THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

HIGHER DIPLOMA IN BUILDING CONSTRUCTION (HDBC 12J)

EBC 3111: THEORY OF STRUCTURE III

END OF SEMESTER EXAMINATION
SERIES: AUGUST 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 **THREE** printed pages

Question One (20 marks)

Using the three-moment theorem analyze the beam of uniform cross-section shown in figure 1 and sketch the shear force and bending moment diagrams indicating the critical values. **(20 marks)**

20KN

Question Two (20 marks)

Using the moment distribution method analyze the shown in figure 2 and sketch the force and bending moment diagrams indicating the critical values. **(20 marks)**

D

Question Three (20 marks)

Using the three-moment theorem, analyze the beam shown in figure 3 and sketch the bending moment diagram indicating the values at the critical points. **(20 marks)**

20KN

Question Four (20 marks)

Analyze the beam shown in figure 4 using the method of moment distribution and sketch the bending moment diagram indicating the critical values. **(20 marks)**

1.5I

Question Five (20 marks)

a) Using the method of moment distribution analyzes the portal frame shown in figure 5 and hence sketch the bending moment diagram indicating the values at all critical points. Make only four distributions. **(14½ marks)**

Fig. 5

b) Determine the reactions at A and D and sketch the deflected shape. **(5½ marks)**