

**FEDERAL UNIVERSITY OF TECHNOLOGY OWERRI
SCHOOL OF HEALTH TECHNOLOGY**

DEPARTMENT OF BIOMEDICAL TECHNOLOGY

2012/2013 RAIN SEMESTER EXAMINATION HOURS: 3

BMT 572: CLINICAL IMAGING TECHNOLOGY

LECTURER: REV. SR. (DR.) ANELE, T. I

ANSWER ONLY FIVE (5) QUESTIONS

- [1] (a) Define computed tomography (CT). (2 marks)
(b) Explain with the help of a labeled diagram 4th generation computed tomography (18 marks)
- [2] (a) Outline 10 characteristics of X-rays (15 marks)
(b) State the basic principle of computed tomography (CT). (2 ½ marks)
(c) What is the purpose of computed tomography (CT) scanning? (2 ½ marks)
- [3] (a) What do you understand by ultrasound? (8 marks)
(b) Discuss the origin of ultrasound (12 marks)
- [4] (a) Draw a well labeled diagram of ultrasound transducer (10 marks)
(b) Explain briefly what you understand by an ultrasound transducer (10 marks)
- [5] Explain with the help of two diagrams the characteristics of piezoelectric crystal in ultrasound transducer. (Diagrams 10 marks, Explanation 10 marks)
- [6] (a) Explain the use of ultrasound coupling gel (12 marks)
(b) Outline 5 benefits and 3 limitations of ultrasound (8 marks)

- [7] (a) Explain briefly the term Nuclear Magnetic Resonance (NMR). (10 marks)
- (b) Write on any one of these magnets used in Magnetic Resonance Imaging (MRI) indicating the advantages and disadvantages (10 marks)
- (i) Permanent magnets
 - (ii) Resistive magnets
 - (iii) Superconducting magnets
- [8] (a) Draw a well labeled diagram of Magnetic Resonance Imaging (MRI) (14 marks)
- (b) List the equipments in magnetic resonance Imaging (MRI) system (6 marks)