THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)
Faculty of Engineering and Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

HIGHER DIPLOMA 12

EBC 3112: THEORY OF STRUCTURES II

END OF SEMESTER EXAMINATION

SERIES: APRIL 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 clearly shown
This paper consists of **FOUR** printed pages

Question 1 (20 marks)

a) Determine support reactions at support A and B for Three-pinned parabolic arch in figure 1

(15 marks)

b) Determine moments at points P, Q and R

(5 marks)

B

Question 2 (20 marks)

a) Sketch influence line diagrams for reaction A, B and also influence diagrams for shear force and bending moment at point E for the beam in figure 2

(14 marks)

b) Determine shear force and bending moment at point E for the TWO travelling loads

(6 marks)

D

Question 3 (20 marks)

a) Determine reactions A and B for the three-pinned arch in figure 3

(14 marks)

b) Determine bending moments at point D and E   (6 marks)

D

Question 4 (20 marks)

a) Define the following:
       (i)   Reaction 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 C for the beam subjected to travelling load in figure 4

4.0m

Question 5 (20 marks)

a) Sketch shear stress diagram for the section of beam in figure 5   (12 marks)

b) Sketch bending stress diagram for the beam in figure 5   (8 marks)

Fig. 5(a)

25KN