

3/22

1604E057

Candidate's Seat No : _____

M.Sc. Sem-4 Examination

509

Med. Physics

April 2022

Time : 2-00 Hours]

[Max. Marks : 50

Instructions: All questions in **Section – I** carry equal marks.
Attempt any **Three** questions in **Section – I**.
Questions in **Section – II** is **COMPULSORY**.

Section – I

- Q-I A. Explain the limitations of projection imaging? 7
B. What should be the property of contrast agents to be used in x-ray imaging? Why they should be used? By changing the subject contrast which other two contrast can be altered? 7
- Q-II A. How scattered components can be reduced in diagnostic radiology? 7
B. How x-rays interact with human body in diagnostic radiology? How different patterns of image are obtained in x-ray image of human body? 7
- Q-III A. What are the prime factors of radiographic exposures? How they influence the image quality. 7
B. What are the objectives of radio-diagnosis? Explain how will you optimize the patient dose and image quality during radiographic process. 7
- Q-IV A. What are different radiography techniques available in radiology? 7
B. What is projection in CT scan? Discuss role of projection in CT scan. 7
- Q-V A. Explain the construction of intensifying screens in detail. 7
B. On what basis the performance of grids is evaluated? Write any two methods. 7
- Q-VI A. Explain the concept of latent image formation in radiographic image. 7

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E S7-2

- B. Explain the characteristics curve of radiographic film. 7
- Q-VII A. Describe the quality assurance test for a computed tomography machine. 7
B. Explain about digital subtraction techniques. 7
- Q-VIII A. Explain about MRI system components. 7
B. Write down the details about production of ultrasound and doppler effect. 7

Section – II

- Q-IX MCQs 8
- The scatter fraction----rapidly with patient thickness
A. decreases B. increases
C. no change D. none
 - Which of the following is the method of scatter reduction
A. antiscatter grids B. use of air gaps
C. slit scanning system D. All of the above
 - The primary x-ray beam penetration through a patient can be increased by increasing the
A. mAs B. kV
C. Film-focus distance D. Beam area
 - The primary factor that limits the maximum MA that can be used during a radiographic exposure is
A. Anode angle B. Focal spot size
C. Cathode temperature D. Exposure time
 - Which of the following is not a type of grid?
A. Focussed B. Parallel grid
C. Pseudo focused D. None of the above

E S7-3

6. The maximum slope of the characteristic curve gives
- A. Speed
 - B. Density
 - C. Gamma
 - D. Latitude
7. As field strength increases from 0.5T to 3.0T the T2 of most of the tissues
- A. increases
 - B. decreases
 - C. Remain the same
 - D. decreases than increases
8. Which of the following is not a synonym for T1 relaxation
- A. Spin-spin relaxation
 - B. spin-lattice relaxation
 - C. Longitudinal relaxation
 - D. Thermal relaxation

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