THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

Faculty of Engineering and Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

HIGHER DIPLOMA IN BUILDING & CIVIL ENGINEERING
DIPLOMA IN CIVIL ENGINEERING
DIPLOMA IN BUILDING & CIVIL ENGINEERING

EBC 2212: THEORY OF STRUCTURE II

END OF SEMESTER EXAMINATION

SERIES: AUGUST/SEPTEMBER 2011

TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination

- *Answer booklet*

This paper consists of **FIVE** questions
Answer question **ONE** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **FOUR** printed pages

SECTION A (COMPULSORY)

Question 1

Fig 1.0

a) Determine support reactions at supports A and B for the three-pinned arch in figure 1 (10 marks)

b) Determine bending moments points P, Q and R (20 marks)

SECTION B (Answer *any TWO questions from this section*)

Question 2

a) Sketch influence diagrams for the beam loaded as shown in Figure 2 for reactions A, B and also influence line diagrams for shear force and bending moments at point E. (14 marks)

b) Determine shear force and bending moments at point E for the two travelling loads shown. (6 marks)

Fig 2.0

Question 3

a) Determine reactions at points A and B in figure 3. (6 marks)

b) Determine bending moments at points D, E and F (14 marks)

Fig 3.0

Question 4

a) Define the following:

(i) Reactions influence line
(ii) Shear force influence line
(iii) Bending moment influence line
(iv) Deflection influence line (8 marks)

b) Determine positive shear force and bending moment at point E for the beam loaded as shown in: *Fig 4.0* (12 marks)

Question 5

Using the method of joint resolution, determine the member forces and their nature for the frame shown in:

Figure 5.0