TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN CIVIL ENGINEERING

EBC 2207 : THEORY OF STRUCTURES II

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2019

TIME: 2 HOURS

DATE: Pick Date Aug 2019

Instructions to Candidates
You should have the following for this examination
   -*Answer Booklet, examination pass,a scientific calculator and student ID*
This paper consists of **FIVE** questions. Attempt any THREE questions.
Do not write on the question paper.

Question ONE

(a) (i) State Mohr's theorems for slope and deflection
   (ii) Using the theorem in (i) above,derive the expressions for maximum slope and   deflection for a simply
   beam of span L carrying a uniformly distributed load W KN/m along its span.   (7 marks)

(b) Figure 1 shows a cantilever beam of uniform section.Assuming E=210KN/mm^2,use Macaulay's method
   to determine the maximum slope and deflection on the beam   (13 marks)
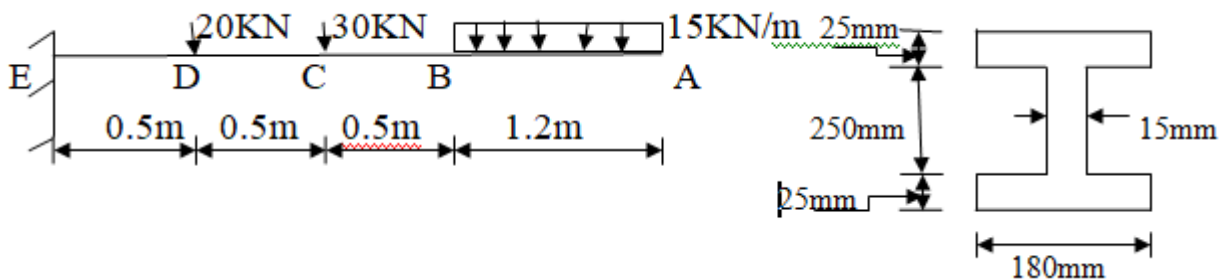
Question Two

Determine deflection under each point load of the beam shown in figure 2 using Macaulay's method; Take E=2.0×10^5N/mm^2, I=10^9mm^4 (20 marks)
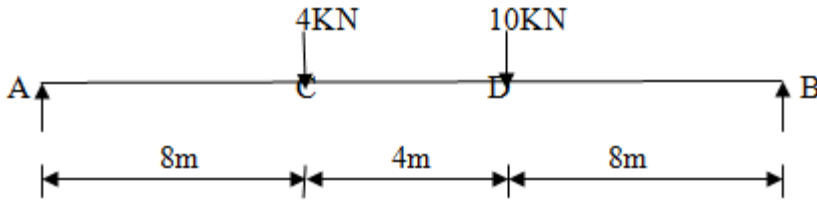

Fig. 2

Question Three

Obtain the expressions for the slope at the supports and the deflection at mid-span for a simply supported beam carrying a centrally placed concentrated load as shown in fig.3 (20 marks)
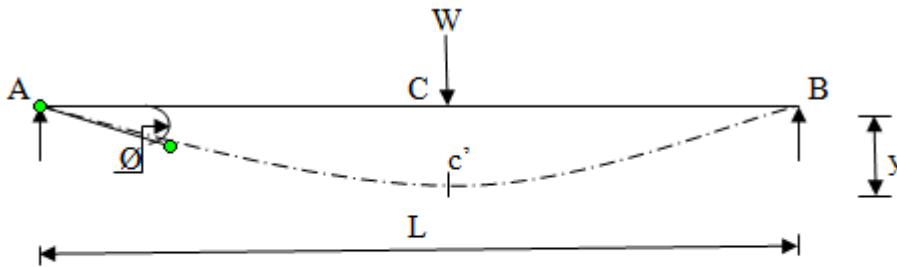

Fig. 3

Question Four

A horizontal beam shown in Figure 4 is of uniform section and 6m long is simply supported at its ends. Two vertical concentrated loads of 48KN and 40KN acts 1m and 3m respectively from the left hand support. Determine the position and magnitude of the maximum deflection if; E=200GN/m^2 and I=85×10^{-6}m^4

(20 marks)

3m

1m

48KN   40KN   x₁

R₁   xi   R₂
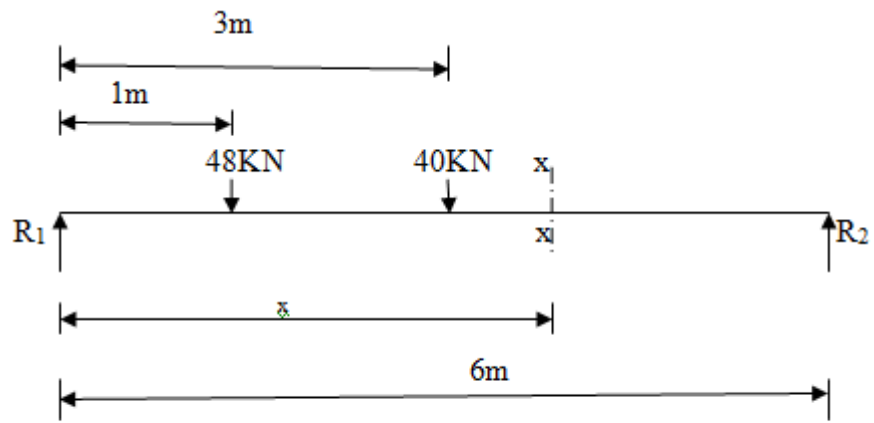
x̄

6m

Fig. 4

Question Five

Obtain expressions for the slope and deflection at the free end of the cantilever shown in figure 5 (20 marks)

W

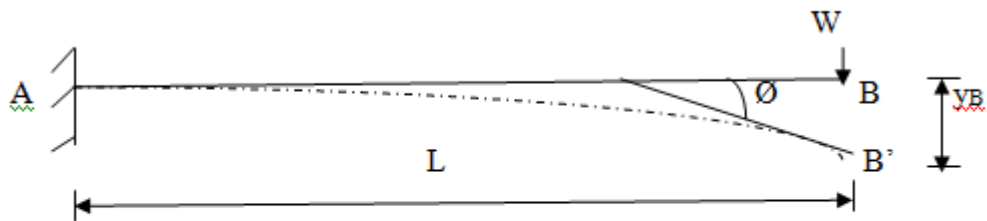A   Ø   B   ↕vB

L   B'

Fig. 5