (d) P-Rinteval & Q-T-Interval
 - (e) QRS Complex
 - (f) S T Segment
3. How to record and Interpretation of an E.C.C
- 4. Abnormal Electrocardiograms**
 - (a) Abnormal – P –Wave
 - (b) Intra ventricular Conduction Defects
 - (c) Tri fascicular Block
 - (d) R.V.H.(Right Ventricular Hypertrophy)
 - (e) RBBB &LBBB
 - (f) Non – Specific Intera ventricular defects
 - (g) Pulmonary Embolism
 - (h) C.O.L.D.(Chronic Obstruction Lungs Disease)
- 5. Drugs – its Effects**
 - (a) Calcium
 - (b) Potassium
6. Hypothermia, Neuromuscular Disease
7. Pericarditis, Myocarditis and Anemia
8. Liquid Protein Diet
- 9. Arterial Disease**
 - (a) Injury
 - (b) Atypical

PAPER IV
5-POSITIONING –

1. **The Radiographic Image**
 - (a) Anatomical Terminology
 - (b) Image formation & Magnification
 - (c) Sharpness & Image Distortion
2. **Upper Extremities** –
 - (a) Fingers, Carpal tunnel
 - (b) Fore arm and Wrist
 - (c) Joints (elbow , shoulder ,Acromic – Clavicular, Scapula – Sterno – Clavicular Joint
 - (d) Head of Radius & Humorous
3. **Lower Extremities** –
 - (a) Toes & Foot
 - (b) Calcaneum & Condylar notch
 - (c) Ankle Joint
 - (d) Knees & Patella and Femur
4. **Hip** –
 - (a) Neck of Femur
 - (b) Acetabulum
 - (c) Nails
 - (d) Pelvis – Hip – For hip , Panning for reduction
 - (e) Spine – Thoracic spine, Lumber Spine, Cervical
 - (f) Coccyx and sacrum
 - (g) Flexion extension abduction and adduction
5. **Thorax** –
 - (a) Ribs & Sternum
6. **Skull-**
 - (a) Maxilla (mandible and Zygomatic T.M.Joint)
 - (b) Facial Bones
 - (c) Base of skull and Orbit
 - (d) Jugular foramens & Optic Foramens
7. **Chest-**
 - (a) Miniature Chest Radiography
 - (b) Chest in Tele
8. **Abdomen-**
9. Radiography of Beck & Breast
10. **Dental Radiography**
 - (a) View of Maxilla
 - (b) View of Nasal bones
 - (c) Dental X-Ray of mandibular teeth