

Paper I

11071

Final MD (Radio-Diagnosis) Examination, May/June 2009  
RADIATION PHYSICS, PROTECTIVE MEASURES AND PHYSICS  
INVOLVING IMAGING TECHNIQUES AND RELATED BASIC  
SCIENCES e.g. ANATOMY, PHYSIOLOGY AND PATHOLOGY - I

Total Duration: 3 Hours

Total Marks: 100

Instructions: 1) Use blue/black ball point pen only.

2) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

3) All questions are compulsory.

4) The number to the right indicates full marks.

5) Draw diagrams wherever necessary.

1. LAO

Discuss the principle and clinical applications of spiral C. T. scan.

(1×25)

2. Discuss the anatomy of Para-pharyngeal space.

(1×25)

3. Solve any five questions :

a) Automatic processor

b) Grids and Filters

c) Radiation hazards

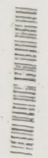
d) MR Artefacts

e) Cassettes

f) Principles of mammography.

Beetoo

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M.D. (Radio-Diagnosis) Examination, November/December 2009  
**RADIATION PHYSICS, PROTECTIVE MEASURES AND PHYSICS INVOLVING IMAGING TECHNIQUES AND RELATED BASIC SCIENCES e.g. ANATOMY, PHYSIOLOGY AND PATHOLOGY - I**

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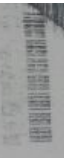
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5) Draw diagrams wherever necessary.

1. Discuss the principle of Multidetector computed tomography and highlight its applications. (1×25=25)
2. Discuss the anatomy of intracerebral vessels and various modes of radiological evaluation. (1×25=25)
3. Solve any five questions out of six.  
  - a) Luminescent screens.
  - b) What are different methods of rectification ?
  - c) Radiation protection in the use of diagnostic X-rays.
  - d) Discuss principle and types of grids used in radiography.
  - e) What is Tissue Harmonic Imaging ?
  - f) Compare conventional and computer radiography.



11071  
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M.D. (Radio Diagnosis) Examination, November/December 2009  
RADIATION PHYSICS, PROTECTIVE MEASURES AND PHYSICS  
INVOLVING IMAGING TECHNIQUES AND RELATED BASIC  
SCIENCES e.g. ANATOMY, PHYSIOLOGY AND PATHOLOGY - I

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1. Discuss the principle of Multidetector computed tomography and highlight its applications. (1×25=25)

2. Discuss the anatomy of intracerebral vessels and various modes of radiological evaluation. (1×25=25)

3. Solve any five questions out of six : (5×10=50)
- a) Luminescent screens.
  - b) What are different methods of rectification ?
  - c) Radiation protection in the use of diagnostic X-rays.
  - d) Discuss principle and types of grids used in radiography.
  - e) What is Tissue Harmonic Imaging ?
  - f) Compare conventional and computer radiography.





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M.D. (Radio-Diagnosis) Examination, May/June 2010  
RADIATION PHYSICS, PROTECTIVE MEASURES AND PHYSICS  
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Duration : 3 Hours

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1. Define maximum permissible dose (M.P.D.). Discuss radiation hazards and preventive measures. 25

2. Describe physics of MRI. Discuss merits and demerits in MRI. Comment in brief on advances of MRI. 25

3. Solve any five questions out of six :

(5×10=50)

- a) Y-view of scapula
  - b) Multi-frequency generators
  - c) Water's view-Imaging techniques
  - d) TLD
  - e) Focus grid
- ✓ Artifacts in colour-doppler.



11071

M.D. (Radio-Diagnosis) Examination, Nov/Dec. 2010  
RADIATION PHYSICS, PROTECTIVE MEASURES AND PHYSICS  
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SCIENCES E.G. ANATOMY, PHYSIOLOGY AND PATHOLOGY - I

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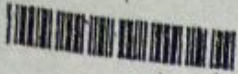
1. Discuss functional MRI. (1×25=25)

2. Write an essay on "conventional radiology artefacts". (1×25=25)

3. Solve any five questions out of six : (5×10=50)

- a) Fluoroscopic imaging
- b) Radiation protection in fluoroscopy and CT scan
- c) Types of interactions between X-Rays and matter
- d) MRI contrast media
- e) Transducer
- f) Film badge





11071

**M.D. (Radio-Diagnosis) Examination, May/June 2011**  
**RADIATION PHYSICS, PROTECTIVE MEASURES AND**  
**PHYSICS INVOLVING IMAGING TECHNIQUES AND RELATED**  
**BASIC SCIENCES E.G. ANATOMY, PHYSIOLOGY AND**  
**PATHOLOGY - I**

Duration: 3 Hours

Total Marks: 100

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  - 5) Draw diagrams wherever necessary.

1. Describe Image Intensifier. Discuss its principle and uses in Radiological practice. 25
2. Describe Radiological anatomy of cranio-vertebral junction. Discuss various cranio-vertebral anomalies and their radiological appearances. 25
3. Solve any five questions out of six. (5×10=50)
  - a) PC and PNDT Act
  - b) Anode Heel Effect
  - c) Towne's View
  - d) Rotating Anode
  - e) Multi Detector C.T.
  - f) Digital Radiography.





11071

M.D. (Radio-Diagnosis) Examination, Winter 2011  
RADIATION PHYSICS, PROTECTIVE MEASURES AND  
PHYSICS INVOLVING IMAGING TECHNIQUES AND  
RELATED BASIC SCIENCES E.G. ANATOMY, PHYSIOLOGY  
AND PATHOLOGY - I

Duration : 3 Hours

Total Marks : 100

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*3) All questions are compulsory.*

*4) The number to the right indicates full marks.*

*5) Draw diagrams wherever necessary.*

1. LAQ

Discuss the physics and clinical application of Helical C.T.

(1×25=25)

2. LAQ

Discuss factors affecting radiographic quality and methods to improve it. (1×25=25)

3. Solve any five questions out of six :

(5×10=50)

a) Transducer

b) Pulse sequence in MRI

c) Ultrasonographic contrast media

d) Radio frequency coils and its clinical application

e) Rectification

f) Anatomy of Petrous temporal bone





11071

M.D. (Radio-Diagnosis) Examination, Summer 2012  
RADIATION PHYSICS, PROTECTIVE MEASURES AND PHYSICS  
INVOLVING IMAGING TECHNIQUES AND RELATED BASIC  
SCIENCES E.G. ANATOMY, PHYSIOLOGY AND PATHOLOGY – I

Duration : 3 Hours

Total Marks : 100

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*3) All questions are compulsory.*

*4) The number to the right indicates full marks.*

*5) Draw diagrams wherever necessary.*

1. Discuss the factors affecting the quality of radiographic image. (1×25=25)
2. What are the various components of developer and fixer? What is the function of each component? (1×25=25)
3. Solve any five questions out of six: (5×10=50)
  - a) Grids ✓
  - b) MRI contrast media ✓
  - c) Xray image intensifiers
  - d) Transducers in USG
  - e) Principles of color Doppler
  - f) Replenishing developers.



M.D. (Radio-diagnosis) Examination, Winter 2012  
RADIATION PHYSICS, PROTECTIVE MEASURES AND PHYSICS INVOLVED  
IMAGING TECHNIQUES AND RELATED BASIC SCIENCES E.G. ANATOMY,  
PHYSIOLOGY AND PATHOLOGY - I

Duration : 3 Hours

Total Marks : 100

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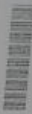
*5) Draw diagrams wherever necessary.*

1. Describe the various types of X ray tube. Mention the details of rectifiers. (1x25=25)

2. Describe the normal heart in details and various radiological techniques of examination. (1x25=25)

3. Solve any five questions out of six : (5x10=50)

- a) X-Ray Films.
- b) USG contrast media
- c) Stationary Grid
- d) Dark-Room
- e) TLD Badge
- f) Radiation Hazards



11071



M.D. (RADIO-DIAGNOSIS), Winter-2013 Examination  
RADIATION PHYSICS, PROTECTIVE MEASURES & PHYSICS INVOLVING IMAGING  
TECHNIQUES AND RELATED BASIC SCIENCES E.G. ANATOMY, PHYSIOLOGY AND  
PATHOLOGY-I  
Total Marks : 100

Total Duration : 3 Hours

Instructions: 1) Use blue/black ball point pen only.  
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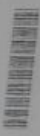
- 3) All questions are compulsory.
- 4) The number to the right indicates full marks.
- 5) Draw diagrams wherever necessary.
- 6) Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question Paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As it is only for the placement sake, the distribution has been done.
- 7) Use common answer book for all sections.

1 Describe the four essential components of a modern X - Ray tube. Discuss the principles of X - Ray production. (1x25=25)

2 What is maximum permissible dose ? Describe the methods of radiation protection on the patient and staff in diagnostic radiology. (5x10=50)

3. Solve any five questions out of six :
- a) Ultrasound artifacts
  - b) Stotography
  - c) Mammography
  - d) Contrast reactions
  - e) Grids
  - f) Autotransformer





41071

M.D. (Radio-Diagnosis), **Summer-2014** Examination  
Radiation physics, Protective measures & Physics involving imaging techniques and  
related basic sciences e.g. Anatomy, Physiology and Pathology-I  
Total Duration : 3 Hours  
Total Marks : 100

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  - 7) Use common answer book for all section
1. 1) Discuss the role of HRCT (High resolution computed tomography) in diagnosis of various lung diseases. (1x25=25)
  2. 2) Role of MRI in hip joint diseases. (1x25=25)
  3. Solve any five questions out of six : (5x10=50)
    - a) a) Role of doppler in portal hypertension.
    - b) b) Prune belly syndrome.
    - c) c) CT colonography.
    - d) d) Cystic hygroma.
    - e) e) Necrotising enterocolitis.
    - f) f) Discuss differential diagnosis of a lump in right iliac fossa.



M.D. (Radio-Diagnosis), Winter-2014 Examination  
 RADIATION PHYSICS, PROTECTIVE MEASURES & PHYSICS INVOLVING IMAGING  
 TECHNIQUES AND RELATED BASIC SCIENCES E.G. ANATOMY, PHYSIOLOGY AND  
 PATHOLOGY-I



11071

Total Duration : 3 Hours

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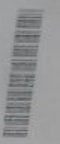
1. Discuss methods of rectification used in 80 mA & 300 mA X-ray machine (1x25=25)

2. Discuss and compare conventional, computer & digital method of radiography. (1x25=25)

3. Solve any five questions out of six: (5x10=50)

- a) Multislice CT *Comp.*
- b) MRI Angiography *Comp.*
- c) Mammography *MG 3322, Comp.*
- d) PET Scan *RF, Comp, Comp.*
- e) Continuous Wave Doppler *Comp.*
- f) PACS *(Refer Notes)*





11071

M.D. (Radio-Diagnosis) Examination, Summer 2015  
RADIATION PHYSICS, PROTECTIVE MEASURES & PHYSICS INVOLVING IMAGING  
TECHNIQUES AND RELATED BASIC SCIENCES E.G. ANATOMY, PHYSIOLOGY AND  
PATHOLOGY-I

Total Duration : 3 Hours

Total Marks : 100

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 7) Use common answer book for all sections.

1. Describe the various deleterious effect of ionizing radiation on health. What are the methods by which these can be minimized? (1x25=25)  
 MB1009, 1018 Gang Notes.
2. Describe the anatomy of the pituitary gland in brief. Describe the MR techniques used to image the pituitary. (1x25=25)  
 Ashide, MB 326.
3. Short answer question/any five out of six: (5x10=50)

- a) Fluor Duppler Alan F. Gang.  
 b) Phase contrast angiography (MCA) Gang Notes.  
 c) Anatomy of the rotator cuff.  
 d) Principle of Digital Subtraction Angiography (DSA) Gang, MB 919.  
 e) Anatomy of Ear ossicles. RL, Ashide ppt.
- branches of External carotid artery. → RF.  
 Mnemonic → she always likes Friends over Papa, Sisters & ma.  
 (8)



Paper I.

Radiation Physics, Protective Measures & Physics Involving Imaging Techniques and Related Basic Science

Total Duration : 3 Hours  
e.g. Anatomy, Physiology and Pathology - I

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- 7) Use a common answer book for all sections.

LAQ: RSNA article, notes, MB911

1. Discuss principles of fluoroscopic imaging.

LAQ: MB 1745

2. Describe radiological etiology of retroperitoneum. Also discuss imaging of primary retroperitoneal neoplasms.

3. Short answer question (any five out of six)

- 1) Radiographic films: Notes, Chris 87, my notes
- 2) TLD (Thermo luminescent dosimeter) my notes & Gang
- 3) Computed radiography Vs Digital radiography Gang notes
- 4) Principles of color Doppler Gang notes
- 5) Characteristic Radiation: RP, Christensen '81
- 6) Rotating anode: my notes
- 7) Rotating anode: Chris: 10-26

Calderwell view → RP  
 water's view (GM) → RP  
 SMV view (basal) → wikileaks  
 Town's view → RP

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11071

M.D. (Radio-Diagnosis) Summer 2016  
**RADIATION PHYSICS, PROTECTIVE MEASURES AND PHYSICS  
INVOLVING IMAGING TECHNIQUES AND RELATED BASIC SCIENCES  
E.G. ANATOMY, PHYSIOLOGY AND PATHOLOGY- I**

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  - 3) **All** questions are **compulsory**.
  - 4) The number to the **right** indicates **full** marks.
  - 5) Draw diagrams **wherever** necessary.
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  - 7) **Use** a common answerbook for **all** sections.

1. Long answer question : (1×25=25)  
What is an image intensifier ? Write in detail its construction and uses in Radiology.
2. Long answer question : (1×25=25)  
Classify contrast media used in diagnostic radiology and imaging. What steps you will take to prevent contrast induced nephropathy ?
3. Short answer questions (**any five** out of six) : (5×10=50)
  - a) Grids
  - b) Principles of image acquisition in digital X-ray Mammography
  - c) Gradient coils
  - d) Cassettes
  - e) Construction of Electronic phased array Ultrasound probe
  - f) Technique of CT Perfusion imaging and its interpretation.

11071

M.D. (Radio-Diagnosis) Examination, Summer 2017  
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  - 7) **Use** a common answerbook for **all** Sections.

1. Long answer question :

Draw and label diagram of Digital Radiography Unit. Discuss physics of image acquisition, display and software applications of digital image.

(1×25=25)

2. Long answer question :

Discuss anatomy of lower limb veins. Discuss techniques and multi modality radiological evaluation of venous disease.

(1×25=25)

3. Short answer question (any five out of six) :

- a) Technique of MRCP.
- b) PC-PNDT Act.
- c) Physics of Tissue Elastography.
- d) Technique of Neurosonography.
- e) Cine Oesophagography and its clinical applications.
- f) Physics of Diffusion weighted imaging and its clinical applications.

(5×10=50)

11071

M.D. (Radio-Diagnosis)

**RADIATION PHYSICS, PROTECTIVE MEASURES & PHYSICS INVOLVING IMAGING  
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3) All questions are compulsory.

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5) Draw diagrams wherever necessary.

1. Describe the anatomy of para nasal sinuses and variants with a neat and labelled diagram. Explain the role of CT in imaging paranasal sinus pathology. (1x25=25)
  2. Describe the basic principles, construction, design and working of a colour Doppler ultrasound machine. Describe in short the various Doppler artifact. (1x25=25)
  3. Solve any five questions out of six : (5x10=50)
    - a) Automatic Film Processor.
    - b) Hysterosalpingography.
    - c) Compton Effect.
    - d) Trans vaginal Probe.
    - e) Construction and Design of Imaging Plate (CR Cassette).
- 7) CT Cisternography.