M.D. DEGREE EXAMINATION

Branch VIII - Radiodiagnosis

(Revised Regulations)

Part II - Preliminary

MEDICAL RADIATION PHYSICS AS APPLIED TO RADIO DIAGNOSIS

Time: Three hours   Max.marks:90

Answer All Questions

1. Discuss the principles of production of an X-ray image. What are the factors affecting the quality of an X-ray image?   (20)

2. Write in detail about the construction and working of a high tension transformer. What are the different transformer losses and how can they be minimised?   (20)

3. Write briefly on:

   (a) Filters

   (b) C.T.Scanner

   (c) Characteristic X-rays

   (d) Beam limiting devices

   (e) Film badge service.

               (5x10=50)

M.D. DEGREE EXAMINATION

Branch VIII - Radio Diagnosis

(Revised Regulations)

Part II - Preliminary

MEDICAL RADIATION PHYSICS AS APPLIED
TO RADIO DIAGNOSIS

Time: Three hours   Max.marks:90

Answer all questions

1. Discuss the principles of digital subtraction
   angiography.   (20)

2. Discuss the physical principles of magnetic
   resonance.   (20)

3. Write briefly on:

   (a) Non-ionic contrast media

   (b) Technetium 99m (Te 99m)

   (c) Automatic processing

   (d) Standard development of X-ray films

   (e) Rating of an X-ray tube.
                                        (5x10=50)

[SM 143]

M.D. DEGREE EXAMINATION.

Branch VIII — Radio Diagnosis

(Revised Regulations)

Part II — Preliminary

MEDICAL RADIATION PHYSICS AS APPLIED TO RADIODIAGNOSIS

Time : Three hours   Maximum : 90 marks

Answer ALL questions.

1. What are scattered X-rays? Discuss their importance in Radiography.   (20)

2. What is Ultrasound? Discuss the advantages and disadvantages of Ultrasound when compared to C.T. & M.R.I.   (20)

3. Write short notes on : $(5 \times 10 = 50)$

     (a) Image intensifier.

     (b) Automatic X-ray Film Processor.

     (c) H.R.C.T.

     (d) Principles of M.R.I.

     (e) Radio-active isotope.

[SG 143] **Sub. Code : 2083**

M.D. DEGREE EXAMINATION.

Branch VIII — Radio diagnosis

(Revised Regulations)

Part II — Preliminary

MEDICAL RADIATION PHYSICS AS APPLIED TO RADIO DIAGNOSIS

Time : Three hours Maximum : 90 marks

Answer ALL questions.

1. Mention Newer imaging modalities in Radio Diagnosis. Explain the principles of C.T. (20)

2. Discuss about the construction and working of a high tension transformer. What are the different transformer losses and how can they be minimised? (20)

3. Write briefly on : (5 × 10 = 50)

   (a) Film badge service.

   (b) Filters.

   (c) Grid Cassette.

   (d) Principles of Mammography.

   (e) Beam limiting devices.

[KA 143]　　　　　　　**Sub. Code : 2083**

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch VIII — Radio Diagnosis

Part II — Preliminary

MEDICAL RADIATION PHYSICS AS APPLIED TO
RADIO DIAGNOSIS

Time : Three hours　　　　　　　Maximum : 90 marks

Answer ALL questions.

1.　Describe the parts of an X–ray tube. How are X–rays produced? Discuss the general characteristics of X–ray Beam Spectrum coming out of the X–ray tube.(20)

2.　Discuss the principles of digital substraction angiography.　　　　　　　　　　(20)

3.　Write briefly on :　　　　　　(5 × 10 = 50)

　(a)　Technetium 99 m (Te 99 m)

　(b)　Non–ionic contrast media

　(c)　Rare Earth Screen

　(d)　Principles of Mammography

　(e)　Automatic Processing.

[KB 143]   Sub. Code : 2040

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch VIII — Radio Diagnosis

Part II — Preliminary

MEDICAL RADIATION PHYSICS AS APPLIED TO
RADIO DIAGNOSIS

Time : Three hours   Maximum : 90 marks

Answer ALL questions.

1.   (a) What is 'quality' and 'intensity' of X ray beam
coming out of a diagnostic X ray machine.   (8)

      (b) Explain various physical parameters which
affects these quantities.   (12)

2.   (a) What is the difference between 'attenuation'
and 'absorption' of X rays by a medium?   (6)

      (b) Write in detail the photo electric and compton
processes and their relevance to diagnostic radiology
including computed tomography.   (14)

3.   Write short notes on :

      (a) Technetium-99 m radiopharmaceuticals

      (b) Mass miniature radiography

      (c) Diagnostic ultrasound

      (d) Soft tissue radiography

      (e) T_1 and T_2 weighted images in MRI.

                                   $(5 \times 10 = 50)$

[KC 143]   **Sub. Code : 2040**

M.D. DEGREE EXAMINATION.

Branch VIII — Radio Diagnosis

(Revised Regulations)

Part II — Preliminary

MEDICAL RADIATION PHYSICS AS APPLIED TO RADIO DIAGNOSIS

Time : Three hours   Maximum : 90 marks

Answer ALL questions.

1. Discuss the characteristic design features of four generations of CT scanners.   (20)

2. Describe gamme camera in detail.   (20)

3. Write short notes on : $(5 \times 10 = 50)$

   (a) MRI

   (b) SPECT

   (c) TLD

   (d) ^{99m}TC and its radiopharmaceuticals

   (e) Linear accelerator.