TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN BUILDING AND CIVIL ENGINEERING

EBC 2207 : THEORY OF STRUCTURES II

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: 22 Dec 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

-Drawing instruments.

This paper consists of five questions.

Attempt any THREE questions.

Do not write on the question paper.

Question One

A uniform beam of length 20 metres is simply supported at its ends. It carries two concentrated loads as shown in figure Q1 below. Determine the deflection of the beam at points C and D by the McCauley's method. Take E=207GPa and I=10^{10}mm^4 **(20 marks)**

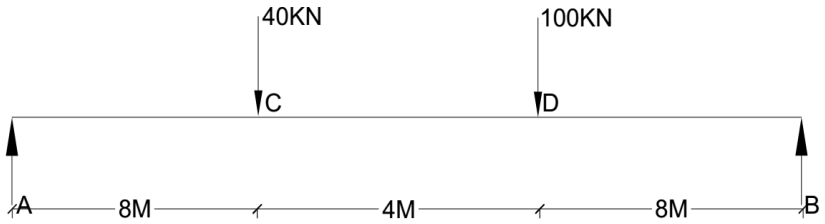

Figure Q1

Question Two

Figure Q2 below shows a simply supported beam, determine the slope at support A and deflection at midspan. Given the flexural rigidity EI=300MNm^2 **(20 marks)**

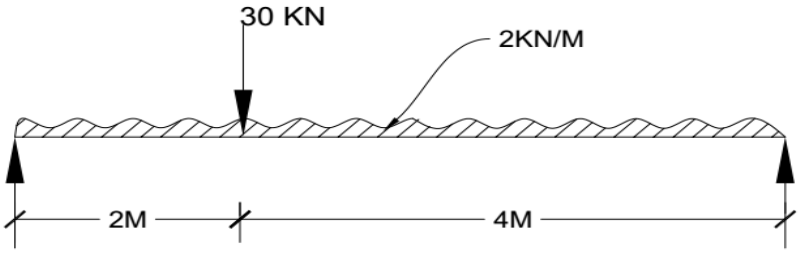

Figure Q2

Question Three

i. State the Mohr's theorems **(4 marks)**

ii. Using the Mohr's moment area theorem, determine the slope at point C of the beam in Figure Q3 shown below. Take E=200GPa I=360x10^6mm^4 **(16 marks)**

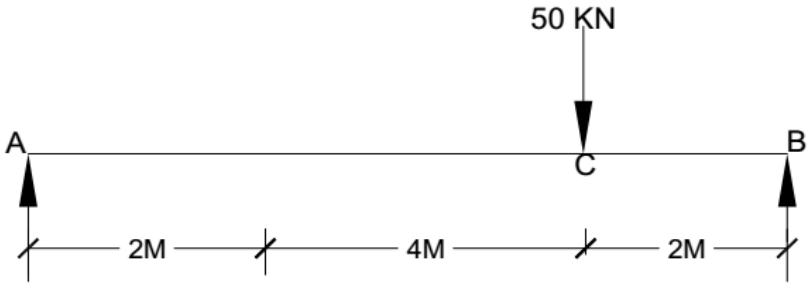

Figure Q3

Question Four

i. Briefly discuss the procedure used in determining deflections in trusses **(6 marks)**

ii. Using the McCauley's square bracket method determine the deflection of the beam in Figure Q4 at a point 3m from left hand support. Take the flexural rigidity EI of the beam to constant **(14 marks)**

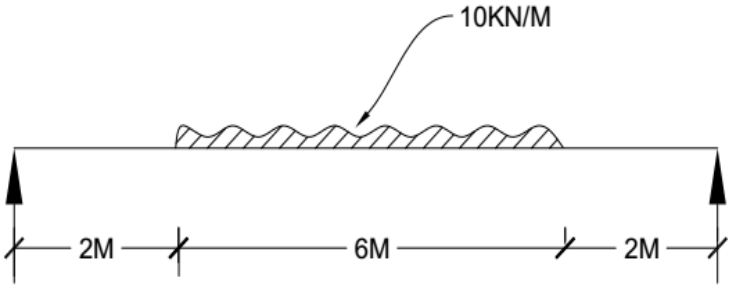

Figure Q4

Question Five

Figure Q5 shows a warren truss ABCDE carrying a vertical load of 3KN at joint E as indicated. Given A=645mm^2 and E=200kN/mm^2 for each of the truss members, determine the vertical deflection at joint E. **(20 marks)**

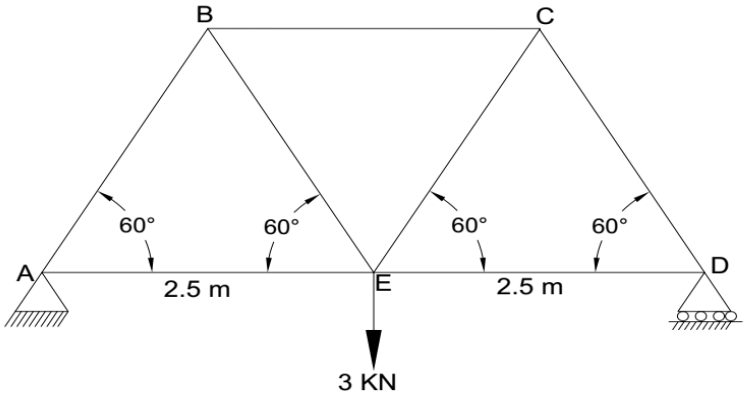

Figure Q5