UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2015/2016

COURSE NAME	:	STRUCTURAL ANALYSIS
COURSE CODE	:	BPD 20403
PROGRAMME CODE	:	BPC
EXAMINATION DATE	:	JUNE/JULY 2016
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

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Q1 A plane-truss as shown in **Figure Q1** have been imposed loads at two points, namely B and C. The loads imposed are 12kN and 24kN at point B and 18kN at point C.

(a) Analyse the stability of the plane-truss.

(10 marks)

(b) Calculate the internal forces of each member of the plane-truss using the method of joints.

(15 marks)

Q2 A frame as shown in **Figure Q2** has been imposed 5kN and 10kN loads at point C. The frame is pinned at point A and roller support at D.

(a) Analyse the stability of this frame.

(10 marks)

(b) Calculate the internal forces of member AB, BC and CD by using the method of section.

(15 marks)

Q3 A cantilever beam as shown in **Figure Q3** is loaded with uniformly distributed load of 10kN/m along 6m. The cantilever beam also loaded with point loads of 20kN and 10kN at point C and D respectively.

(a) Calculate the reaction forces at A.

(5 marks)

(b) Draw Shear Force Diagram (SFD) at point A, B, C and D.

(10 marks)

(c) Draw Bending Moment Diagram (BMD) at point A, B, C and D.

(10 marks)

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Q4 A beam as shown in **Figure Q4** is subjected to point loads of 15kN and 10kN at points B and C.

(a) Calculate the reaction forces at points A and D.

(5 marks)

(b) Compare with examples the Macaulay method and the Double Integration method for the calculation of deflection of this beam.

(10 marks)

(c) Calculate the deflection at points B and C using Macaulay method in EI form.

(10 marks)

- END OF QUESTIONS -

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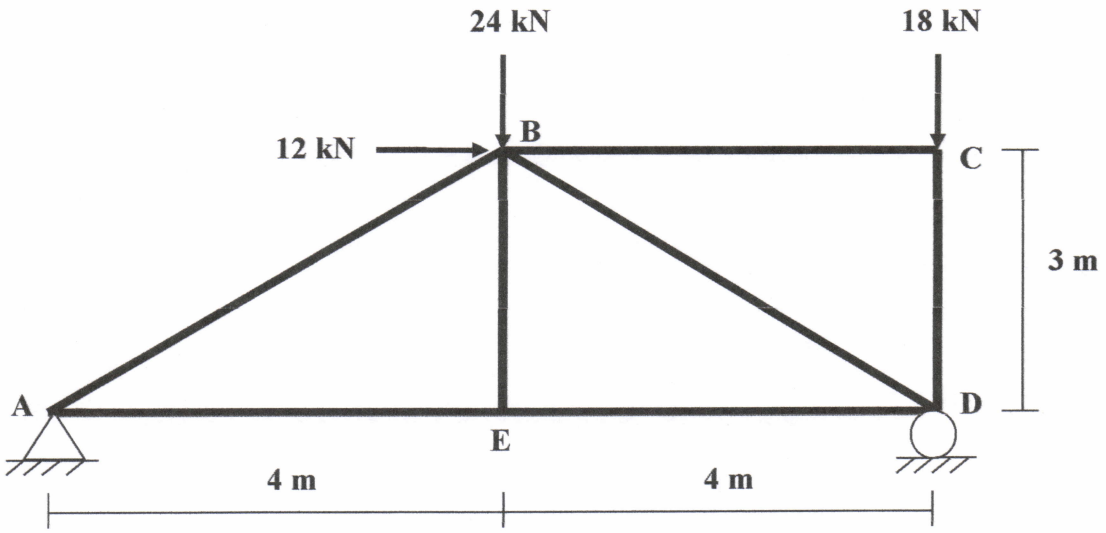

Figure Q1

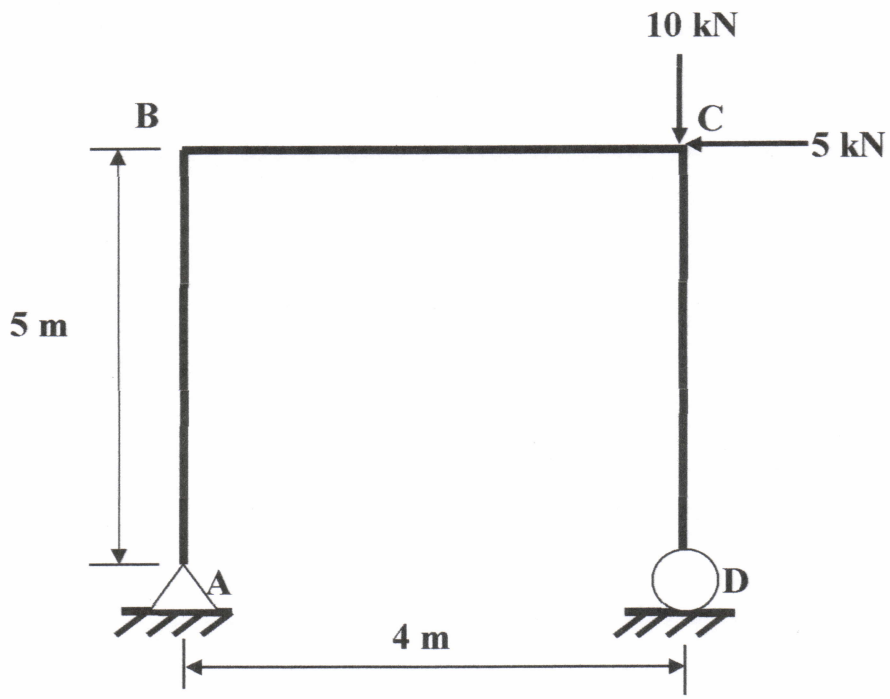

Figure Q2

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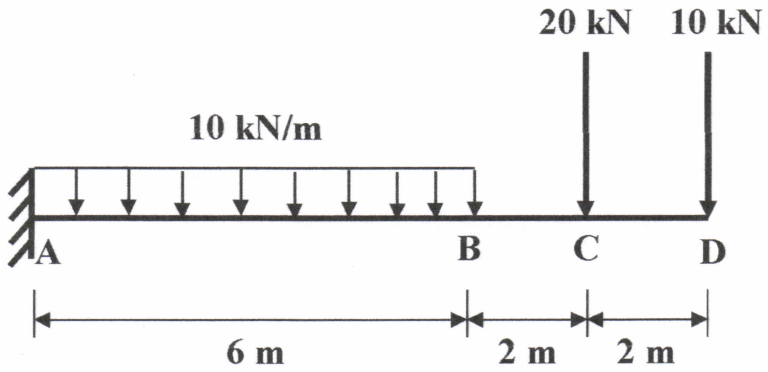

Figure Q3

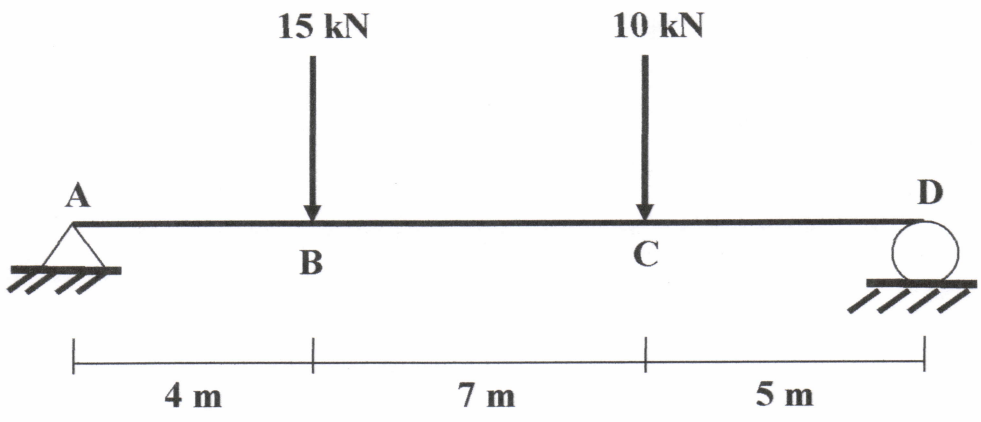

Figure Q4

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