



MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND YEAR FIRST SEMESTER EXAMINATION FOR

DIPLOMA IN CIVIL ENGINEERING

2707 202: STRUCTURES II

DATE: 30/8/2021

TIME: 11:30 – 2:30 AM

Instructions:

- This paper consists of **Six** questions.
- Answer **five** questions
- Maximum marks for each part of the question are as shown.

1. Figure 1 shows a loaded beam.

- Calculate the reactions
- Draw the shear force diagram
- Draw the bending moment diagram

(20 marks)

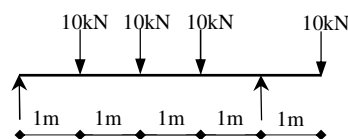


Fig. 1

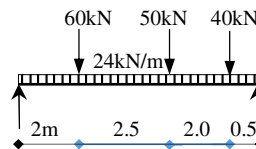


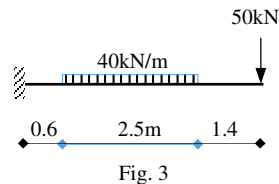
Fig. 2

2. A beam is loaded as shown in figure 2.

- Draw the shear force and bending moment diagrams
- Determine the position of the maximum sagging bending moment
- Calculate the maximum sagging bending moment

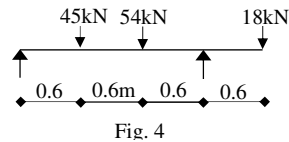
(20 marks)

3. A cantilever beam is loaded as shown in figure 3.



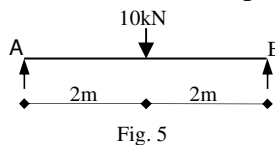
- a) Calculate the reaction
- b) Draw the shear force and bending moment diagrams (20 marks)

4. Figure 4 shows a loaded beam.



Determine the following values:

- a) The reactions
 - b) Draw the shear force diagram
 - c) Draw the bending moment diagram (20 marks)
5. Figure 5 shows a simply supported beam carrying a concentrated load at mid span. Using Mohr's theorems determine the maximum slope and deflection. (20 marks)



6. Figure 6 shows a simply supported beam carrying a concentrated load at mid span.
- a) Using Macaulay's method determine the maximum deflection
 - b) Using Mohr's theorems determine the slope and deflection at the quarter span point marked C (20 marks)

