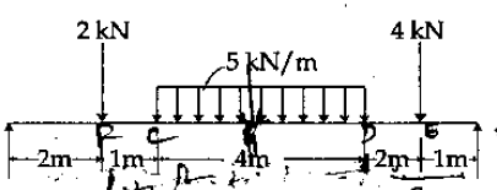
Problems Based on Beams

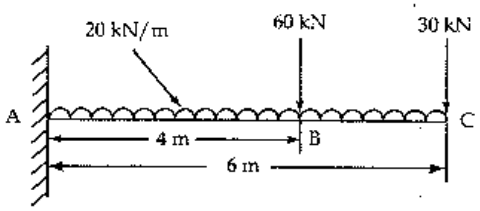
2005–2006 (Sem. I) (TME101)

1. Define a beam. What are the different types of beams and different type of loading? What do you understand by the term point of contraflexure?
2. A simply supported beam is subjected to various loadings as shown in fig 3. Sketch the shear force and bending moment diagrams showing their values at significant locations.



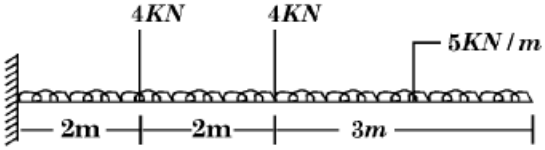
2005–2006 (Sem. II) (TME201)

1. Define a beam and classify different types of beams on the basis of support conditions and loadings. What do you understand by 'Shear force' and 'Bending-moment' and what is their importance in beam design? What do you understand by statically determinate beams?
2. Explain, how shearing force and Bending moment diagrams are drawn for a beam. Also, draw the Shear Force and Bending moment diagrams for the cantilever beam shown in figure:



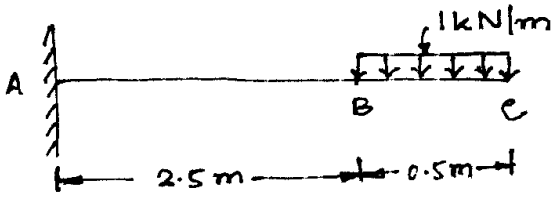
2006–2007 (Sem. II) (TME201)

1. Derive the relationship between shear force, bending moment and the loading for a beam. What are the assumptions required for this derivation?
2. Draw the SF and B.M Diagram for the beam shown in fig.3.



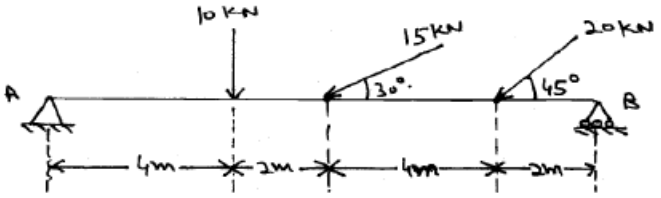
2006–2007 (Sem. II) (ME202)

1. Draw the bending moment diagram of the cantilever beam shown in the figure.

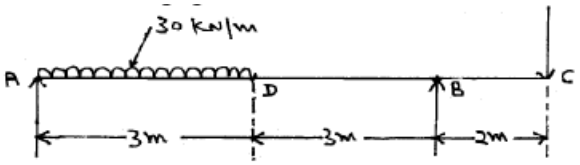


2006–2007 (Sem. I & II) (TME101/TME201) [SCOP]

1. The beam *AB* of span 12 m shown in fig is hinged at *A* and is on rollers at *B*. Determine the reactions at *A* and *B* for the loading.

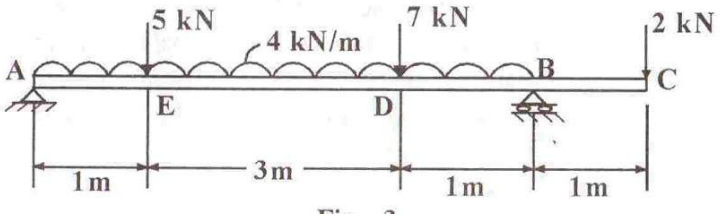


2. Draw S.F. and B.M. diagram for the following overhanging beam.



2007–2008 (Sem. I) (TME101)

1. For the overhanging beam as shown in fig-3, draw the shear force and bending moment diagrams. Find out the position and magnitude of maximum bending moment. Also determine the location of any point of contraflexure.

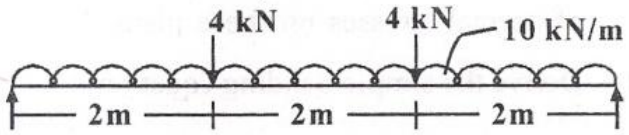


2. Why shear force and bending moment appear in a loaded beam? Develop an expression between loading, shear force and bending moment.

2007–2008 (Sem. II) (TME201)

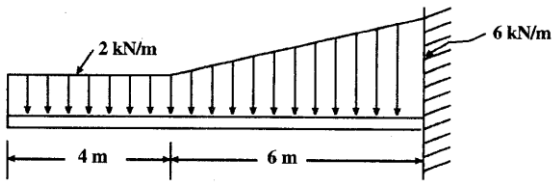
1. Define a beam. Explain how shear force and^ bending moments are developed at different sections of the beam.

2. Draw the shear force and bending moment diagrams for the beam shown in figure.

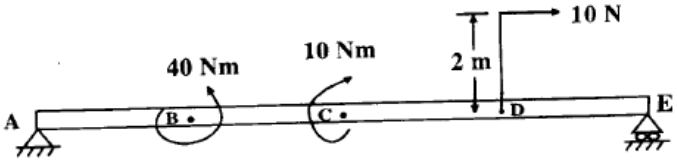


2008–2009 (Sem. I) (EME102)

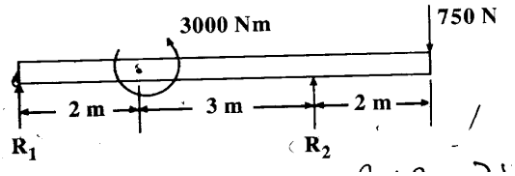
1. Find the shear force and moment equation for the cantilever beam shown in figure. Also sketch the shear force and bending moment diagram.



2. Determine the reactions at A and B.

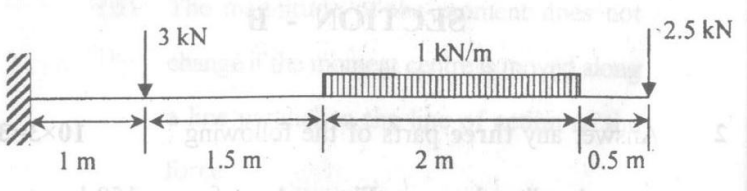


3. Draw the shear force and bending moment diagram for the beam shown in figure.

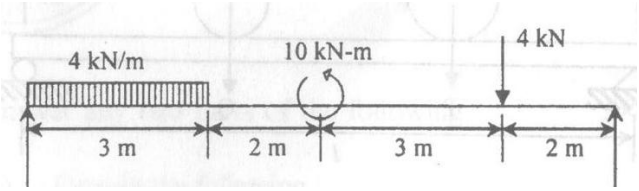


2008–2009 (Sem. II) (EME202)

1. Calculate the values of shear force and bending moments for the cantilever beam shown in Figure. Also draw the shear force and bending moment diagrams.

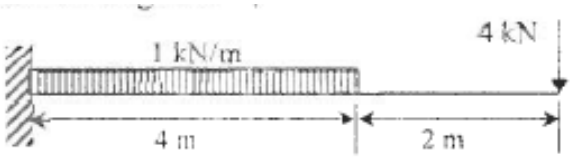


2. Draw the shear force and bending moment diagram for the beam loaded as shown in Figure.

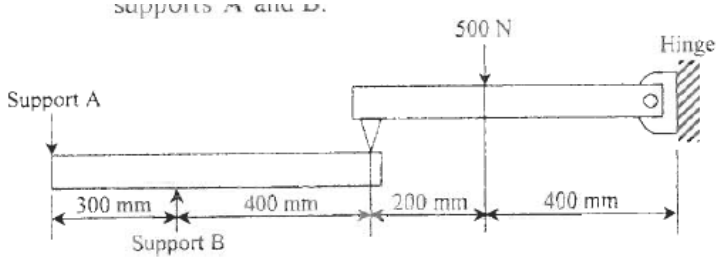


2009–2010 (Sem. I) (EME102)

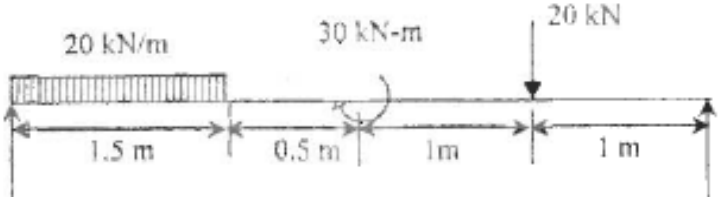
1. Calculate the values of shear force and bending moments for the cantilever beam shown in Fig. Also draw the shear force and bending moment diagrams.



2. Fig. shows a system of levers supporting a load of 500 N. Determine the reactions at the supports *A* and *B*.

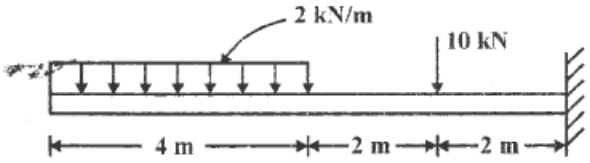


3. A beam is loaded as shown in Fig. Draw its shear force and bending moment diagram.

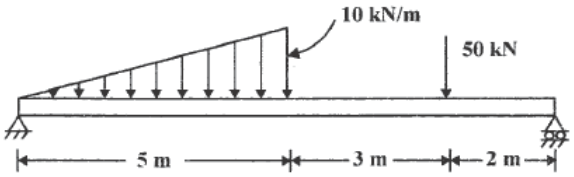


2009–2010 (Sem. I) (TME101) [COP]

1. Find the shear force and moment equation for the cantilever beam carrying the uniformly distributed load and concentrated load shown in figure. Also sketch the shear force and bending moment diagrams.

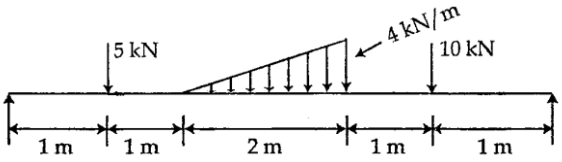


2. Give the shear force and bending moment equation for the beam carrying the uniformly varying load and concentrated loads shown in figure. Also draw the shear force and bending moment diagrams.

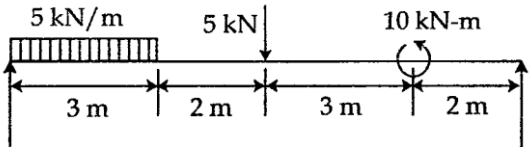


2009–2010 (Sem. II) (EME202)

1. Calculate the values of shear force and bending moments for the simple supported beam shown in Figure. Also draw the shear force and bending moment diagrams.

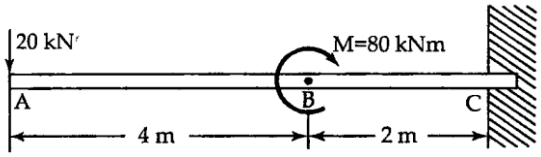


2. Draw the shear force and bending moment diagram for the beam loaded as shown in Figure.

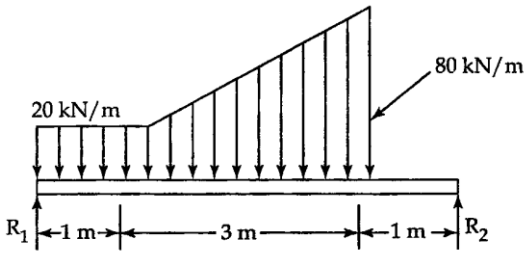


2009–2010 (Sem. II) (TME201) [COP]

1. Find the shear force and moment equation for the cantilever beam shown in figure. Also sketch the shear force and bending moment diagram.

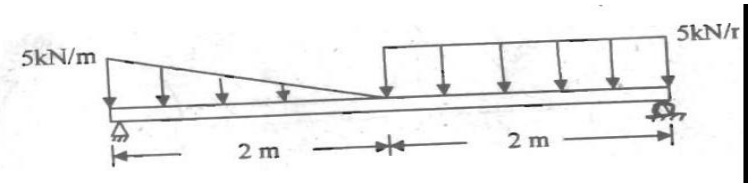


2. Give the shear force and bending moment equation for the beam. Also draw the shear force and bending moment diagrams.

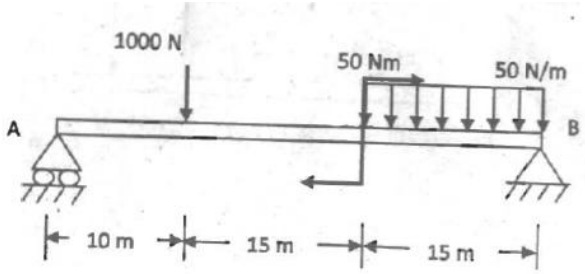


2010–2011 (Sem. I) (EME102)

1. For the simply supported beam as shown in Figure, draw shear force and bending moment diagrams after Finding the equations for shear force and bending moment.

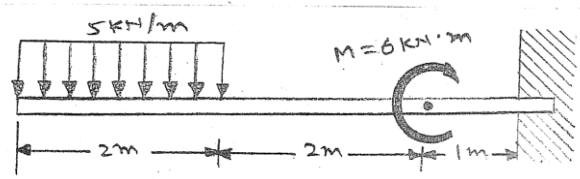


2. For the beam shown in figure, draw the shear force and bending moment diagrams.

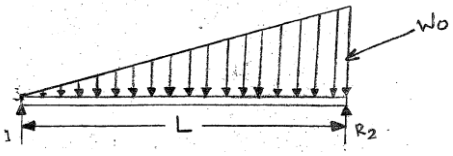


2010–2011 (Sem. I) (TME101) [COP]

1. Find the shear force and moment equation for the cantilever beam shown in figure. Also sketch the shear force and bending moment diagram.

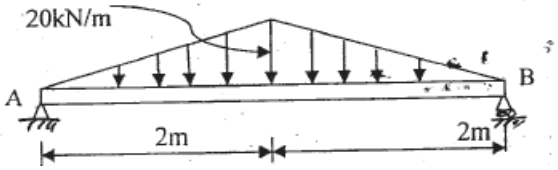


2. Give the shear force and bending moment equation for the beam shown in figure. Also draw the shear force and bending moment diagram.

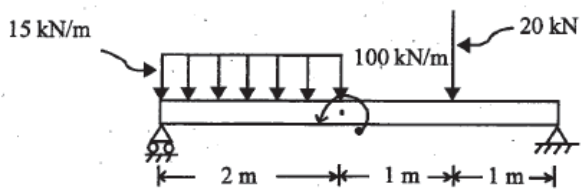


2010–2011 (Sem. II) (EME202)

1. Find the shear force and moment equation for the simply supported beam shown in figure. Also sketch the shear force and bending moment diagram.

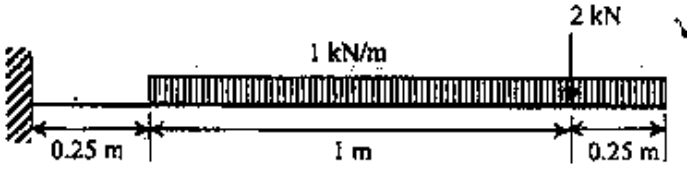


2. Draw the shear force and bending moment diagram for the beam loaded as shown in Figure.

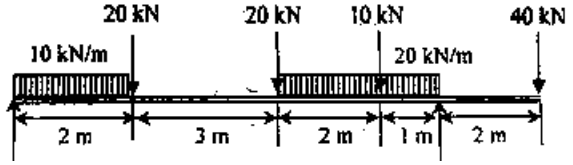


2010–2011 (Sem. II) (EME202) (MTU)

1. Calculate the values of shear force and bending moments for the cantilever beam shown in figure. Also draw the shear force and bending moment diagrams.

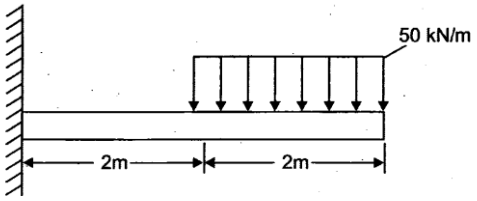


2. Draw the shear force and bending moment diagram for the beam loaded as shown in Figure.

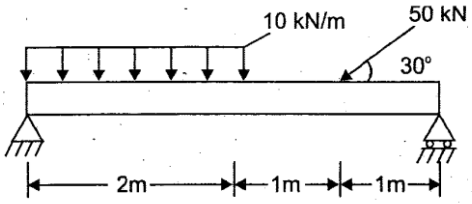


2010–2011 (Sem. II) (TME201) [COP]

1. Find the shear force and moment equation for the beam shown in figure. Also sketch the shear force and bending moment diagram.



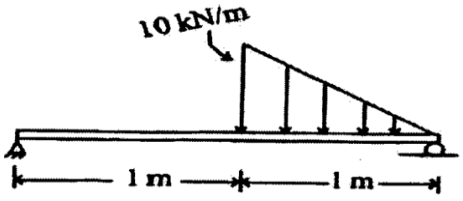
2. Give the shear force and bending moment equation for the beam carrying the uniformly distributed load and concentrated load shown in figure. Also draw the shear force and bending moment diagrams.



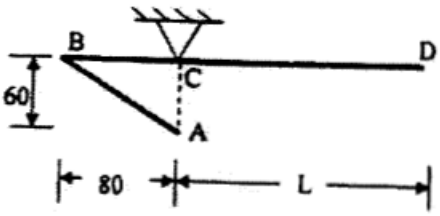
2011–2012 (Sem. I) (EME102)

1. How will you replace fixed support of a beam by reaction as a set of forces (or force system)?

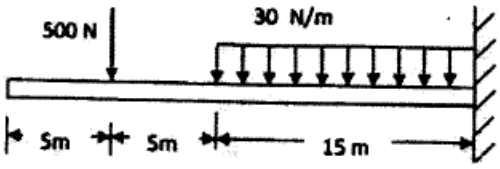
2. Draw the shear force and bending moment diagrams for the overhanging beam as shown in Fig.



3. The homogeneous wire *ABCD* is bent as shown in Fig. and is attached to *A* hinged at *C*. Determine the length *L* for which portion *BCD* of the wire is horizontal. All dimensions are in mm.



4. Determine the support reactions for the cantilever beam shown in Fig. and sketch shear force and bending moment diagrams showing key points.

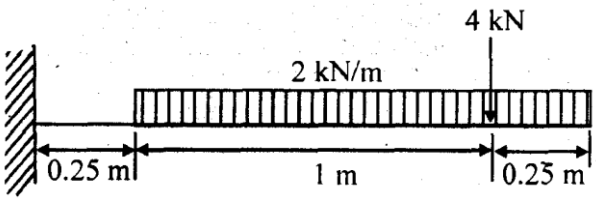


2011–2012 (Sem. I) (EME102) (MTU)

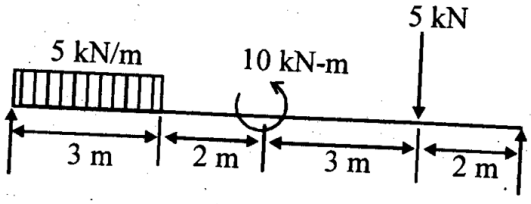
1. What do you mean by the point of contraflexure? Is the point of contraflexure and point of inflexion different?

2. What do you mean by sagging and hogging moments? What kinds of curvatures are produced by them?

3. Calculate the values of shear force and bending moments for the cantilever beam shown in Fig. Also draw the shear force and bending moment diagrams.



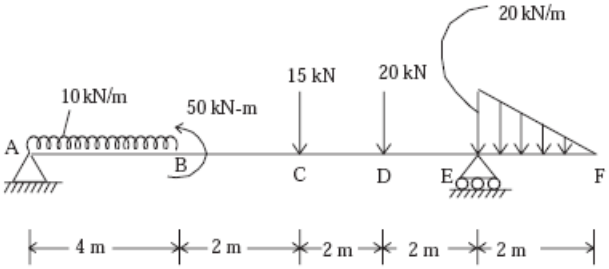
4. Draw the shear force and bending moment diagrams for the simple supported beam as shown in Fig.



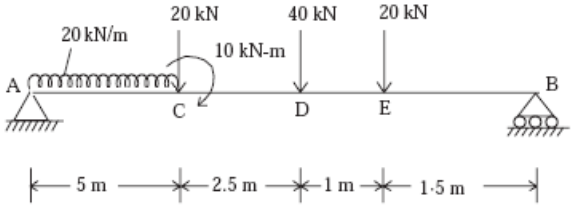
2011–2012 (Sem. II) (EME202)

1. What is the relationship between load, shear force and bending moment?

2. Draw SFD and BMD for the following loaded beam (Fig.) and also locate point of contraflexure.



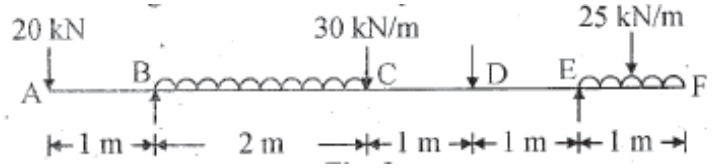
3. Derive shear force and bending moment equations and draw the SFD and BMD for the beam shown in Fig. Find out the position and magnitude of maximum bending moment.



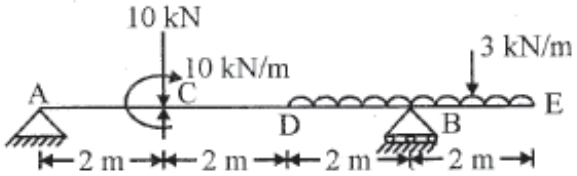
2011–2012 (Sem. II) (EME202) (MTU)

1. What is the relationship between load, shear force and bending moment? Define point of Contraflexure. In what types of beam this point occurs?

2. Draw Shear Force Diagram (SFD) and Bending Moment Diagram (BMD) for the beam shown in Fig. Also locate the point of contraflexure.

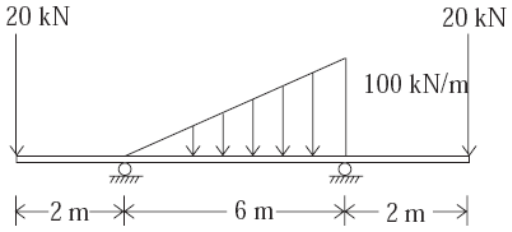


3. Draw SFD and BMD for the following loaded beam (Fig.) and also locate point of contraflexure.

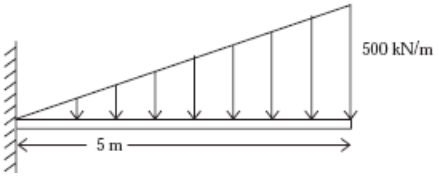


2012–2013 (Sem. I) (EME102)

1. Draw SFD and BMD for the following loaded beam.



2. Determine the expression for shear force and bending moment for the beam shown in Fig.

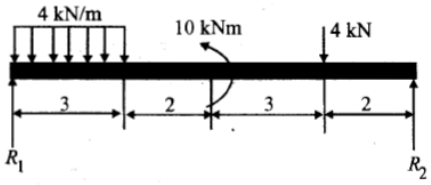


2012–2013 (Sem. I) (EME102) (MTU) [COP]

1. What are statically determinate and statically indeterminate beams?

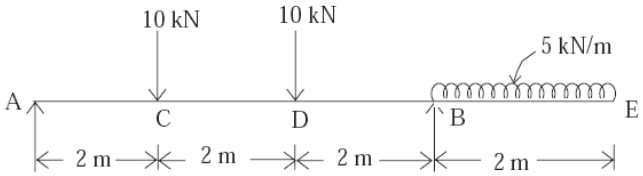
2. With neat sketch explain the different types of support reactions and different loading systems for beam.

3. Draw the shear force and Bending moment diagram for the simply supported beam as shown in fig.



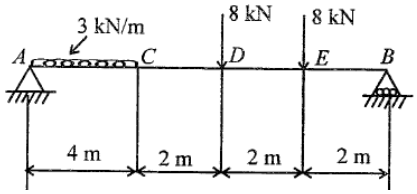
2012–2013 (Sem. I) (TME101) [COP]

1. Discuss the various types of beams and loading.
2. Derive the relation between load intensity, shear force and bending moment.
3. Draw SFD and BMD for the following loaded beam. Also locate point of contraflexure.



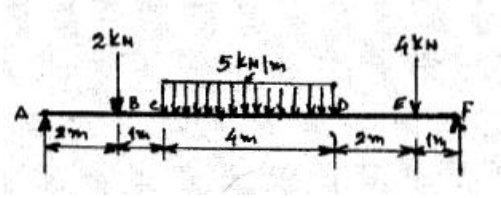
2012–2013 (Sem. II) (ME201) (MTU)

1. A beam *AB* of span 10 m loaded as shown in Fig. Determine the reactions at *A* and *B*.



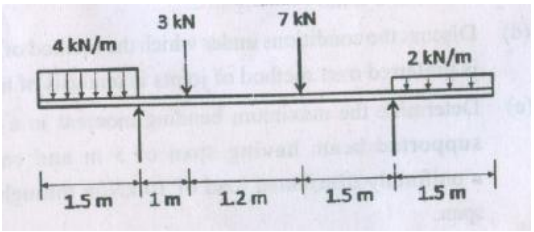
2012–2013 (Sem. II) (TME201) [COP]

1. Derive the relationship between shear force, bending moment and loading for a beam,
2. Draw SFD and BMD for the loaded beam shown in the fig.

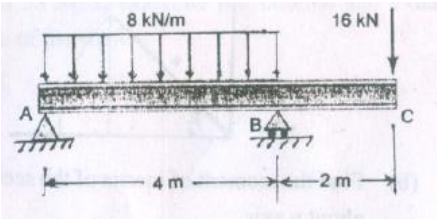


2013–14 (Sem. I) (NME102)

1. Draw the SFD and BMD and locate the point of contra- flexures for the loaded beam in figure.



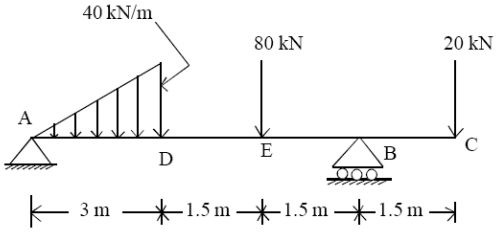
2. Determine the reactions and draw the shear force and bending moment diagram for the beam shown in figure.



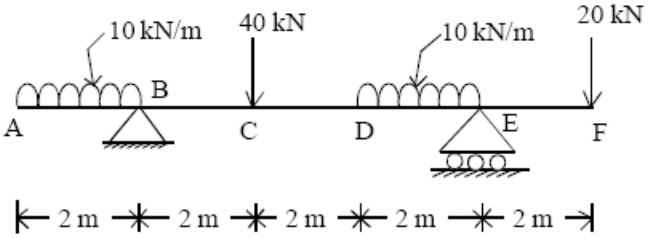
2013–14 (Sem. I) (EME102) [COP]

1. Define point of contraflexure. In what types of beams this point occurs?

2. Draw shear force and bending moment diagram for the overhanging beam shown in Fig. Also locate the point of contraflexure if any.

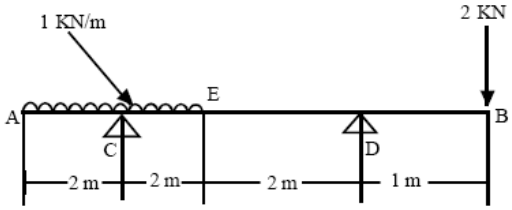


3. Draw the SFD and BMD for the following beam, also locate the point of contraflexure if any Fig.



2013–14 (Sem. I) (TME101) [COP]

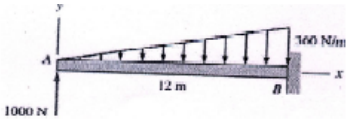
1. Draw the shear force diagram of the beam shown in fig.



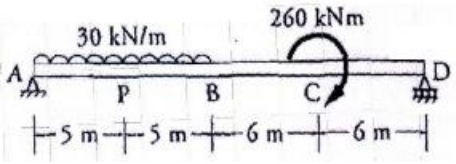
2013–14 (Sem. II) (NME202)

1. Determine the maximum bending moment in a simply supported beam of span 5 m, carrying uniformly distributed load of 2 kN/m over its entire span.

2. The cantilever beam in figure carries a triangular load, the intensity of which varies from zero at the left end to 360 N/m at the right end. In addition, a 1000 N upward vertical load acts at the free end of the beam. Draw the shear force and bending moment diagrams. Neglect the weight of the beam.



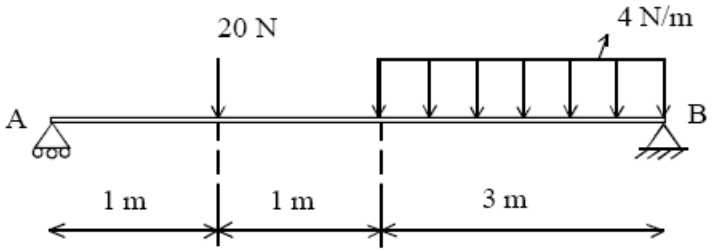
3. Write the shear force and bending moment equations and draw the shear force and bending moment diagrams for the beam shown in the figure:



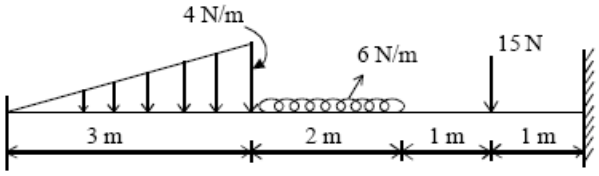
2013–14 (Sem. II) (EME202) [COP]

1. Find the maximum bending moment in a Cantilever beam of length 5 m carrying a UDL of 10 kN/m over its span.

2. Find the shear force and moment equation for simply supported beam as shown in Figure. Also sketch the shear force and bending moment diagram.



3. Draw shear force and bending moment diagram of cantilever beam.



2013–14 (Sem. II) (ME201) [COP]

1. Find the reaction at supports of the beam as shown in Figure.

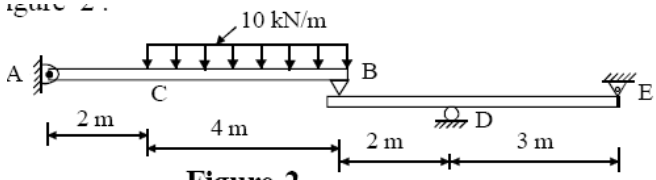
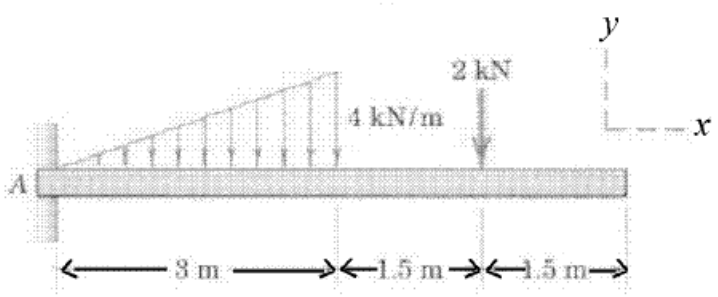


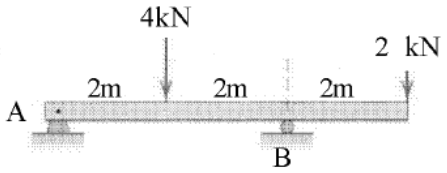
Figure-2

2014–15 (Sem. I) (NME102)

1. Determine the reactions at *A* for the cantilever beam subjected to the distributed and concentrated loads.



2. Draw the shear and moment diagrams for the beam loaded as shown in Fig.

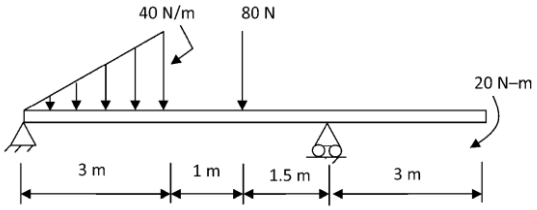


2014–15 (Sem. I) (EME102) [COP]

1. A simply supported beam of 16 m effective span carries the concentrated loads of 4 kN, 5 kN and 3 kN at distances 3 m, 7 m, and 11 m respectively from the left support. Draw the Shear force and bending moment diagrams.
2. A horizontal beam *AB* of length 8 m is simply supported at *A* and *B*. It carries UDL of 3 kN/m over the entire span and a clockwise moment of 12 kNm is applied in the plane of beam at a point *C*, 5m from *A*. Determine the position and magnitude of maximum bending moment.

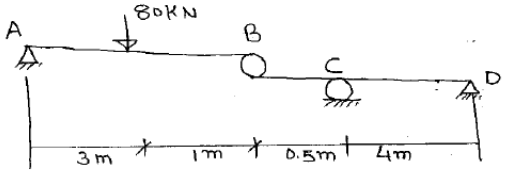
2014–15 (Sem. I) (ME101) [COP]

1. Draw SFD and BMD for the overhanging beam as shown in figure.

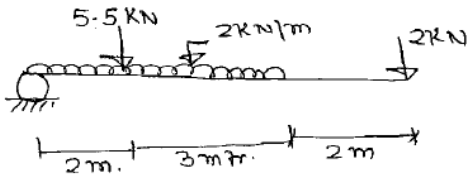


2014–15 (Sem. II) (NME202)

1. With neat sketches describe in brief different types of beams.
2. Determine the reaction at support *A* and *D* in the structure shown in fig.

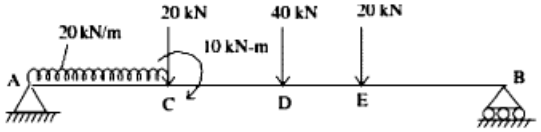


3. Determine SFD and BMD for the simply supported beam as shown in fig and also find maximum B.M.



2014–15 (Sem. II) (EME202) [COP]

1. Explain the relationship between load, shear force and bending moment.
2. Draw SFD and BMD for the following loaded beam.

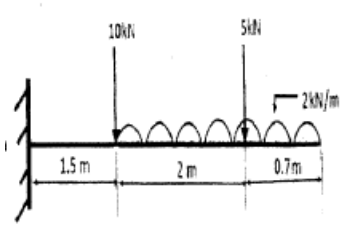


2014–15 (Sem. II) (ME201) [COP]

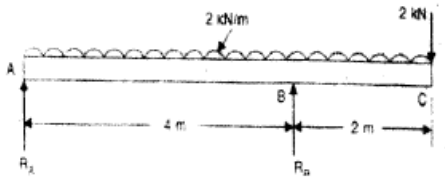
1. Define point of contra flexure. In what type of beams this point occurs?

2014–15 (Sem. I) (NME202/NME102/EME202/EME102) [SCOP]

1. Define the types of loads & supports in a beam.
2. Draw the shear force & bending moment diagram for a loaded beam shown in figure.

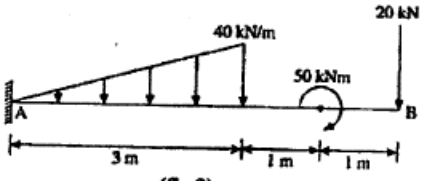


3. Draw the shear force & bending moment diagram for the beam shown in figure (6) also find out the value of maximum bending moment & position of point of contraflexure.

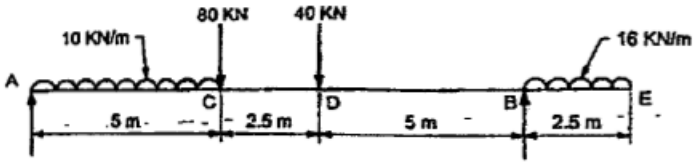


2015–16 (Sem. I) (NME102)

1. What do you understand by point of contra-flexure?
2. Calculate the support reactions in the given cantilever beam as shown in fig.

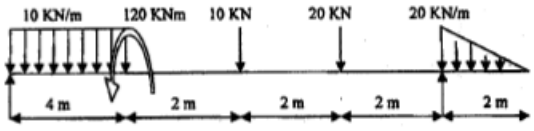


3. For the beam shown in fig. draw the shear force and bending moment diagram. Determine the position of maximum bending moment Also determine the point of contra-flexure if any.



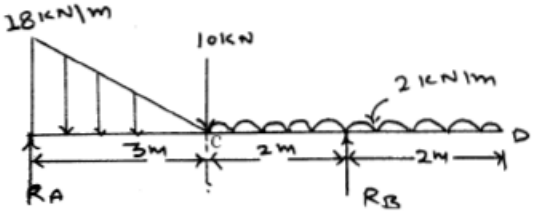
2015–16 (Sem. I) (EME102) [COP]

1. Define point of contra-flexure in beam.
2. Draw the SFD and BMD for the given beam figure. Also find out the position of max BM and point of contra flexure.



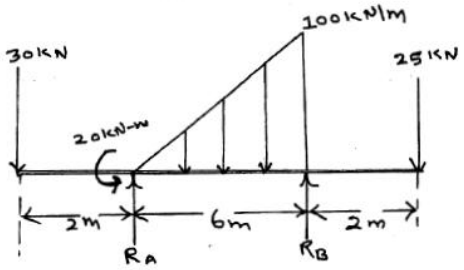
2015–16 (Sem. II) (NME202)

1. Define the relationship between load, shear force and bending moment.
2. Determine the maximum bending moment in a simply supported beam having span of 7 m and carrying a point load of 50 N at mid of span.
3. Draw the shear force and bending moment diagram of the beam as shown in fig and also locate the point of contraflexture.



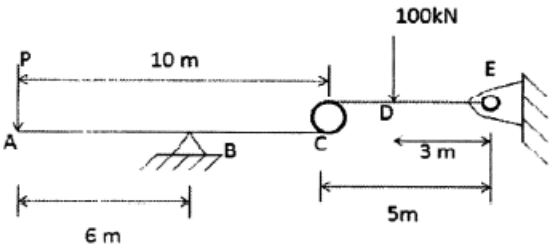
2015–16 (Sem. II) (EME202) [COP]

1. What are the various supports which are used in beam. Also explain various types of beam.
2. Draw the shear force and bending moment diagram for the beam as shown in fig.



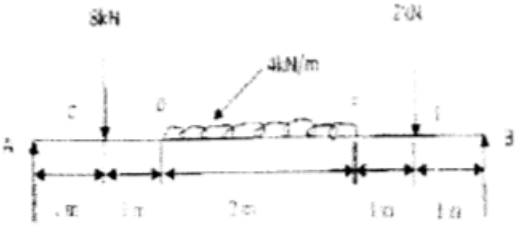
2015–16 (Sem. II) (ME201) [COP]

1. Find the support reactions at *B* and *E* for the beam system as shown in figure.



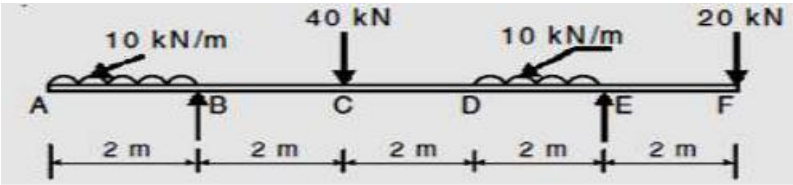
2016–17 (Sem. I) (RME101)

1. List the various types of loads to which the beam can be subjected.
2. For the beam shown in fig. Draw the shear force and bending moment diagram.

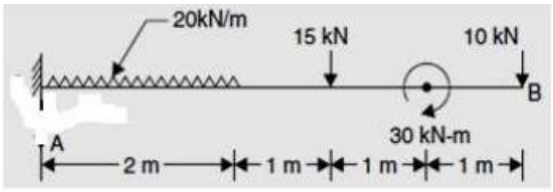


2016–17 (Sem. II) (RME201)

1. Determine the reactions at *B* and *E* of the beam, loaded as shown in fig. Below.

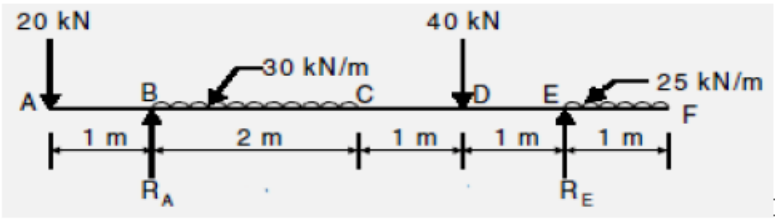


2. Derive the relationship between load, shear force and bending moment.
3. Draw the SFD and BMD of the a beam loaded beam as shown in fig. Below.



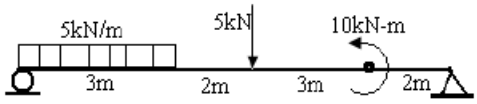
2016–17 (Sem. II) (NME202/EME202/ME201) [COP]

1. Differentiate between shear force and bending moment.
2. Draw the SFD and BMD of the overhanging beam loaded as shown in Fig.



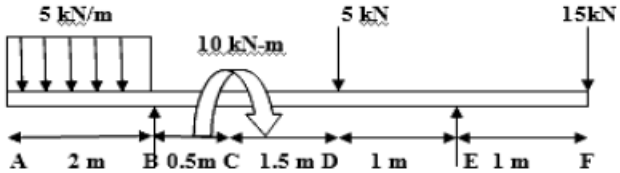
2017–18 (Sem. I) (RME101)

1. What do you mean by statically determinate beams?
2. Draw SFD and BMD of the beam as shown in Fig.



2017–18 (Sem. I) (NME102/EME102) [COP]

1. Draw SFD and BMD for the overhanging beam shown in figure.



2. Find the expression for Shear Force and Bending Moment, hence draw the SFD and BMD for the beam shown in figure.

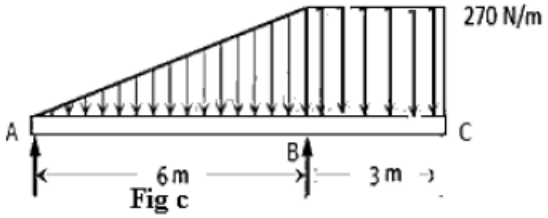
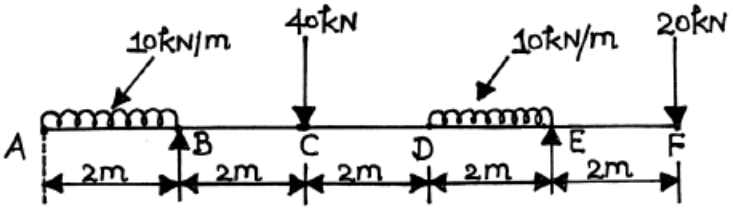


Fig c

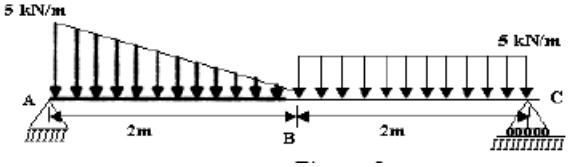
2017–18 (Sem. II) (RME201)

1. Differentiate between statically determinate and indeterminate beam.
2. Draw SFD and BMD of the beam as shown in figure. Also find out the point of contraflexure if any and calculate maximum bending moment.

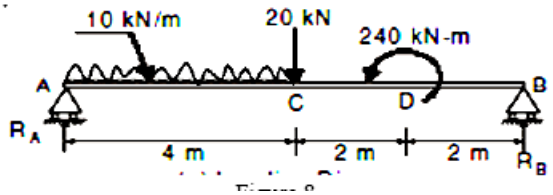


2017–18 (Sem. II) (NME202) [COP]

1. Draw the shear force and bending moment diagram for the beam as shown in Figure. Also find the point of contra flexure if any.

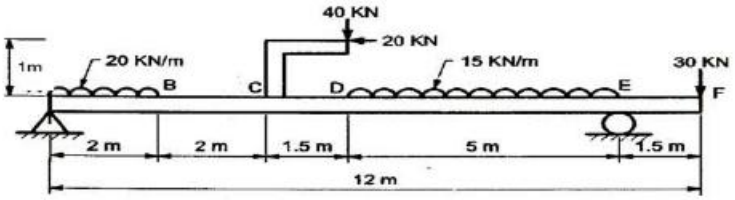


2. Draw the shear force and bending moment diagram of the beam as shown in fig an also find the point of contraflexture.

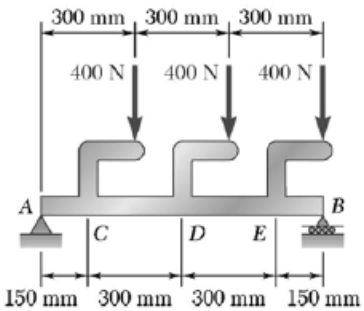


2017–18 (Sem. II) (EME202) [COP]

1. What is the difference between a beam and a frame?
2. Write the relationship among load, shear force and bending moment.
3. Draw the shear force and bending moment diagram for the beam as shown below.

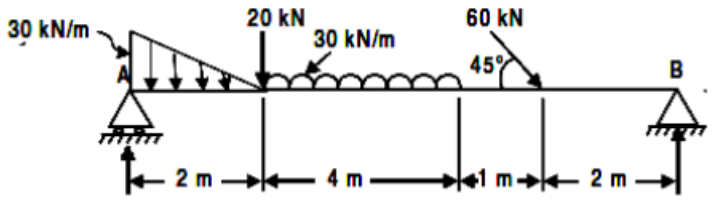


4. Draw the shear and bending-moment diagrams for the beam *AB* as shown below and determine the maximum absolute values of the shear and bending moment.



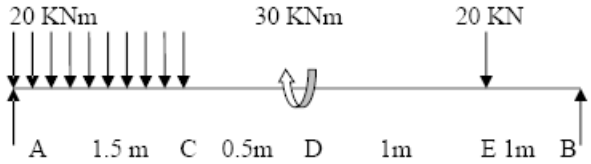
2018–19 (Sem. I) (RME101)

1. Draw the shear force and bending moment diagram for the beam as shown in Figure below. Also find the point of contraflexure if any.

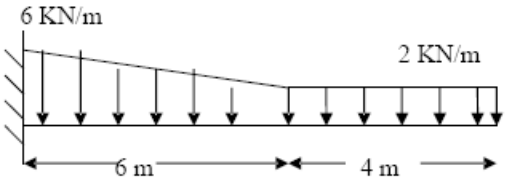


2018–19 (Sem. I) (NME102/EME102) [COP]

1. Draw the SFD and BMD for the given beam. Also find out the position of max BM and point of contraflexure if any.



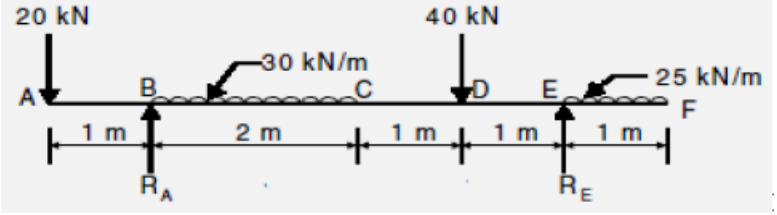
2. Draw the Shear force & Bending moment diagram for given beam.



2018–19 (Sem. II) (RME201)

1. Differentiate between overhanging beam and simply supported beam.

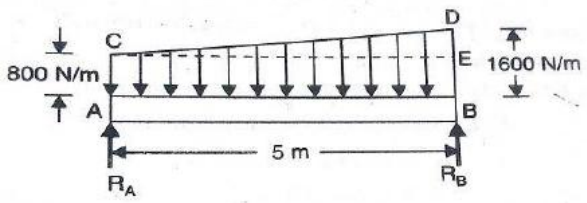
2. Draw the shear force and bending moment diagram for the beam as shown in Figure below. Also find the point of contraflexure if any.



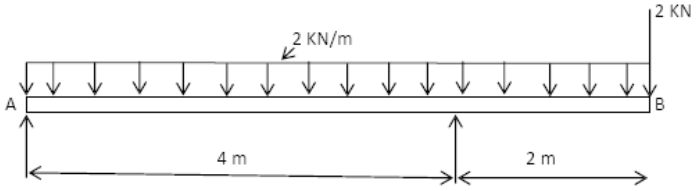
2018–19 (Sem. II) (NME202/EME202) [COP]

1. Define types of beam with neat sketch.

2. A simply supported beam of length 5 m carries a uniformly increasing load of 800 N/m at one end to 1600 N/m at the other end as shown in figure. Calculate the reaction at both the ends.

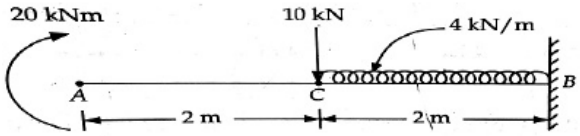


3. Draw shear force and bending moment diagram for given overhanging beam as shown in fig.

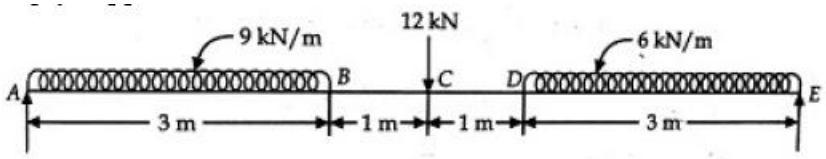


2019–20 (Sem. I) (RME101)

1. Draw shear force and bending moment diagram for a given cantilever beam.



2. Find reactions and draw shear force and bending moment diagram for a given simply supported beam.

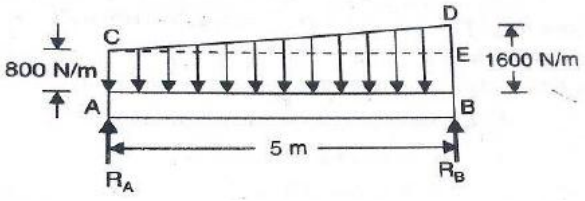


2019–20 (Sem. I) (NME102/EME102) [COP]

1. Differentiate between shear force and bending moment.

2. Define types of beam with neat sketch.

3. A simply supported beam of length 5 m carries a uniformly increasing load of 800 N/m at one end to 1600 N/m at the other end as shown in figure. Calculate the reaction at both the ends.



4. Draw shear force and bending moment diagram for given overhanging beam as shown in fig.