



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

INSTITUTION BASED PROGRAMME

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN BUILDING AND CIVIL ENGINEERING

EBC 2207 : THEORY OF STRUCTURES II

SPECIAL SUPPLEMENTARY EXAMINATION

SERIES: JULY 2017

TIME: 2 HOURS

DATE: Pick Date Sep 2017

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

- Pocket calculator

This paper consists of **FIVE** questions. Attempt any **THREE** questions.

Do not write on the question paper.

Mobile phones are not allowed in the examination room.

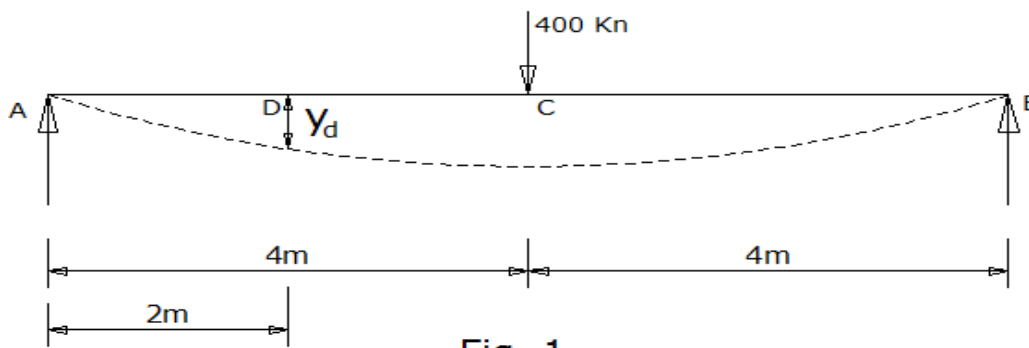
1. a) Using the Mohr's moment area method, show that the deflection at the end of a cantilever carrying a uniformly distributed load is given by

$$y_b = -\frac{wL^4}{8EI}$$

(10 marks)

- b) Obtain the expression for the slope at the supports and deflection at mid span of a simply supported beam carrying a centrally placed point load. (10 marks)

2. A timber joist of rectangular section is to carry a uniformly distributed load of 15 Kn over the full length of its span of 4m. Determine the dimension of a suitable section that will not deflect more than 20 mm. Take EI for timber to be 10Kn/mm² (20 marks)
3. A universal beam is simply supported and carries a single concentrated load of 105 Kn at the mid point of its span of 7.5 m. The second moment of area of the section is 100x10⁶ mm⁴ and young's modulus of elasticity of 210 Kn/mm². Calculate the maximum deflection due to the load. (20 marks)
4. The figure 1 below shows a simply supported beam carrying a concentrated load at the mid span. Determine (a) The maximum deflection
(b) The slope and deflection at quarter span, point D on the beam.
Take EI= 80x10³ Kn/m² (20 marks)



5. For the loaded beam shown in figure 2 below, determine the shearing force and bending moments at all critical points hence draw the S.F.D and B.M.D.

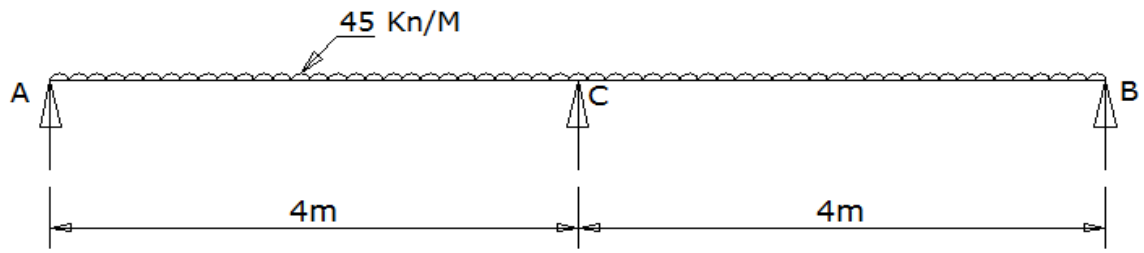


Fig. 2