AFE BABALOLA UNIVERSITY

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ADO-EKITI (ABUAD)

ABUAD

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COLLEGE OF ENGINEERING
CIVIL ENGINEERING DEPARTMENT

Instructions Attempt questions.

Q1.
  i.   Write the virtual work procedure for plane frame analysis.
  ii.   Write the virtual equation.
  iii. Using the principle of virtual work, determine the vertical deflection component of joint C of the truss shown in figure 1. Take $E = 150 \times 10^6$ kN/m^2 and cross-sectional area of each bar $= 50 \times 10^{-6}$ m^2.
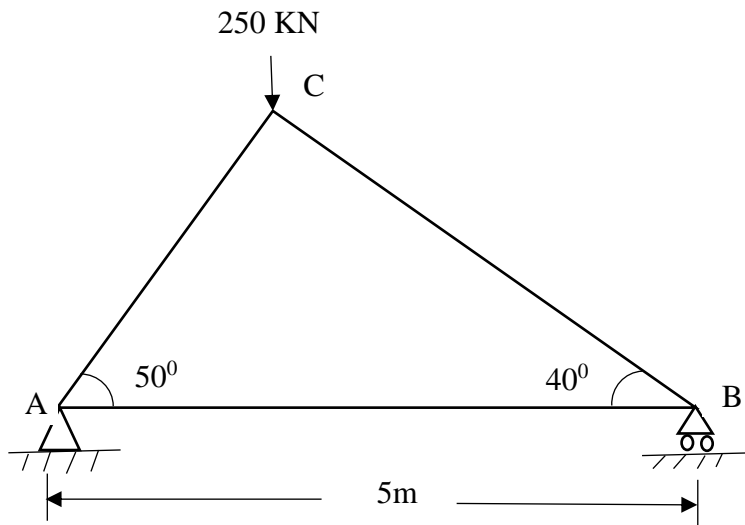
250 KN

figure 1.

Q2.   Using the principle of virtual work, determine the horizontal deflection component of joint C of the truss shown in figure 2. Take $E = 150 \times 10^6$ kN/m^2 and cross-sectional area of each bar $= 50 \times 10^{-6}$ m^2.
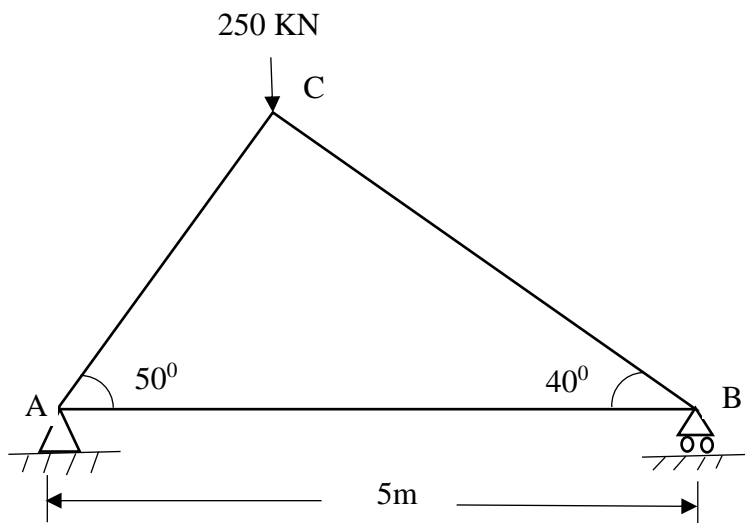
250 KN

figure 2.

Q3.
  i.   State the two theorems for moment area method of analysis and write the mathematical expressions for both theorems.

ii. Using moment area method, determine the slope and deflection at the free end of a cantilever beam. See Figure 3.
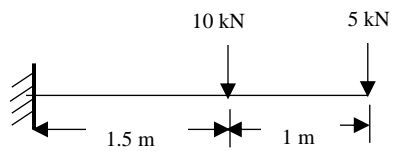
Take EI= 4000kN/m^2

Figure 3.

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