THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

DIPLOMA IN BUILDING & CIVIL ENGINEERING (DC 011)
DIPLOMA IN CIVIL ENGINEERING (DBC 011)

EBC 2212: THEORY OF STRUCTURES II

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: OCTOBER 2012
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions. Answer any **THREE** questions
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

Question One (20 marks)

a) States the first and second Mohr's Theorem and give their mathematical expressions. **(4 marks)**

b) Figure 1 shows a simple beam supported at point A and B and acted on by two moving points loads 1.0 apart.
   i) Sketch the influence line diagrams for RA, RB, shear force and bending moment at point E on the beam.
   ii) Determine the maximum shear force and bending moment at point E on the beam. **(16 marks)**

C

Question Two (20 marks)

A simple supported beam has a span of 20m. A uniformly distributed load of 20KN/m and 5m long crosses the span. Find the maximum bending moment produced at a point 8m from the left support.
                                                                                          (20 marks)

Question Three (20 marks)

A cantilever 12cm wide and 20cm deep is 2.5m long. What uniformly distributed load should the beam carry to produce a deflection of .0.5cm at the free end?
Take $E = 2 \times 10 kg/cm^2$.   **(20 marks)**

Question Four (20 marks)

Using Macaulay's method, determine deflection at mid-span for figure 2.   **(20 marks)**

3m

Question Five (20 marks)

Using influence lines, determine the maximum bending moment at a point 20m from the left hand support of the girder shown in figure 3 when the loads move from A to B.   **(20 marks)**

30KN