A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 96B01

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2022

Sixth Semester

Biomedical Engineering

19UBM601- MEDICAL IMAGING EQUIPMENTS
(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	Give the basic principles of angiography.	CO1- U
2.	Name few parts in the block diagram of X ray equipment.	CO1- U
3.	Write a technical note on collimation.	CO2- U
4.	Give the applications of spiral CT scan.	CO2- U
5.	Mention the advantages of the MRI over other medical imaging modalities.	CO3- U
6.	Give the principle of magnetic resonance signals	CO3- U
7.	What is the function of Scintillation detector?	CO4- U
8.	Define gamma camera	CO4- U
9.	Write the clinical significance of cyber knife.	CO5- U
10.	Give the functions of cyber knife.	CO5- U

PART – C (5 x 16= 80 Marks)

11.	(a)	Draw the block diagram of an X-ray machine and describe its various components in detail.	CO1- U	(16)
		Or		
	(b)	(i) Summarize the differences between Radiography and Fluoroscopy.	CO1- U	(8)
		(ii) Explain how image intensifier used in Fluoroscopy with neat sketch.	CO1- U	(8)

12.	(a)	Depict the block diagram of a Computer Tomography scanner and explain the various blocks in it.	CO2- U	(16)
		Or		
	(b)	(i) Explain the image reconstruction through back projection technique.	CO2- U	(8)
		(ii) Write short note on ultrafast CT scanners.	CO2- U	(8)
13.	(a)	What is the principle of MRI pulse sequence? Explain it.	CO3- U	(16)
		Or		
	(b)	Give major advantages of magnetic resonance imaging. Explain about MRI image acquisition and its reconstruction.	CO3- U	(16)
14.	(a)	With neat sketch explain how a Gamma-ray camera is used to detect and scan the gamma rays emitted from a patient who has been injected with a radio isotope.	CO4- U	(16)
		Or		
	(b)	Describe the principle of operation of positron emission tomography (PET) and give the applications.	CO4- U	(16)
15	(a)	Why 3-D visualization is important in medical imaging? Explain your answer with the help of an example.	CO5- U	(16)
		Or		
	(b)	(i) Explain the functioning of Thermo Luminescent dosimeter.	CO5- U	(8)
		(ii) Briefly point out the 'Radiation Protection in medicine'.	CO5- U	(8)