

DIPLOMA IN MEDICAL RADIO IMAGING TECHNOLOGY

1-GENERAL

- A-GENERAL FUNCTIONING OF DIFFERENT TYPES OF HOSPITALS
- B-HOSPITAL ADMINISTRATION.
- C- GENERAL PATTERN OF THE STAFF.
- D- HOSPITAL RECORD KEEPING.
- E- FUNCTIONING OF GENERAL WARDS.
- F- FUNCTIONING OF SPECIAL WARDS.
- G-INTER DEPARTMENTAL RELATIONS AND WORK CULTURE
- H-RELATIONS WITH SENIOR AND OTHER STAFF
- I- CARE AND ATTENTION OF OPD AND INDOOR PATIENTS.
- J- CARE AND ATTENTION OF CRITICAL AND INJURED PATIENTS.
- K- LESSONS ON PREPARATION OF THE PATIENTS FOR GENERAL AND SPECIAL INVESTIGATIONS.
- L-PROFESSIONAL ETIQUETTE AND ETHICS

2-HUMAN ANATOMY AND HUMAN PHYSIOLOGY

- A- ORGANS AND SYSTEMS.
- B-ANATOMICAL POSITION OF THE BODY.
- C- AXIS AND PLANES.
- D-BONES- CLASSIFICATION – DEVELOPMENT - PARTS OF LONG BONES - BLOOD SUPPLY OF BONES - DIFFERENT BONES OF THE BODY INCLUDING STERNUM AND VERTEBRAE & RIBS
- E-JOINTS - DEFINITION, CLASSIFICATION, MOVEMENTS OF DIFFERENT JOINTS. - DIFFERENT JOINTS OF THE BODY
- F-OUTLINE OF VARIOUS PARTS OF THE THORACIC CAGE
- G-OUTLINE OF VARIOUS VISCERA OF THE ABDOMEN.
- H-SURFACE MEASURING AND RADIOLOGICAL PROCEDURES USED IN THE STUDY OF THRACIC AND ABDOMINAL ORGANS.
- I-OUTLINE OF BRAIN AND ITS PARTS

PHYSIOLOGY

- A-OUTLINE OF FUNCTIONING OF VARIOUS SYSTEMS OF THE BODY
- B-COMPOSITION OF BLOOD.
- C-E.C.G.
- D-GENERAL PRINCIPLES OF ENDOCRINOLOGY
- E-PHYSIOLOGY OF KIDNEY AND URINE FORMATION.
- F-PHYSIOLOGY OF MALE AND FEMALE REPRODUCTIVE SYSTEM.

3-PROTECTION AGAINST RADIOLOGICAL HAZARDS

- A- LIKELY HAZARDS FACED WHILE WORKING IN X RAY DEPARTMENT.
- B-HAZARDOUS MATERIALS
- C- METHODS TO PROTECT THESE HAZARDS.

BASIC & RADIATION PHYSICS-

- 1-FUNDAMENTAL OF PHYSICS
- 2-MEASUREMENTS UNITS OF CGS AND MRS SYSTEM
- 3-ELECTRIC CHARGE.
- 4-CURRENT AND RESISTANCE.

- 5-ELECTROMAGNETIC INDUCTION SELF AND MUTUAL PRODUCTION OF A.C. CURRENT.
6-TRANSFORMERS LOSSES CONSTRUCTION, REGULATIONS AND TYPES USED IN X RAY APPARATUS.
7-THERMIONIC EMISSION VACUUM DIODE.
8-THE DIODE AS RECTIFIER AND AS AN X RAY TUBE.
9-TYPES OF RECTIFICATION AND METHODS USED IN DIAGNOSTIC AND THERAPY UNITS.
10-RT CABLES.
11-MATTER & ENERGY.
12-RADIATION & SPECTRA.
13-ATOMS & NUCLEI.
14-RADIOACTIVITY.
15-PRODUCTION.
16-MEASUREMENT.
17-CONTROL & INDICATING DEVICES.
18-ROENTGEN & ITS MEASUREMENTS.
19-GEIGER MOLLER & SCINTILLATION COUNTERS & DOSIMETER
20-ABSORBED DOSES & RAD
21-FILTERS & FILTRATION

BASICS ORIENTATION OF RADIOTHERAPY

TECHNICAL ASPECTS OF X AND GAMMA RAYS THERAPY.
TUMOR LOCALIZATION AND VERIFICATION, FIELD COMBINATION TREATMENT PLANNING, USE OF STIMULATORS.
TECHNICAL ASPECTS OF THE USE OF RADIOACTIVE SUBSTANCES IN THERAPY, CONSTRUCTION OF RADIUM NEEDLES AND TUBES. DOSE CALCULATION USING INVERSE SQUARE LAW, PRINCIPLES OF MOULDS AND IMPLANTS.
APPLICATION OF BETA-RAYS THERAPY, PRINCIPLES OF CLINICAL USES OF UNSEALED RADIOACTIVE SOURCES PROTECTION, PROTECTIVE MATERIALS IN COMMON USE.
ROOM AND MACHINE PROTECTION, INSTALLATION OF X AND GAMMA RAYS UNITS, CARE AND CUSTODY OF SOURCES OF IONIZING RADIATION, PERSONAL MONITORING SYSTEMS, TYPES OF APPARATUS OF X RAY THERAPY APPARATUS FOR SUPER VOLTAGE SOURCES. APPARATUS FOR SEALED SOURCES. COBALT-60 AND CAESIUM 137 SHORT AND LONG DISTANCE TECHNIQUES. BIOLOGICAL EFFECTS OF IONIZING RADIATION. GENETIC EFFECTS. SOMATIC EFFECTS ON BLOOD AND TISSUE. CARE OF THE THERAPY PATIENT. REPORTING IN CHANGES OF CONDITION DUE TO TREATMENT. GENERAL WELFARE OF PATIENTS. KEEPING OF INDIVIDUAL RECORD. NEED FOR ACCURACY IN DOSAGE. POSITIONING AND RECORDING OF DOSAGES.

RADIOLOGICAL PROCEDURES

CONTRAST MEDIA- TYPES, PROPERTIES, REACTION & TREATMENT.
GENITOURINARY SYSTEM-IVU, MCU, RCU, HSG.
GI TRACT-BA SWALLOW, BA MEAL, BA FOLLOW THROUGH, BA ENEMA, SMALL BOWEL ENEMA, DOUBLE CONTRAST ENEMA, SIALOGRAPHY.
BILARY TRACT-OCG, IVP EPCP, PTHC, T TUBE & OPERATIVE CHOLANGIORAPHY.

DARK ROOM PROCEDURE

SITTING LAY OUT & FITTINGS
CASSETTE & FILM HANDLING-LOADING & UNLOADING, SAFE LIGHT.
MANUAL & AUTOMATIC PROCESSING-PRACTICAL ASPECT

PRACTICAL WILL BE BASED ON THEORY

RADIATION PHYSICS

BASIC RADIOGRAPHIC TECHNIQUES

SKULL : RADIOGRAPHY OF CRANIAL BONES, CRANIUM, SELLA TURCICA, ORBIT OPTICFORMINA, SUPERIOR ORBITAL FISSURE AND INFERIOR ORBITAL FISSURE.

FACIAL BONES: PARANASAL SINUSES. TEMPORAL BONE. DENTAL RADIOGRAPHY. RADIOGRAPHY OF TEETH INTRA ORAL, EXTRA ORAL AND OCCULUSAL VIEW.

ABDOMEN: PREPARATION OF PATIENT, GENERAL, ACUTE POSITIONING FOR FLUID AND AIR LEAVES. PLAIN FILM EXAMINATION. RADIOGRAPHY OF FEMALE ABDOMEN TO LOOK FOR PRGNANCY. MACRO RADIOGRAPHY, PRINCIPAL, ADVANTAGE, TECHNIQUE AND APPLICATIONS. STEREOGRAPHY: PROCEDURE-PRESENTATION, FOR VIEWING, STEREOSCOPES, STEREMETY. HIGH KV TECHNIQUE PRINCIPLE AND ITS APPLICATIONS. SOFT TISSUE TECHNIQUES- MAMMOGRAPHY, LOCALIZATION OF BODIES. WARD MOBILE RADIOGRAPHY. GENERAL PRECAUTIONS, ASPESIS IN TECHNIQUES. CHECKING OF MAINS SUPPLY AND FUNCTIONS OF EQUIPMENT, SELECTION OF EXPOSURE FACTORS, EXPLOSION RISKS. RADIATION PROTECTION AND RAPID PROCESSING TECHNIQUES.

REGIONAL RADIOGRAPHY & RADIOLOGICAL PROCEDURES

COMMON TERMINOLOGY

RADIOGRAPHY OF EACH PART POSITIONING

PATIENT HANDLING & PREPARATION

DRUGS IN X RAYS DEPT.

CLINICAL, ETHICAL & LEGAL RESPONSIBILITY, (INCLUDING MEDICO, LEGAL/ACCIDENT CASES

EQUIPMENTS FOR RADIO DIAGNOSIS

EQUIPMENTS FOR RADIOTHERAPY INCLUDING NEWER DEVELOPMENTS

ORTHO VOLTAGE EQUIPMENT WITH SPECIAL REFERENCE TO PHYSICAL DESIGN REQUIREMENT OF TUBE AND ITS ACCESSORIES AND INTERLOCKS, GAMMA RAY SOURCES USED IN RADIOTHERAPY ESPECIALLY COBALT 60 SOURCE ITS CONSTRUCTION AND SOURCE HOUSING AND HANDLING MECHANISM. PRINCIPLES OF ISOCENTRIC. TELEISOTOPE MACHINES MEGA VOLTAGE X RAYS AND ELECTRON BEAM ACCELERATORS AND BELATRON. SALIENT FEATURES OF COMPONENTS OF LINEAR ACCELERATOR LIKE TUBE DESIGN, WAKE GUIDE, TARGET DESIGN BEAM BENDING SYSTEM. RADIOFREQUENCY GENERATORS KILE MAGNETRON AND LIESTRON. BASIC PRINCIPLE OF REMOTE AFTERLOADING SYSTEM/MACHINES FOR MAKING CASTS. STEROFIOM TEMPLATE CUTTING SYSTEM. INTRODUCTION TO RADIO-SURGERY EQUIPMENT AND DOSIMETRY EQUIPMENT.

PRACTICAL BASED ON THEORY

ULTRASONOGRAPHY AND TECHNIQUE OF ULTRA SOUND

RADIOLOGICAL PROCEDURES PERTAINING TO SALIVARY GLANDS, LACRIMAL SYSTEM, BROCHOGRAPHY ARTHROGRAPHY AND HYSTEROSALPANGIOGRAPHY VARIOUS REQUIREMENT TROLLEY SET UP, INDICATIONS AND CONTRA INDICATIONS, CONTRAST MEDIA USED. VENTRICULOGRAPHY AND ENCEPHALOGRAPHYTECHNIQUE, CONTRAST MEDIA USED, FILM SEQUENCE, INDICATION CONTRA INDICATIONS. MYELOGRAPHY, TECHNIQUE, CONTRAST MEDIA USED, INJECTION OF CONTRAST MEDIA, INDICATIONS AND CONTRA INDICATIONS. I.V.P. AND CYSTOGRAPHY ETC. INTRA-VENOUS CHOLANGIOGRAPHY T.TUBE: CHOLANGIOGRAPHY PREOPERATIVE CHOLANGIOGRAPHY PROCEDURE CONTRAST MEDIA INDICATION & CONTRA INDICATIONS. DOUBLE CONTRAST BARIUM STUDIES (SMALL BOWEL ENEMA BA ENEMA ETC.) PRE-OPERATIVE CHOLANGIOGRAPHY PROCEDURE CONTRAST MEDIA INDICATIONS AS CONTRAST MEDIA USED.

ANGIOGRAPHY: CEREBRAL CARDIAC ABDOMINAL AORTOGRAPHY GENERAL ANAL AND SELECTIVE RENAL. SPLENOPORTOVENOGRAPHY PERIPHERAL ARTERIAL AND VENOUS ANGIOGRAPHY PRECATUTIONS.

RADIATION PROTECTION FILM CHARGE MANUAL
AUTOMATIC BIPLANE FILM TYPES LARGE MINIATURE CINE CONTRAST MEDIA INJECTION
PROCEDURE AND TECHNIQUE. INTERVENTIONAL RADIOLOGICAL PROCEDURES. PTC. PTBD,
ERCP, FINE NEEDLE ASPIRATION CYTOLOGY PERCUTANEOUS NEPHROSTOMY. CARDIAC
CATHETERIZATION IMMOBILIZATIONS DILATION ETC.

LATEST DEVELOPMENTS SPECIAL RADIOLOGY EQUIPMENT

-IMAGE INTENSIFIER & TV MONITOR
-MAMMOGRAPHY
-DIGITAL RADIOGRAPHY
-PICTORIAL ARCHIVING & COMMUNICATION SYSTEM (PACS)
-COMPUTERS IN RADIOLOGY COMPUTED TOMOGRAPHY: HISTORICAL DEVELOPMENTS, ITS
PRINCIPLE AND APPLICATIONS, VARIOUS GENERATORS AND DEFINITION OF TERMS AND
CROSS SECTIONAL ANATOMY. RECENT DEVELOPMENTS IN CT- SPECIAL CT (TRIPLE PHASE CT
STUDY FOR HEPATIC & PANCREATIC TUMOR, MULTISLICE CT, PRINCIPLES OF CT ANGIO, CT
GUIDED BIOPSIES & DRAINAGE. MRI RECENT DEVELOPMENTS IN US – 3D USG, COLOUR
DOPPLER, 4D USG, GUIDED BIOPSIES & DRAINAGE. DIAGNOSTIC ULTRASOUND: ITS PRINCIPLE
APPLICATIONS AND ROLE IN MEDICINE. VARIOUS TYPES OF TRANSDUCERS AND DEFINITION
TERMS AND CROSS SECTIONAL ANATOMY. DIGITAL RADIOGRAPHY: PRINCIPLE SCANNED
PROJECTION RADIOGRAPHY DIGITAL SUBTRACTION ANGIOGRAPHY APPLICATION AND
DEFINITIONS OF TERMS.

PRACTICAL WILL BE BASED ON THEORY

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