TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

DIPLOMA IN BUILDING AND CIVIL ENGINEERING

EBC 2203: STRENGTH OF MATERIAL I

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination

- Answer booklet
- Calculator

This paper consists of **FIVE** questions
Answer any other **THREE** questions
Use neat, large and well labelled diagrams where required
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed papers.

QUESTION ONE

a. Defined the following terms
   i. Working stress
   ii. Tangent modulus
   iii. Strain hardening **(6marks)**

b. With an aid of a diagram illustration the stress/stain relationship **(8marks)**

c. A bar of sectional area 1250mm^2 and 2.0m length extend to 0.4mm when an axial load of 52.5KN was applied calculate the young modulus for the material. **(6marks)**

QUESTION TWO

A specimen has an initial gauge length of 55mm and X area of 150mm^2

Lord KN	0	10	20	30	35	38	40
Extension mm	0	0.075	0.15	0.23	0.30	0.38	0.6

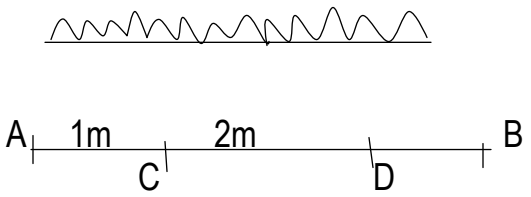
A test of the specimen gave the above result.

a) Draw the stress strain curve and determine
   i. Modular of elasticity
   ii. Ultimate stress
   iii. Breaking strength

(20marks)

QUESTION THREE

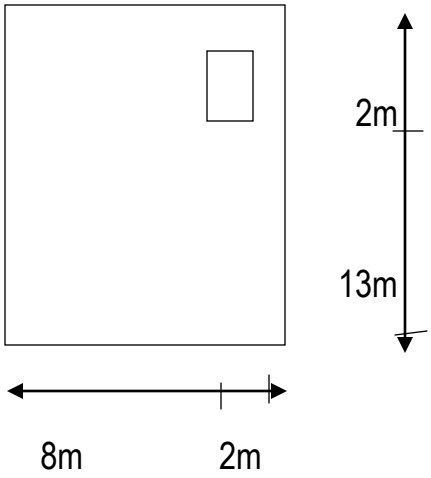
Draw the shear force and bending moment diagram for a simple supported beam loaded as shown.



(20marks)

QUESTION FOUR

i) Determine the center of gravity of the figure below



(6marks)

ii) From first principal show how to determine the center of gravity by method of moment. (**10marks)**

iii) Distinguish between centroid and center of gravity. **(4marks)**

QUESTION FIVE

Using method of section analyze the truss below **(20 marks)**