

UNIVERSITY OF ZAMBIA
SCHOOL OF ENGINEERING
DEPARTMENT OF MECHANICAL ENGINEERING

MEC 3351 – STRENGTH OF MATERIALS I

Assignments 3 – Shear Force & Bending Moments

Due Date: 3rd August 2023

Attempt ALL questions. You will be advised on the due date which questions you will be required to answer in class for submission as assignment.

1. The shear force diagram of a loaded beam is shown in Figure Q1. Determine the loading and nature of the beam and determine the bending moment diagram indicating important ordinates and points of contra-flexure if any.

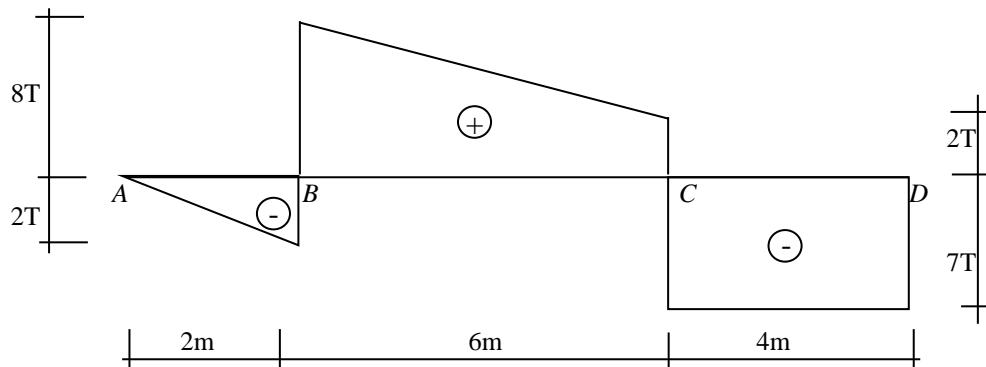


Figure Q1

2. Calculate the value of the uniformly distributed load w so that the bending moment at point C for the beam shown in Figure Q2 is 5tm. Draw the resultant shear force and bending moment diagrams for this beam for the calculated value of w .

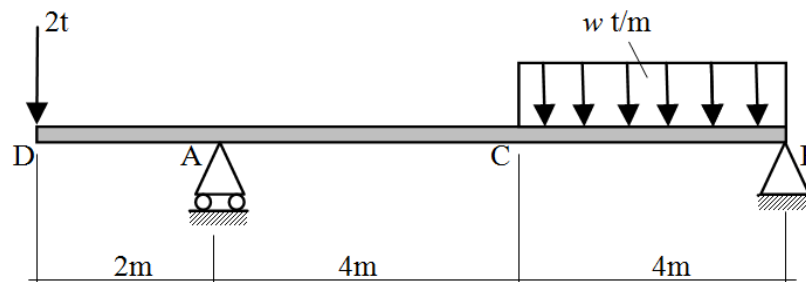


Figure Q2

3. A beam 8.5 metres long rests on supports 5 metres apart, the right hand end overhanging its support by 2 metres and the left end by 1.5 metres as shown in Figure Q3. the beam carries a uniformly distributed load of 5 tonnes per metre run between the supports only. The beam also carries a point load of 6 tonnes at the right hand end and a point load of 4 tonnes at the left hand end.
- Construct the shear force stating thereon all the important values of shear force and bending moment.
 - State the positions of points of inflexion on the beam.

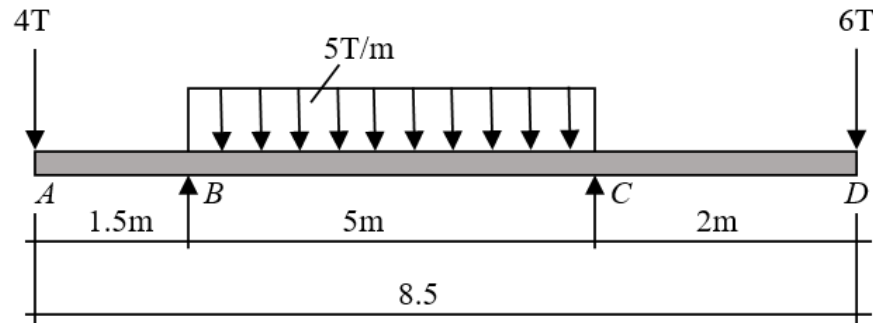


Figure Q3

4. Draw the SF and BM diagrams, for the beam shown in Figure Q4, indicating important their values and distances.

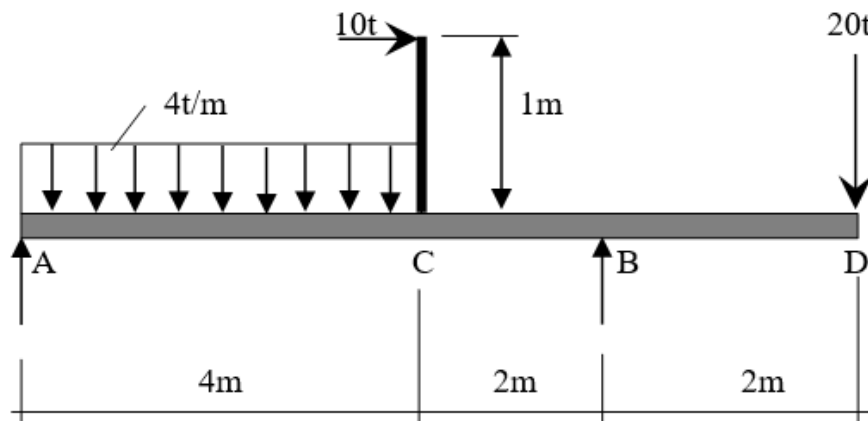


Figure Q4