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Total Number of Pages: 2

B.Tech
PCBM4402

8th Semester Regular / Back Examination 2016-17

MEDICAL IMAGING TECHNIQUES

BRANCH(S): CSE, IT, ITE

Time: 3 Hours

Max Marks: 70

Q.CODE: Z274

**Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.**

Q1 Answer the following questions: (2 x 10)

- a) What is the ultrasonic frequency used for diagnostic purpose?
- b) What are the two main limitations of using X- rays in conventional radiography?
- c) What are the advantages of digital radiography over conventional radiography?
- d) Name any two natural piezoelectric crystals used in ultrasonography.
- e) What do you mean by angiography?
- f) What is larmor frequency in terms of MRI imaging?
- g) What are the advantages of CT scan?
- h) Mention the two properties of X-rays that is used in imaging.
- i) What is the function of collimators and grids in radiography?
- j) How velocity of sound in medium is related to depth of penetration in ultrasonography?

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Q2 a) What are the advantages of using synthetic piezo- electric crystals over natural piezoelectric crystals in ultrasonography? (2)

b) Explain Characteristic impedance in relation to ultrasonography. What is the significance of this term in ultrasonography? (8)

Q3 a) Explain the construction and working of a stationary anode tube with a neat diagram. (5)

b) Write a short note on dental radiography. (5)

- Q4 a)** Briefly explain about X-ray image intensifier television system. (5)
- b)** With a neat diagram, explain the basis of diagnostic radiology. (5)
- Q5 a)** What is the basic principle of Computed Tomography? Explain with an example. (5)
- b)** Explain the data acquisition system of a CT scan with a neat block diagram. (5)
- Q6 a)** What are the advantages of NMR imaging? (5)
- b)** What do you mean by Free Inductive Effect? Explain briefly. (5)
- Q7** Draw a neat block diagram of a pulse echo apparatus and explain each block. (10)
- Q8 Write short answer on any TWO:** (5 x 2)
- a)** Digital Radiography
 - b)** Gamma Camera
 - c)** PET Scanner
 - d)** Block diagram of basic NMR components.

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