

FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI

SCHOOL OF HEALTH TECHNOLOGY

DEPARTMENT OF BIOMEDICAL TECHNOLOGY

2011/2012 RAIN SEMESTER EXAMINATION

BMT 572: CLINICAL IMAGING TECHNOLOGY

TIME : 3Hrs

Instruction: Answer any five (5) questions.

1 Discuss the characteristics of X-rays.

Comment on the application of the ionizing properties as it concerns X-ray tube fabrication.

2a. Draw a well labeled diagram of the fourth (4) Generation Computed Tomography.

[20 marks]

b. Write short notes on the fourth (4th) Generation Computed Tomography (Rotate Fixed Scanner)

c. Explain the term positron Emission Tomography PET. What are the clinical importance of PET.

[20 marks]

3a. Define Ultrasound.

b. Write short note on the origin of Ultrasound/Sonar (i.e. Ultrasonic).

c. Outline three (3) benefits of ultrasound

[20 marks]

4a. Mention the two types of ultrasound transducer (probes) you know.

b. Draw well labeled diagram of an ultrasound transducer

[20 marks]

5a. Write short notes on the characteristic of piezoelectric crystal in ultrasound transducer.

b. Draw two diagrams to illustrate the dipoles in a piezoelectric crystal

i. when they are NOT under the influence of electric field.

ii. when they are under the influence of electric field.

[20 marks]

6a. Explain the term Nuclear Magnetic Resonance (NMR)/Magnetic Resonance Imaging (MRI)

b. What are the three (3) types of magnets used for MRI?

c. Outline the equipment used in Magnetic Resonance Imaging and draw a well labeled diagram of

MRI

[20 marks]