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:APRIL2016

TIME:2HOURS

DATE: Pick DateSelect MonthPick 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) Describe the need of the following circuit/elements in a radiology equipment

i. Mains compensation
ii. Cable/ line resistance compensation
iii. Filament current stabilization circuit
iv. Autotransformer
v. KV_P compensation reverse wound transformer

(10Marks)

(b) Tabulate to show FIVE difference between x- ray radiation and nucleus radiation

(10Marks)

QUESTION TWO

(a) A 410v/1640n autotransformer is used to feed the primary side of the H.T transformer of 1:550 transformation ratio, if $80KV_P$ is required at the H.T secondary side,

(i) Sketch a representative setup.

(ii) Calculate number of turns on the autotransformer secondary taps to give the required KV_P value at the H.T secondary side

(10Marks)

(b) With the aid of a sketch describe the operation of an electromagnetic circuit breaker of a radiography equipment.
(10Marks)

QUESTION THREE

(a) Define any FOUR ionization radiation units.
(8Marks)

b) Sketch and label a rotating anode x-ray tube assembly
(12Marks) (12Marks)

QUESTION FOUR

(a) Describe the processes for manual film processing
(12Marks)

(b) Explain any FOUR film storage/handling recommendations
(8Marks)

QUESTION FIVE

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

(20Marks)