Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U5217

M.E. DEGREE EXAMINATION, DEC 2025

Professional Elective

Communication Systems

21PCM517- MEDICAL IMAGING TECHNIQUES

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1.	(a)	Apply the concept of piezoelectric transducers to design a protocol for Doppler ultrasound to measure blood flow in small vessels.	CO2- App	(20)
		Or		
	(b)	Apply the concept of ultrasound frequency to determine which frequency range would be most suitable for imaging a patient's thyroid gland and justify suitable examples.	CO2- App	(20)
2.	(a)	What is computed tomography? And explain the principles of sectional Imaging in X-raycomputed tomography.	CO1-U	(20)
		Or		
	(b)	Discuss how reconstruction algorithms convert projections into cross-sectional images.	CO4- U	(20)
3.	(a)	Explain the working principles of MRI Scanner with a schematic diagram	CO1-U	(20)
		Or		
	(b)	Describe basic Magnetic Resonance Pulse Sequences	CO1-U	(20)
4.	(a)	Explain the Nuclear Magnetic Resonance pulse sequences and detail its importance in NMR imaging.	CO1-U	(20)
		Or		
	(b)	Describe Relaxation Contrast in Images and spoiling in images.	CO1-U	(20)

5.	(a)	. Derive the relationship between objects and an image.	CO1-U	(20)
		Or		
	(b)	. Explain about iterative image processing techniques.	CO1-U	(20)