

बि.पि. कोइराला मेमोरियल क्यान्सर अस्पताल  
प्राविधिक (स्वास्थ्य) सेवा, मेडिकल (एलाइड हेल्थ) समुह, रेडियोडायग्नोसिस तथा इमेजिङ टेक्नोलोजी उपसमुह,  
अधिकृत सातौं तह, रेडियोलोजीकल टेक्नोलोजिष्ट पदको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको  
पाठ्यक्रम

एवं परीक्षा योजना

कुल पूर्णाङ्क : १२०

१. प्रथम चरण : – लिखित परीक्षा				पूर्णाङ्क :- १००		
पत्र / विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या X अङ्क	समय
General Subject and Technical Subject	१००	४०	वस्तुगत	बहुवैकल्पिक प्रश्न (MCQs)	१०० प्रश्न x १ अङ्क	१ घण्टा ३० मिनेट

२. द्वितीय चरण : – अन्तर्वार्ता

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

**द्रष्टव्य :**

- यो परीक्षा योजनालाई प्रथम चरण (लिखित परीक्षा) र द्वितीय चरण (अन्तर्वार्ता) गरी दुई चरणमा विभाजन गरिएको छ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- लिखित परीक्षामा यथासम्भव पाठ्यक्रमका सबै एकाईबाट देहाय बमोजिम प्रश्नहरू सोधिनेछ ।

खण्ड	अङ्कभार	वस्तुगत प्रश्न संख्या
A	१०	१० प्रश्न X १ अङ्क = १०
B	१०	१० प्रश्न X १ अङ्क = १०

- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्भन्नु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागू मिति :- २०७४/११/२९

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पत्र/विषय : **General Subject and Technical Subject**

**General Subject**

**Section (A) – 10 Marks**

**1. B.P.Koirala Memorial Cancer Hospital, Related Legislations and General Health Issues**

- 1.1. B.P.Koirala Memorial Cancer Hospital : History, organizational structure, functions, roles, services, problems and challenges
- 1.2. National Health Policy
- 1.3. B.P.Koirala Memorial Cancer Hospital related act and regulations
- 1.4. Professional council related acts and regulations
- 1.5. Professional ethics

**Technical Subject**

**Section (B) – 90 Marks**

**1. Anatomy and Physiology**

- 1.1 Cell and Tissues (Epithelial, Connective, Skeletal, Muscular and Nervous)
- 1.2 General pathology : Bacteria, Viruses, Tumours
- 1.3 Surface and regional anatomy
  - 1.3.1 The anatomical position
  - 1.3.2 Head, Neck, Thorax, Abdomen and Pelvic cavity
- 1.4 Skeleton System
  - 1.4.1 Structure and function of bones
  - 1.4.2 Development and growth of bones, and healing of fractures
  - 1.4.3 The skull
    - 1.4.3.1 The skull viewed from the above and the below
    - 1.4.3.2 The skull viewed from the side and the front
    - 1.4.3.3 The interior of the skullcap
    - 1.4.3.4 The interior of the base of the skull
    - 1.4.3.5 The nasal cavity
    - 1.4.3.6 The accessory nasal sinuses
    - 1.4.3.7 The individual bones of the skull
  - 1.4.4 The vertebral column, ribs and sternum
  - 1.4.5 The bones of the upper limb
    - 1.4.5.1 The clavicle
    - 1.4.5.2 The scapula
    - 1.4.5.3 The humerus
    - 1.4.5.4 The radius
    - 1.4.5.5 The ulna
    - 1.4.5.6 The carpal bones
    - 1.4.5.7 The metacarpal bones
    - 1.4.5.8 The phalanges
    - 1.4.5.9 Arteries and nerves related to the bones of the upper limb
    - 1.4.5.10 Ossification of the bones of the upper limb
  - 1.4.6 The bones of the lower limb
    - 1.4.6.1 The hipbone
    - 1.4.6.2 The pelvis
    - 1.4.6.3 The femur

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- 1.4.6.4 The patella
- 1.4.6.5 The tibia
- 1.4.6.6 The fibula
- 1.4.6.7 The tarsal bones
- 1.4.6.8 The metatarsal bones
- 1.4.6.9 The phalanges
- 1.4.6.10 The arches of the foot
- 1.4.6.11 Arteries and nerves related to the bone of the lower limb
- 1.4.6.12 Ossification of the bones of the lower limb
- 1.4.7 The joints of the bones of the lower limb
  - 1.4.7.1 Types of joints
  - 1.4.7.2 The muscles and joints of the head
  - 1.4.7.3 The joints and muscles of the neck and trunk
  - 1.4.7.4 The joints and muscles of the upper limb
  - 1.4.7.5 The joint and muscles of the lower limb
- 1.5 Circulatory System
  - 1.5.1 The blood
  - 1.5.2 The blood vessels
  - 1.5.3 The heart
  - 1.5.4 The pulmonary circulation
  - 1.5.5 The systemic circulation
  - 1.5.6 The veins
- 1.6 Lymphatic System
  - 1.6.1 Lymph
  - 1.6.2 The lymphatic vessels
  - 1.6.3 The lymph nodes
  - 1.6.4 The lymphatic drainage of the body
  - 1.6.5 Lymphatic tissue
  - 1.6.6 The spleen
- 1.7 Respiratory System
  - 1.7.1 The nose
  - 1.7.2 The pharynx
  - 1.7.3 The larynx
  - 1.7.4 The trachea
  - 1.7.5 The bronchi
  - 1.7.6 The lungs
  - 1.7.7 The physiology of respiration
- 1.8 Digestive System
  - 1.8.1 The mouth
  - 1.8.2 The salivary glands
  - 1.8.3 The pharynx
  - 1.8.4 The oesophagus
  - 1.8.5 The stomach
  - 1.8.6 The small intestine
  - 1.8.7 The large intestine
  - 1.8.8 The pancreas
  - 1.8.9 The liver

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- 1.8.10 The biliary apparatus
- 1.8.11 The function of the alimentary system
- 1.9 Urinary System
  - 1.9.1 The kidneys
  - 1.9.2 The ureters
  - 1.9.3 The urinary bladder
  - 1.9.4 The urethra
  - 1.9.5 The functions of kidneys
  - 1.9.6 The control of micturition
- 1.10 Nervous System
  - 1.10.1 Nervous tissue
  - 1.10.2 Central nervous system, brain and spinal cord
  - 1.10.3 Peripheral nervous system
  - 1.10.4 Autonomic nervous system
- 1.11 Reproductive System
  - 1.11.1 Female Reproductive System & Breast
    - 1.11.1.1 External genitalia, Uterus, Ovaries: Position, structure functions
    - 1.11.1.2 Menstrual cycle, Reproduction & menopause
    - 1.11.1.3 Breast-Position, structure and its functions
    - 1.11.1.4 Puberty
  - 1.11.2 Male Reproductive System:
    - 1.11.2.1 Position structure and functions of scrotum, testes, epididymis, deferent ducts, seminal vesicles, ejaculatory ducts and penis
    - 1.11.2.2 Puberty
- 1.12 Special Senses
  - 1.12.1 Skin- structure and function
  - 1.12.2 The ear (external, middle & internal ear)-structure and function
  - 1.12.3 The Eyes- structure & functions.
  - 1.12.4 Nose- structure and functions
  - 1.12.5 Tongue-structure, functions,
  - 1.12.6 Taste buds and Sense of taste
- 1.13 Endocrine System
  - 1.12.7 Endocrine glands - pituitary gland, thyroid gland, parathyroid glands, adrenal gland, islets of langerhans, pineal gland, testis, ovaries, thymus etc.
  - 1.12.8 Endocrine glands - Position, structure, functions and hormone secretion
- 2. **Basic Radiation Physics**
  - 2.1 **Review of Electricity**
    - 2.1.1 Electromagnetic induction and its laws
    - 2.1.2 Self and mutual induction
    - 2.1.3 A.C generator, Peak and effective values of AC
    - 2.1.4 Concept of Reactance, Impedance & phase angle
  - 2.2 **Transformer**
    - 2.2.1 Theory, construction, Losses & Efficiency, Transformer ratings
    - 2.2.2 Filament transformer
    - 2.2.3 High-tension transformer
    - 2.2.4 Autotransformer or variac transformer

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- 2.3 **Thermionic Emission and Rectifiers**
  - 2.3.1 Diode - construction, principle & characteristics
  - 2.3.2 Rectifiers: Self-rectification, Half-wave, Full-wave (two valves and four valves) and constant voltage rectifiers
  - 2.3.3 The cold cathode gas filled diode and its use
- 2.4 **Atomic Structure and Electromagnetic Radiation**
  - 2.4.1 Electron, proton, neutron, mass number, and atomic number
  - 2.4.2 Isotopes, isobars and isomers
  - 2.4.3 Electron shells & energy levels
  - 2.4.4 Excitation and ionization
  - 2.4.5 Emission of electromagnetic waves, spectra
  - 2.4.6 Properties of electromagnetic waves
  - 2.4.7 Concept of photon and quanta
  - 2.4.8 Photoelectric effect, photocell
- 2.5 **Radioactivity**
  - 2.5.1 Radioactive elements, radioactive disintegration
  - 2.5.2 Properties of radioactive particles
  - 2.5.3 Radioactive decay law, half-life, mean life
  - 2.5.4 Artificial radioactivity: Radioactivity induced by neutron bombardment and proton bombardment
  - 2.5.5 Nuclear binding energy, nuclear stability
  - 2.5.6 Alpha, beta and gamma disintegration
  - 2.5.7 Introduction to fission and fusion
- 2.6 **X-rays**
  - 2.6.1 Historical background
  - 2.6.2 X-ray tube
  - 2.6.3 Mechanism of x-ray production
  - 2.6.4 Properties of x-rays, intensity & quality of x-rays, continuous and characteristic spectra
  - 2.6.5 Effects of variation of tube current and voltage, Brag's law for wavelength determination
  - 2.6.6 X-ray control and indicating equipment: simple circuit diagram as illustration of sequence from mains supply to exposure control
  - 2.6.7 Mains voltage circuit
  - 2.6.8 Mains cables, Switches and fuses
  - 2.6.9 Mains voltage compensation, earthing, insulation, voltage drops in cables
  - 2.6.10 X-ray tube voltage control and indication
  - 2.6.11 Exposure controls. Contactors and timers
  - 2.6.12 X-ray tube current control and filament supply, mA compensation, Generator regulation
- 2.7 **Interaction of Radiation with Matter**
  - 2.7.1 Thompson scattering
  - 2.7.2 Photoelectric interaction
  - 2.7.3 Compton scattering
  - 2.7.4 Pair production
  - 2.7.5 Transmission of homogenous and heterogeneous x-ray beam through matter
  - 2.7.6 Effects of filtration

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- 2.7.7 Relative amount of scatter from an x-ray beam during the passage through matter
- 2.7.8 Effects of collimation
- 2.8 **Radiation Detection and Measurement**
  - 2.8.1 Principle of measurement
  - 2.8.2 Ionization chamber, Electrometer
  - 2.8.3 Scintillation counter
  - 2.8.4 Gieger-muller counter
  - 2.8.5 Thimble chamber
  - 2.8.6 Condenser chamber
- 2.9 **Radiation Protection**
  - 2.9.1 Objective and principle of radiation protection
  - 2.9.2 Radiation and Radiation units
  - 2.9.3 Personnel monitoring
  - 2.9.4 Protective materials
  - 2.9.5 ICRP recommendations on dose limits
- 3. **Clinical Oncology**
  - 3.1 Tumors
    - 3.1.1 Tumor definition
    - 3.1.2 Benign tumors and malignant tumors
    - 3.1.3 Spread of tumors
- 4. **Radiographic Technique**
  - 4.1 Upper Limb
    - 4.1.1 Technique for whole hand, fingers, thumb, wrist joint, Radio ulnar joints
    - 4.1.2 Supplementary technique: carpal tunnel, scaphoid, ulnar groove, head of radius
    - 4.1.3 Supplementary views of elbow, humerus & Supra-condylar projection
  - 4.2 Shoulder Girdle and Thorax
    - 4.2.1 Technique for shoulder joint, acromio-clavicular joint, and scapula
    - 4.2.2 Supplementary views: projection to show recurrent dislocation of shoulder, infero-superior projection of clavicle, sterno-clavicular joint, sternum, ribs
  - 4.3 Lower Limb
    - 4.3.1 Technique for whole foot, toes, great toe, calcaneum, talo-calcaneal joint, ankle joint, lower leg with ankle joint
    - 4.3.2 Knee joint, patella, tibio-fibular joints
    - 4.3.3 Supplementary technique for torn ligaments, flat feet, axial view of calcaneum, skyline view of patella, intercondylar notch view
  - 4.4 Vertebral Column
    - 4.4.1 Technique for cranio-vertebral joint, atlanto-occipital joint, first three cervical vertebra, odontoid peg view
    - 4.4.2 Cervical spine for intervertebral joints and foramina, cervico thoracic vertebrae
    - 4.4.3 Thoracic spine, thoraco-lumbar vertebrae
    - 4.4.4 Lumbar spine, intervertebral joints and foramina, lumbo-sacral joint, sacrum, coccyx
    - 4.4.5 Supplementary techniques, to demonstrate scoliosis, kyphosis, spondylolisthesis

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- 4.5 Pelvic Girdle and Hip Region
  - 4.5.1 Technique for whole pelvis, ileum, ischium and pubic bones
  - 4.5.2 Sacroiliac joints, symphysis pubis, hip joints, acetabulum, neck of femur
  - 4.5.3 Supplementary projections: acetabulum view, Judet view, Von-Rosen view and frog leg view for hip joint (CDH)
- 4.6 Skull
  - 4.6.1 Routine views of Skull, Towne's view, SMV, Emergency Skull radiography
  - 4.6.2 Technique for mastoids, styloid process, IAM
  - 4.6.3 Routine views for facial bones, mandible, zygomatic arches, nasal bone, maxilla, temporo-mandibular joints
  - 4.6.4 Optic foramina, macroradiography for optic foramina
  - 4.6.5 Routine and special views for Paranasal sinuses
- 4.7 Chest Radiography
  - 4.7.1 Routine radiography of chest, High kV technique for Chest
  - 4.7.2 Supplementary views: apicogram, lordotic and oblique views, lateral decubitus, diaphragmatic excursions double exposure technique
- 4.8 Ward and Operation Theatre Radiography
  - 4.8.1 Knowledge of Electrical supply, radiation protection
  - 4.8.2 Radiography of bed-ridden patients
  - 4.8.3 Radiography in operation theatre
- 4.9 Mammography
  - 4.9.1 Soft tissue radiography
  - 4.9.2 Principle and technique of mammography
- 4.10 Macro-Radiography
  - 4.10.1 Definition, principles and its applications
  - 4.10.2 Magnification factors and uses of magnification radiography
- 5. Special Radiological Procedures**
  - 5.1 First Aids and Emergency Care
    - 5.1.1 Introduction to Shock, emergency treatment, Cardio-Pulmonary resuscitation
    - 5.1.2 Introduction to Haemorrhage, primary management of haemorrhage
  - 5.2 Contrast Media
    - 5.2.1 Introduction to contrast media
    - 5.2.2 Definition, types and uses of contrast media
    - 5.2.3 Properties of contrast media
    - 5.2.4 Adverse effects of contrast media and their management
    - 5.2.5 Emergency trolley setting
    - 5.2.6 Life saving drugs and emergency trays
  - 5.3 Alimentary Tract
    - 5.3.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming & post procedure care for following investigations:
      - 5.3.1.1 Barium swallow
      - 5.3.1.2 Barium meal
      - 5.3.1.3 Barium follow-through
      - 5.3.1.4 Small bowel enema
      - 5.3.1.5 Barium enema -single contrast, -double contrast
      - 5.3.1.6 Loopogram

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5.4 Biliary Tract

5.4.1 Definition, indications, contraindications, equipment required contrast media, preparation of the patient, technique / procedure, filming, post procedure care for following investigations:

5.4.1.1 Percutaneous transhepatic cholangiography (PTC)

5.4.1.2 Endoscopic retrograde cholangio-pancreatography (ERCP)

5.4.1.3 Per operative cholangiography (POC)

5.4.1.4 T-tube cholangiography

5.5 Urinary Tract

5.5.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming, post procedure care for following investigations:

5.5.1.1 Intravenous urography (IVU), Modification of IVU and additional techniques

5.5.1.2 Percutaneous nephrostomy (PCN)

5.5.1.3 Retrograde pyelography (RGP)

5.5.1.4 Micturating cysto-urethrography

5.6 Reproductive System

5.6.1 Definition, indications, contraindications, equipment required contrast media, preparation of the patient, technique/procedure, filming, post procedure care for Hysterosalpingography

5.7 Cardio-Vascular System

5.7.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming, post procedure care for following investigations:

5.7.1.1 Carotid angiography

5.7.1.2 Abdominal aortography

5.7.1.3 Portal venography

5.7.1.4 Peripheral and lower limb venography

5.8 Myelography

5.8.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming, post procedure care for following investigations:

5.8.1.1 Lumbar, Thoracic and Cervical Myelography

5.8.1.2 Post Myelo-CT (CT Myelography)

5.9 Arthrography

5.9.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming, post procedure care for following investigations:

5.9.1.1 Knee Arthrography

5.9.1.2 Hip Arthrography

5.10 Sinography

5.10.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique /procedure, filming, post procedure care for Sinography



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- 5.11 Sialography
  - 5.11.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming, post procedure care for following investigations:
    - 5.11.1.1 Parotid sialography
    - 5.11.1.2 Sub-mandibular sialography
- 5.12 Dacryocystography
  - 5.12.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming, post procedure care for Dacryocystography.
- 6. **Equipment for Diagnostic Radiology**
  - 6.1 X-Ray Tubes
    - 6.1.1 Overview of production of x-rays, Historical background
    - 6.1.2 Components of an x-ray tube: Cathode assembly, Anode assembly
    - 6.1.3 Stationary and rotating anodes
    - 6.1.4 Line focus principle, anode heel effect, Off-focus radiation
    - 6.1.5 Glass envelope, tube shielding, care of x-ray tubes
    - 6.1.6 X-ray tube faults
    - 6.1.7 Modification and recent advances in x-ray tube
  - 6.2 Radiographic Couches, Stands and Tube Supports
    - 6.2.1 X-ray tube supports
    - 6.2.2 Radiographic couches
    - 6.2.3 Chest stands and vertical bucky
    - 6.2.4 Modern basic radiographic units
  - 6.3 Exposure Timers
    - 6.3.1 Clockwork timer, synchronous motor and impulse timers
    - 6.3.2 Electronic timers
    - 6.3.3 Autotimers (photoelectric timer and ionization chamber timer)
  - 6.4 Beam Centering & Beam Limiting Devices
    - 6.4.1 Cones and cylinders, Aperture diaphragms
    - 6.4.2 Light beam diaphragms, Positive beam limitation
  - 6.5 Portable and Mobile Radiographic Equipments
    - 6.5.1 Main features of portable and mobile equipment
    - 6.5.2 Mains dependent mobile equipment
    - 6.5.3 Capacitor discharge equipment
    - 6.5.4 Battery powered generators
  - 6.6 Control of Scattered Radiation
    - 6.6.1 Significance of scattered radiation
    - 6.6.2 Reduction in the amount of scatter radiation produced (field size, use of appropriate exposure factors, compression band)
    - 6.6.3 Reduction in the amount of scatter radiation reaching to the film (metal backing of cassettes, filters, air-gap technique, cones and diaphragms, Grids)
    - 6.6.4 Grid: construction, function, grid characteristics, grid types and patterns. Grid movement
    - 6.6.5 Reduction in the effect of scatter (use of intensifying screens)
  - 6.7 Fluoroscopic Equipment
    - 6.7.1 Conventional fluoroscopy

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- 6.7.2 Mobile and specialised fluoroscopic units
- 6.7.3 Image intensified fluoroscopy
- 6.7.4 Image intensifier- construction and working principle
- 6.7.5 TV camera and TV monitor
- 6.7.6 Digital fluoroscopy
- 6.8 Equipment for Dental Radiography
  - 6.8.1 A simple dental radiographic unit, Orthopantomography (OPG)
- 6.9 Vascular Imaging Equipment
  - 6.9.1 Generators and x-ray tubes
  - 6.9.2 C-Arm/U-Arm assembly
  - 6.9.3 Angiographic tables
  - 6.9.4 Automatic pressure injectors
  - 6.9.5 Digital subtraction Angiography
- 6.10 Mammographic Equipment
  - 6.10.1 Mammography x-ray tube
  - 6.10.2 Image receptors in mammography
  - 6.10.3 Apparatus for magnification radiography in mammography
  - 6.10.4 Digital mammography/ Digital Breast tomosynthesis
- 6.11 Digital Imaging
  - 6.11.1 Introduction to digital imaging concepts and advantages of image digitization
  - 6.11.2 Digital image structure
  - 6.11.3 Digital radiography: Scanned projection radiography (SPR), Computed radiography (CR), Direct digital radiography (DR)
- 6.12 Computed Tomography (CT)
  - 6.12.1 Basic principles of CT
  - 6.12.2 Generations of CT/ MDCT/Newer advances in CT
  - 6.12.3 System components
  - 6.12.4 Image characteristics & Image quality in CT
  - 6.12.5 Artifacts in CT
- 6.13 Magnetic Resonance Imaging (MRI)
  - 6.13.1 Fundamental concepts: magnetic moments, precession, resonance, nuclear magnetic resonance (NMR)
  - 6.13.2 Introduction to MR Scanners: imaging magnets, RF transmitter and receiver coils, shim coils and gradient coils
  - 6.13.3 Principal parameters of MRI: spin density, T1- and T2 - relaxation time
  - 6.13.4 Basic principles of MR imaging and related parameters
  - 6.13.5 Spin echo pulse sequence
  - 6.13.6 Gradient echo pulse sequence
  - 6.13.7 Artifacts in MRI
  - 6.13.8 Advances in MR technology
- 6.14 CT and MRI Technique
  - 6.14.1 Technique for Brain
  - 6.14.2 Technique for Head, Chest, Abdomen and other body parts
  - 6.14.3 Technique for CTA and MRA
  - 6.14.4 Technique for Spine and Joint
- 6.15 Bone Mineral Densitometry : Indication and techniques
- 6.16 Dual Headed Gamma Camera

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**7. Radiographic Photography**

- 7.1 Photographic Principle
  - 7.1.1 Photographic effect
  - 7.1.2 Photosensitive materials
  - 7.1.3 Photographic emulsion
  - 7.1.4 Characteristic curve
  - 7.1.5 Spectral sensitivity
  - 7.1.6 Direct exposure film (x-ray sensitive)
  - 7.1.7 Gurney-Mott theory of latent image formation
- 7.2 Film Materials
  - 7.2.1 Construction of x-ray film
  - 7.2.2 Film for medical imaging
  - 7.2.3 Comparison between single coated and double coated x-ray films
- 7.3 Film Storage
  - 7.3.1 Different storage areas
  - 7.3.2 Ideal storage condition
  - 7.3.3 Stock control and film ordering methods
- 7.4 Intensifying Screens
  - 7.4.1 Luminescence: fluorescence and phosphorescence
  - 7.4.2 Construction of Intensifying screen and their types
  - 7.4.3 Types of phosphors: calcium tungsten, rare earth and their comparison
  - 7.4.4 Detective Quantum efficiency (DQE)
  - 7.4.5 Quantum mottle
  - 7.4.6 Care, monitoring and cleaning of IF screen
  - 7.4.7 X-ray film cassettes
  - 7.4.8 Cassette function, construction, materials used, types and care of cassettes
- 7.5 Radiographic Processing
  - 7.5.1 Manual and Automatic processing
  - 7.5.2 Processing cycles
  - 7.5.3 Processing chemical
  - 7.5.4 Care and maintenance of automatic processors
  - 7.5.5 The principle of dry silver imager
  - 7.5.6 Silver recovery
  - 7.5.7 Daylight processing
- 7.6 Design and Construction of Darkroom
  - 7.6.1 The layout of an ideal darkroom
  - 7.6.2 Darkroom location, size, radiation protection, floor, walls / ceiling, ventilation and heating, entrance, white lighting and safe light and its test, film hoppers loading bench and wet bench
- 7.7 The Radiographic Image
  - 7.7.1 Radiographic image quality
  - 7.7.2 Factors affecting radiographic image quality
  - 7.7.3 Image artifacts
- 7.8 Identification and Viewing of Radiographs
  - 7.8.1 Methods of film
- 7.9 Quality assurance in radiography

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The questions distribution for this paper/subject shall be as follows:

Section	Marks	Multiple Choice Questions
		No. of Questions × Mark
A	10	10 Questions × 1Mark =10 Marks
B	90	90 Questions × 1Mark =90 Marks