TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

UNIVERSITY EXAMINATION FOR:

CERTIFICATE IN ELECTRICAL POWER ENGINEERING (CEPE 2) PP2

ENGINEERING SCIENCE II

EEP1103

END OF SEMESTER EXAMINATION SERIES**:**

MAY 2016

TIME: HOURS

DATE:

Instructions to Candidates

You should have the following for this examination

Answer booklet, examination pass and student ID

This paper consists of five Questions; Attempt any THREE Questions.*)*

DO not write on the question paper.

QUESTION ONE

a (i) Describe the following temperature scales:-

I. Fahreinheit
II. Kelvin
III. Celcius (6marks)

b (i) Describe with the aid of a diagram a clinical thermometer

(ii) State one advantage and one disadvantage of using alcohol and mercy thermometers (9 marks)

C Explain the lower fixed point and the upper fixed point of a thermometer.

QUESTION TWO

a (i) Define the following terms:-

I. Specific heat capacity
II. Heat Capacity
III. Heat exchange (6marks)

b (i) Describe the experiment used to measure specific heat capacity of a metal for example copper (6marks)

(ii) State three factors that affect the process of evaporation of a liquid.

c Explain the principle of refrigeration (8marks)

QUESTION THREE

a (i)Describe the three methods of heat transfer

(ii) State the difference in the way in which heat is transmitted by conduction and radiation (9marks)

B(i) Explain blackbody radiation

(ii) Define the term latent heat of fusion of a solid (7marks)

(c) Explain the difference between heat and temperature (4marks)

QUESTION FOUR

(a)(i) Define the following terms:-

I. Velocity

II. Acceleration

(ii) A train has a uniform acceleration of $0.5m/s^2$ along a straight track. Calculate (i) the velocity after an interval of 20 seconds from stand still.

(ii) The time required to attain velocity of 40km/h (6marks)

b (i) Explain the term " moment of a force"

(ii) A light beam AD rests on support at B and C, a load of 5N is placed at O, where BO is 40cm and CO is 60 cm. find the reactions P and Q at the supports (6 marks)

C A boy on a bicycle accelerated uniformly at $1m/s^2$ for 10 Seconds from an initial velocity of 4m/s . Calculate the distance travelled in this time (4marks)

QUESTION FIVE

(a)(i) State Newton's laws of motion

(ii) A ball is thrown vertically upwards from the ground with a velocity of 30m/s . Calculate (I) the maximum height reached (II) time taken to reach the maximum height (8 marks)

(a) (i) Define the following terms:-

I. Centre of gravity

II. Kinetic energy (5marks)

(ii) A box of mass 4kg is allowed to drop freely from rest from a height 6m above the ground, calculate (i) its potential energy

(II) Its kinetic energy when it has fallen a distance of 3m from rest. (7marks)