



MACHAKOS UNIVERSITY

University Examination 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING AND CIVIL ENGINEERING
SECOND YEAR SECOND SEMESTER EXAMINATION FOR
DIPLOMA IN CIVIL ENGINEERING
BCECD 213 THEORY OF STRUCTURE II

DATE: 6/5/2019

TIME: 2:00 – 4:00 PM

INSTRUCTIONS

This paper consists of FIVE questions

Answer question one and other two questions in this paper

1. a) A uniformly distributed load 20KN/M of 5M length cross a girder of span 20M from left to right with the help of influence lines, determine the values of shear force and bending moment at a point 8m from the left support, the head of the load is 11M from the left support. (20 marks)
- b) Explain three importance of studying influence lines (4 marks)
- c) State four statically determinate structure. (4 marks)
2. Find the forces in AB, AD, AC and equilibrium EG, FG and FH on the right hand side. (20 marks)

3. a) Construct the influence line for:-
- i) Reaction of A and B.
 - ii) Shear at point C
 - iii) Bending moment at point C in the following figure.

(10 marks)

- b) Obtain the internal force diagram (SFD and AMD) for the beam

4. a) Find the forces in all members in the figure.

(10 marks)

- b) A train of 5 wheel-loads as shown crosses a simply supported beam of span 22.5 meters. Calculate the maximum negative and positive shear force values of the centre of the span and the absolute maximum bending moment anywhere in span.

(10 marks)

5. a) Two-point loads of 80kN and 160kN spaced 2m apart, cross a girder of span 10m with the 80kN load leading from left to right. Draw the influence lines for shear force and bending moment and find the value of maximum shear force and bending moment at section 4m from the left end support. (10 marks)
- b) In the following, width of 2kN/m, 6m long crosses a girder of span 24m. Determine values of S.F and B.M at a point E. (10 marks)