R07

Set No. 2

Time: 3 hours

Code No: 07A61104

Max Marks: 80

16

Answer any FIVE Questions All Questions carry equal marks *****

- 1. Discuss the frequency encoding using linear field gradient for MRI imaging. [16]
- 2. Briefly explain mammography technique and its advantages over other methods.
- 3. Explain the suitable method of ultrasonic diagnostics in detecting the eye tumor and also its block diagram. [16]
- 4. Discuss the limitations of the conventional x-rays and the advantages of tomography and its existence. [16]
- 5. Briefly explain the various transducer beam characteristics. [16]
- 6. Write short notes on:
 - (a) Nuclear activity and half-life
 - (b) Specific activity.
 - (c) Nuclear sources. (d) Scintillation detectors. [4+4+4+4]
- 7. Justify how the magnetic field in-homogenities can be compensated in MRI. [16]
- 8. Write short notes on:
 - (a) Filament current.
 - (b) Image intensifier.
 - (c) X-ray film.
 - (d) Film magnification.

[4+4+4+4]

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 $\mathbf{R07}$

Set No. 4

Time: 3 hours

Code No: 07A61104

Max Marks: 80

[16]

Answer any FIVE Questions All Questions carry equal marks *****

1.	Explain the fundamentals of radioactivity .	[16]
2.	Compare and contrast the spin-echo and gradient-echo imaging in MR	. [16]
3.	Write short notes on:	
	(a) Compressional wave.	
	(b) Shear wave.	
	(c) Characteristic impedance.	
	(d) Intensity.	[4+4+4+4]
4.	Define white radiation and discuss the characteristics of radiation.	[16]
5.	Write short notes on:	
	(a) Point spread function.	
	(b) Line spread function.	
	(c) System transfer function.	
	(d) Edge spread function.	[4+4+4+4]
6.	With a suitable block diagram explain the pulsed Doppler flow-meter.	[16]
7.	Discuss any two algorithms used in image reconstruction of CT .	[16]
8	Briefly explain the shielded coils and how is the eddy current forma	tion can be

controlled with it for MRI.

 $\mathbf{R07}$

Set No. 1

Time: 3 hours

Code No: 07A61104

Max Marks: 80

Answer any FIVE Questions All Questions carry equal marks *****

1.	Explain how the pulse sequence is used for inversion recovery study with suitable figures. [16]
2.	Explain the effect of attenuation compensation in various imaging systems. [16]
3.	Discuss in brief about various pulse echo methods of ultrasonic diagnostics. [16]
4.	Decribe the biological effects of magnetic fields in MRI. [16]
5.	Explain the principle of CT and the projection function with suitable mathematical expression. [16]
6.	(a) With suitable mathematical expression discuss about nonlinear parameter.
	(b) Explain Doppler effect with suitable example and its uses in ultrasound. [8+8]
7.	Discuss the physical construction of a collimator. [16]
8.	Explain dual energy subtraction and k-edge subtraction with suitable examples. [16]

R07

Set No. 3

Time: 3 hours

Code No: 07A61104

Max Marks: 80

[4+4+4+4]

[16]

Answer any FIVE Questions All Questions carry equal marks ****

- 1. Write short notes on:
 - (a) Image noise.
 - (b) Image subtraction.
 - (c) Image contrast.
 - (d) Spatial resolution.
- 2. Write short notes on:
 - (a) Filters.
 - (b) Beam restrictors.
 - (c) Grids.
- ZANKE (d) Intensifying screens.
- 3. Explain the gradient-echo imaging in MRI with suitable pulse sequence figures.
- 4. Write short notes on:
 - (a) Scanning laser acoustic microscopy.
 - (b) Computed tomography.
 - (c) Doppler method.
 - (d) Duplex imaging. [4+4+4+4]
- 5. Discuss the nuclear particles and its nature of radioactivity decay. [16]
- 6. Discuss the two uses of the room temperature Magnetic Field Gradients. [16]
- 7. (a) Briefly explain the lateral resolution in terms of beam width. Justify with suitable figures.
 - (b) Differentiate between the linear switched array and linear phased array. [8+8]
- 8. Explain the procedure involved in the 3D reconstruction of images. [16]

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