B. TECH.

(SEM. VI) EXAMINATION, 2006-07

MEDICAL IMAGING TECHNIQUES

Time : 3 Hours] [Total Marks : 100

Note : Attempt all questions.

1. Attempt any four parts of the following : \(5 \times 4\)
   
   (a) What are the medical imaging techniques? And list their importance.
   
   (b) Explain the principle of X-ray.
   
   (c) Explain the principle of ultrasound.
   
   (d) Describe Computed Tomography principle.
   
   (e) What is infrared photography?
   
   (f) List the applications of MRI

2. Attempt any four parts of the following : \(5 \times 4\)
   
   (a) How the X-rays are produced?
   
   (b) Explain with suitable diagram image intensifier.
   
   (c) Draw and explain the high-voltage generation circuits of X-rays.
   
   (d) Write a note on fluoroscopy and radiographs.
   
   (e) Write a note on X-ray tube.
   
   (f) Describe the physics of X-rays.

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3 Attempt any two parts of the following: 10×2
(a) What is Tomography? Describe image acquisition with tomography.
(b) Describe in detail with principle Computed Tomography.
(c) Describe with principle positron Emission Tomography.

4 Attempt any two parts of the following: 10×2
(a) Explain in detail the pulse echo technique of ultrasound.
(b) Explain in detail real time ultrasound system.
(c) Describe in detail with principle Doppler ultrasound and its application.

5 Attempt any four parts of the following: 5×4
(a) Draw and explain the components of MRI instrument.
(b) Write a note on application of MRI.
(c) Explain the image reconstruction techniques of MRI.
(d) What is infrared photography?
(e) Write a note on infrared imaging.
(f) Differentiate between MRI and Infrared imaging.