TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

DIPLOMA IN BUILDING & CIVIL ENGINEERING (CBCE 13S & 13S)

EBC 2207: THEORY OF STRUCTURES II

END OF SEMESTER EXAMINATION
SERIES: APRIL 2015
TIME ALLOWED: 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 of the **FIVE** questions
Maximum marks for each part of a question are as shown
Use neat, large and well labeled diagrams where required

This paper consists of **THREE** printed pages

Question One

a) State Mohr's Theorems for slope and deflection **(6 marks)**

b) Derive expressions for slope and deflection for the following cases:
   (i) Cantilever beam with point load and free end
   (ii) Uniformly distributed load over entire span
   - Use Mohr's Theorems
   - EI = constant **(14 marks)**

Question Two

Determine maximum slope and deflection for the section of beam in figure 1 using Mohr's Theorems.

$E_{steel} = 206KN/mm^2$ **(20 marks)**

25mm

Question Three

a) Derive expression for slope and deflection in figure 2. Use Macaulay's method **(8 marks)**

A

b) Determine maximum deflection for the beam in figure 3 using Macaulay's method.
Esteel = 210KN/mm^2
I = Constant

30KN

Question Four

a) Illustrate diagrammatically the shapes of deflected beams for the following cases stating points of maximum slope and deflection:
(i) Cantilever beam with point load at free and
(ii) Uniformly loaded beam over entire span **(8 marks)**

b) Determine maximum slope and deflection with a point load of 10KN on a cantilever beam over a span of 1.5m
Load acts at free and
E = 210KN/mm^2
I = constant **(12 marks)**

Question Five

Determine maximum deflection for the beam in figure 4 using Macaulay's method **(20 marks)**

1.0m