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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E.

Branch: Institutional Elective

Course Code: 19ML7OE2IM

Course: Imaging Modalities

Semester: VII

Duration: 3 hrs.

Max Marks: 100

Date: 22.02.2023

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1	a) Classify the different interactions between X-ray and matter. Explain any two in detail.	10
	b) Provide detail information about Dual-Energy imaging.	05
	c) Discuss any one clinical application of x-ray imaging.	05

OR

2	a) Elaborate on the basic principle of the “Angiography” imaging technique. Discuss its applications.	10
	b) With a neat block diagram, discuss the functions of the major components of Digital Subtraction Angiography system. What are the advantages and limitations of a DSA over film subtraction angiography?	10

UNIT - II

3	a) Discuss the clinical applications of Computed Tomography.	05
	b) What is a CT number? Give its significance in CT imaging.	05
	c) Briefly summarize the Detectors for Computed Tomography.	10

UNIT - III

4	a) List the types of clinical applications of ultrasound. Narrate any one of them.	07
	b) Explain the term Attenuation, Absorption and scattering with respect to ultrasound.	08
	c) Provide information about blood velocity measurements using ultrasound.	05

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

UNIT - IV

5	a) Discuss some of the fundamental concepts of frequency and phase encoding imaging methods of MRI.	10
	b) Explain the Spin-Echo imaging sequence with respect to MRI.	10

OR

6	a) List the clinical applications of MRI. Explain any one of them.	07
	b) Provide information about MRI contrast agent.	07
	c) Discuss briefly about the safety issues to be considered in MR Imaging.	06

UNIT - V

7	a) Discuss briefly PET image reconstruction.	05
	b) With schematic diagram explain electronic processing of Gamma camera.	08
	c) Mention and explain any one different test performed using radiation detector probe in diagnostic methods of radio nuclide imaging.	07
