[KM 143]   Sub. Code : 2040

M.D. DEGREE EXAMINATION.

Branch VIII — Radiodiagnosis

Part II — Preliminary

MEDICAL RADIATION PHYSICS AS APPLIED TO RADIO DIAGNOSIS

Time : Three hours   Maximum : 100 marks

Theory : Two hours and   Theory : 80 marks

forty minutes

M.C.Q. : Twenty minutes   M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams whenever necessary.

I.   Essay questions :   (2 × 15 = 30)

(1) Discuss in detail on interaction of X-rays with matter.

(2) Discuss the basic principles of localisation of foreign bodies and tomography.

II.   Short note questions :   (10 × 5 = 50)

(a) Natural and artificial radioactivity

(b) Full wave rectification

(c) Tube rating

(d) Protective barriers

(e) Filters in Radiology

(f) Quality of X-rays

(g) Cones and grids

(h) Conductors and insulators

(i) Transformers

(j) Timers.

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[KO 143]　　　　　Sub. Code : 2040

M.D. DEGREE EXAMINATION.

Branch VIII — Radiodiagnosis

MEDICAL RADIATION PHYSICS AS APPLIED TO RADIODIAGNOSIS

Time : Three hours　　　　　Maximum : 100 marks

Theory : Two hours and　　　Theory :　80 marks
　　　　　forty minutes

M.C.Q. : Twenty minutes　　　M.C.Q. :　20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I.　Essay questions :　　　　(2 × 15 = 30)

(1)　Describe the various interactions of X-rays with matter.

(2)　Describe the various methods of radiation protection and Radiation personnel monitoring available.

II.　Short notes questions :　　(10 × 5 = 50)

(a)　Characteristic X-Radiation

(b)　Rotating anode

(c)　Linear Accelerator

(d)　I–131 Therapy

(e)　Spin lattice relaxation time

(f)　CT numbers

(g)　Piezo electric effect

(h)　Image intensifier

(i)　X-ray film processing

(j)　Filters.

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

M.D. DEGREE EXAMINATION.

Branch VIII — Radiodiagnosis

MEDICAL RADIATION PHYSICS AS APPLIED TO RADIODIAGNOSIS

Time : Three hours   Maximum : 100 marks

Theory : Two hours and   Theory : 80 marks
    forty minutes

M.C.Q. : Twenty minutes   M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I.   Essay questions :

(1) (a) Explain the importance of Quality Assurance tests in Diagnostic radiology.

(b) Discuss various quality assurance tests and test stools required in Diagnostic Radiology.   (20)

(2) (a) Explain the functions of each layer of Medical X-ray film.

(b) Discuss principles and functions of intensifying screen.

(c) What are the various steps in film processing?   (15)

(3) Outline the process by which X-rays are produced in an X-ray tube? What are the various factors which influence the X-ray omission spectrum?   (15)

II.   Short notes :   (6 × 5 = 30)

(a) Grids and Grid ratio

(b) Characteristic curve

(c) Latent image formation

(d) Gamma camera

(e) Line focus principle

(f) Grinacher X-ray Circute

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[KQ 133]   **Sub. Code : 2040**

M.D. DEGREE EXAMINATION.

Branch VIII — Radio Diagnosis

MEDICAL RADIATION PHYSICS AS APPLIED TO RADIO DIAGNOSIS

Common to

Part II — (Preliminary/New/Revised Regulations)

(Candidates admitted from 1988–89 onwards)

and

Paper I (for candidates admitted from 2004–2005 onwards)

Time : Three hours   Maximum : 100 marks

Theory : Two hours and   Theory : 80 marks
      forty minutes

M.C.Q. : Twenty minutes   M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I.   Essay :

1.   Explain the physical principle of Computerised Tomography (CT) and describe its technological evolution to the present status. What are the clinical advantages of the new generation scanner?   (20)

2.   What is Doppler Effect? Describe its major medical applications based on the spectral waveform. What are the factors that affect Doppler signal?   (15)

3.   What are the different factors that influence the quality of a radiograph? Describe the different contrast enhancement techniques.   (15)

II.   Short notes :   (6 × 5 = 30)

    (a)   Vignetting and pincushion effect.

    (b)   Magnetic Resonance Spectroscopy.

    (c)   Renogram.

    (d)   Molybdenum target X ray tube.

    (e)   Effective half life.

    (f)   Contrast media in ultrasound imaging.

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MARCH 2008

[KS 136]   **Sub. Code : 2031**

M.D. DEGREE EXAMINATION.

Branch VIII — Radio Diagnosis

MEDICAL RADIATION PHYSICS AS APPLIED TO RADIO DIAGNOSIS

(Common to all Regulations)

Q.P. Code : 202031

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I.   Essay : $(2 \times 20 = 40)$

1.   Write the principle of colour doppler. What are the causes of deep vein thrombosis? Discuss merits and demerits of various imaging modalities used in evaluation of DVT?   (20)

2.   What are scattered radiations? What is its significance in radiography? What are the methods to reduce scattered radiations?

(20)

II.   Short notes : $(10 \times 6 = 60)$

1.   Principle digital substraction angiography DSA.

2.   Replenisher.

3.   Three phase generators.

4.   Inverse square law.

5.   Comptons effect.

6.   Phase transformer.

7.   Capacitors.

8.   Factors on which quality of X rays depend.

9.   Rotating anode.

10.   Grid.