

Course Code: ESC106A

Course Title: Construction Materials and Engineering Mechanics

Lecture No. 29:

Problems on Beams

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Lecture Intended Learning Outcomes

At the end of this lecture, students will be able to:

- Identify the type of support and support reactions
- Apply the conditions of equilibrium
- Calculate the reactions for the beams



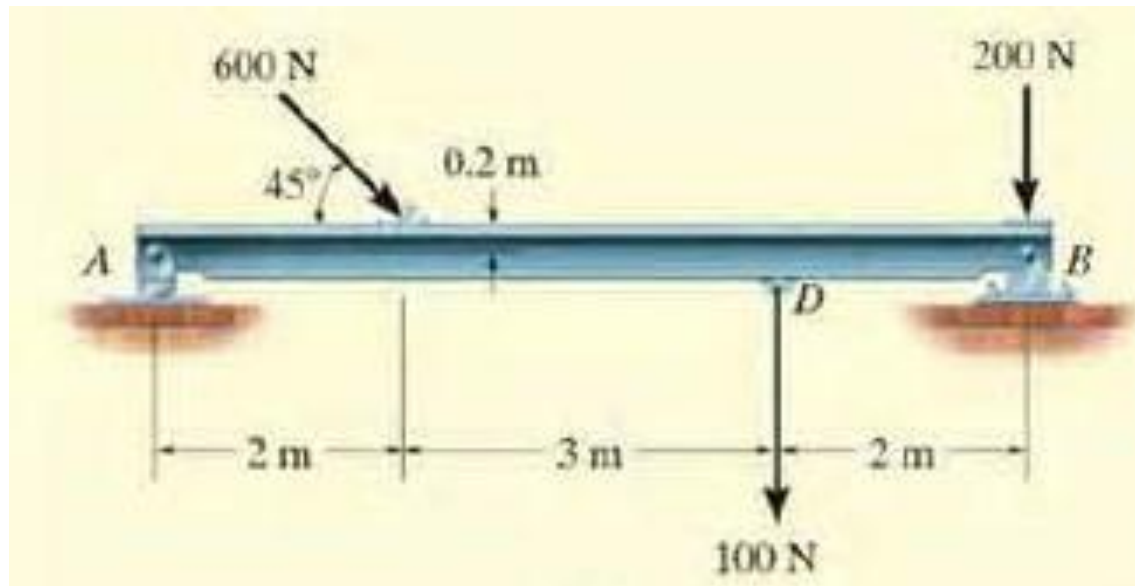
Contents

Type of support, support reactions, problems on support reactions



Problems on Beams

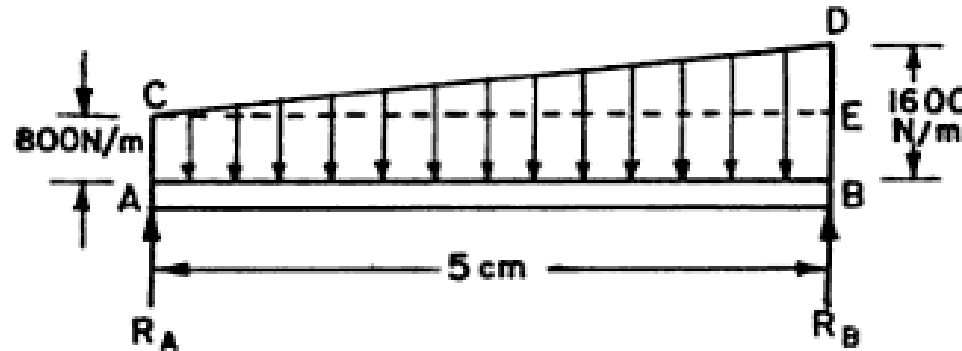
1. Find the reactions in the supports A and B in the beam AB as shown in the figure



$$\begin{aligned}R_{AV} &= 319 \text{ N} \\ R_{BH} &= 424 \text{ N} \\ R_{BV} &= 405 \text{ N}\end{aligned}$$

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2.A simply supported beam of length 5m carries a uniformly increasing load of 800Nm at one end to 1600Nm at the other end. Calculate the reactions at both ends



$$R_A = 2666.67\text{N}$$
$$R_B = 3333.33\text{N}$$



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3. In the figure determine the support reactions at A and B.

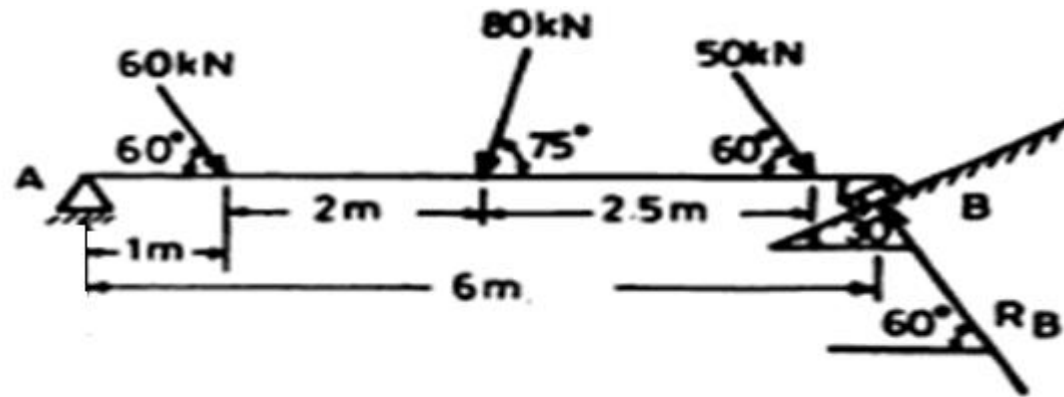


$$R_{AV} = 160 \text{ kN}$$

$$R_{BV} = 90 \text{ kN}$$

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4. Find the reactions in the supports A and B in the beam AB as shown in the figure



$$R_{AH} = 15.92 \text{ kN}$$

$$R_{AV} = 85.54 \text{ kN}$$

$$R_B = 100.44 \text{ kN}$$

Summary

- Based on the types of supports and the type of loads, the reactions developed in each support can be calculated

