TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MEDICAL ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN MEDICAL ENGINEERING (DME 215 Y3 S1)

ECL 2302 : IMAGING EQUIPMENT I

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: Pick Date Select Month Pick Year

Instructions to Candidates
You should have the following for this examination
-*Answer Booklet, examination pass and student ID*
This paper consists of **FOUR** questions. Attempt any THREE questions.
Do not write on the question paper.

QUESTION ONE

(a) Differentiate the TWO main classifications of ionization radiation sources.
(4Marks)

(b) With the aid of sketches describe the two sources of x-rays radiation.
(10Marks)

(c) List any Six properties of x-rays.
(6Marks)

QUESTION TWO

(a) Describe any FOUR uses/applications of x-rays in different fields (8Marks)

(b) Describe the production of x-rays, using a basic circuit (6Marks)

(c) Differentiate between:

i. Filament current and tube current
ii. x-ray quality and quantity
iii. hard x- rays and soft x-rays   (6Marks)

QUESTION THREE

(a) Explain the need for interlock circuits in x-tray equipment.   (4Marks)

(b) Describe the functions/needs of any SIX interlock circuit in an x- ray equipment

(12Marks)

(c) List any FOUR properties of nucleus radiation.
   (4Marks)

QUESTION FOUR

Write a standard laboratory practical report you carried out during the course of your study on Imaging Equipment on cable/line resistance determination.

(20Marks)

QUESTION FIVE

An x-ray generator has the following data, 410V/6 pulse/150KeV/800mA/1s/85000N_S was used to produce a chest radiograph with the following exposure data 72KeV/540mA/0.05Sec, from the give data calculate:

(i)   Maximum primary current when the x-ray generator is operated at its maximum values.
(ii)   Primary current due to the selected exposure data
(iii)   Primary side transformer windings(N_P)
(iv)   Resultant power in watts due to the exposure
(v)   Electrons flow count due to exposure

(20Marks)