



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

DIPLOMA IN BUILDING AND CIVIL ENGINEERING

EBC 2207: THEORY OF STRUCTURES II

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination

- Answer booklet
- Scientific calculator

This paper consists of **FIVE** questions

Answer any other **THREE** questions

Use neat, large and well labelled diagrams where required

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed papers.



ECE 2207: THEORY OF STRUCTURES II

QUESTION ONE

- Briefly explain the procedure for the determination of truss deflection **(6 marks)**
- A cantilever 8 metres long is carrying a point load of 12kN at the free end. Determine the slope and deflection at a point 4 metres from the fixed end. Take $E=20\text{GPa}$ and $I=360\times 10^6\text{mm}^4$ **(8 marks)**
- Explain the procedure for the determination of slope and deflection by the McCauley's method **(6 marks)**

QUESTION TWO

Figure Q2 below shows a pin-jointed truss ABCD carrying both a vertical and a horizontal load at joint B as indicated. Determine the vertical and horizontal displacement at joint B. Take $AE=100\times 10^3\text{KN}$. **(20 marks)**

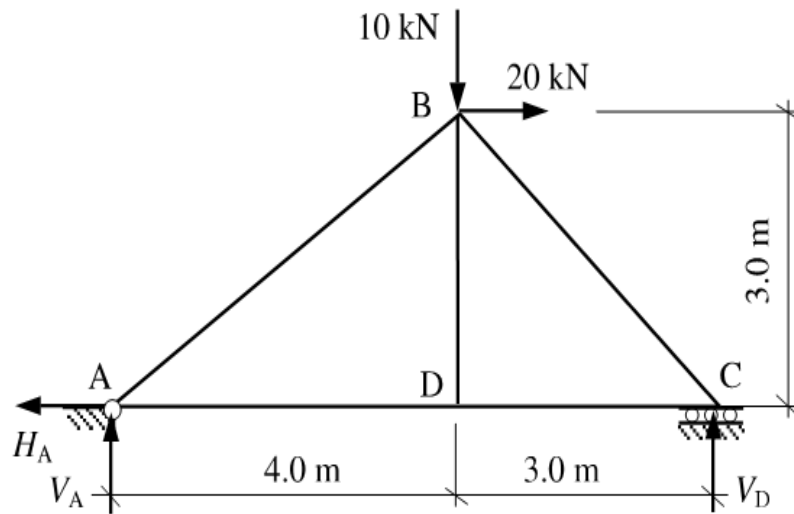


Figure Q2

QUESTION THREE

Figure Q3 shows a loaded simply supported beam. Determine the slope and deflection of the beam at the point under the point load by the McCauley's method. Take $E=207\text{GPa}$ and $I=10^{10}\text{mm}^4$ **(20 marks)**



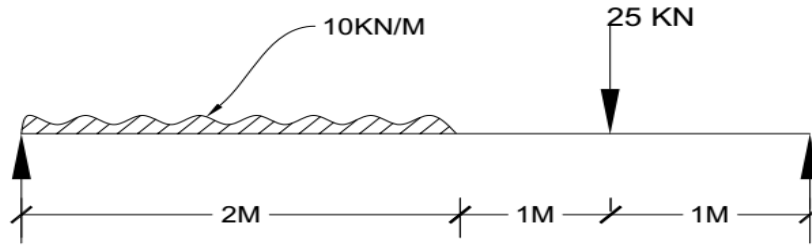


Figure Q3

QUESTION FOUR

Figure Q4 below shows a simply supported beam of span 3.6 metres. It partially carries a uniformly distributed load of 1500N/M along its span, an anticlockwise moment of 1440Nm is applied to the beam at a point C 1 metre from support A. Determine the slope and deflection at point C. (20marks)

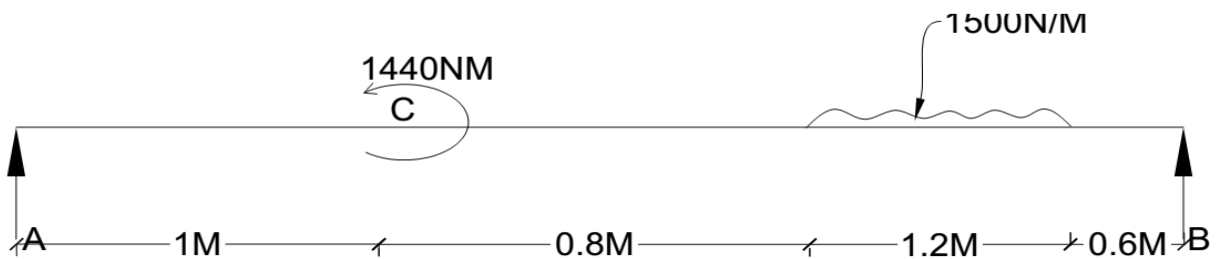


Figure Q4

QUESTION FIVE

Figure Q5 shows an overhanging beam carrying a uniformly distributed load of 1kN/m Using the Mohr's moment area theorem determine the slope and deflection at point C. Take $E=200\text{GPa}$ and $I=250 \times 10^6\text{mm}^4$ (20marks)

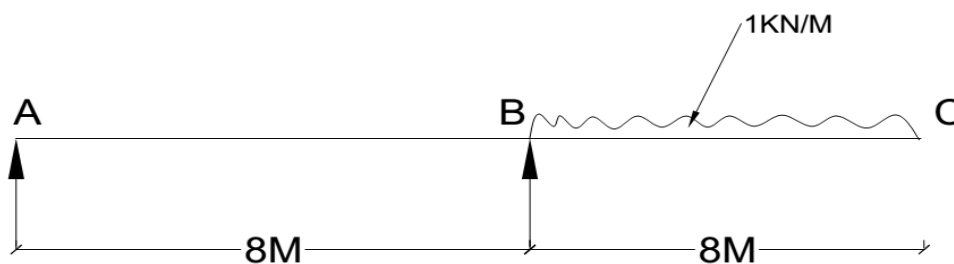


Figure Q5