



DEPARTMENT OF MECHANICAL ENGINEERING

Activity Supports Employability / Entrepreneurship / Skill Development

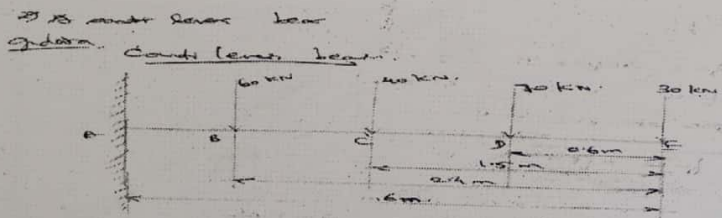
Subject Code : 19UME404

Subject Name : MECHANICS OF MATERIALS

Activity Supports: Assignments and Online software tools used to improve problem solving skills to support Employability.

Topic	Shear force and Bending Moment Diagram	
Type of Activity	Group	
In Class Activity	What Course Instructor Does	Given the problem
	What student Does	Listens, understands and submits a report
Description	Group assignment for shear force and bending moments are given to the students and the results are evaluated using bending moment google application or online tool.	

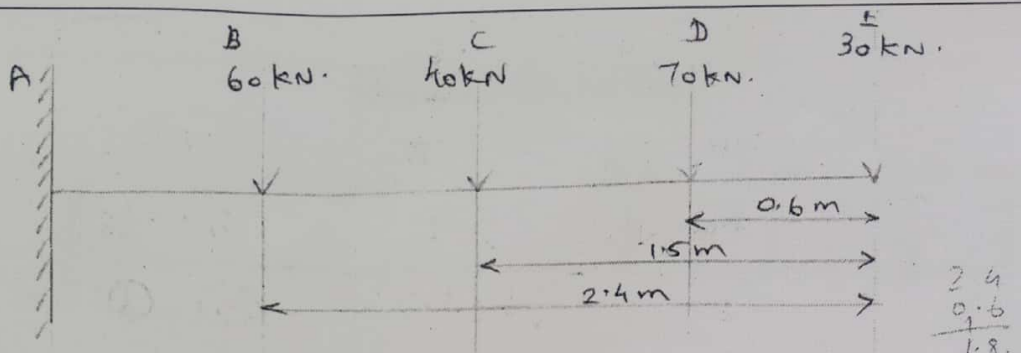
GROUP ASSIGNMENT REPORT



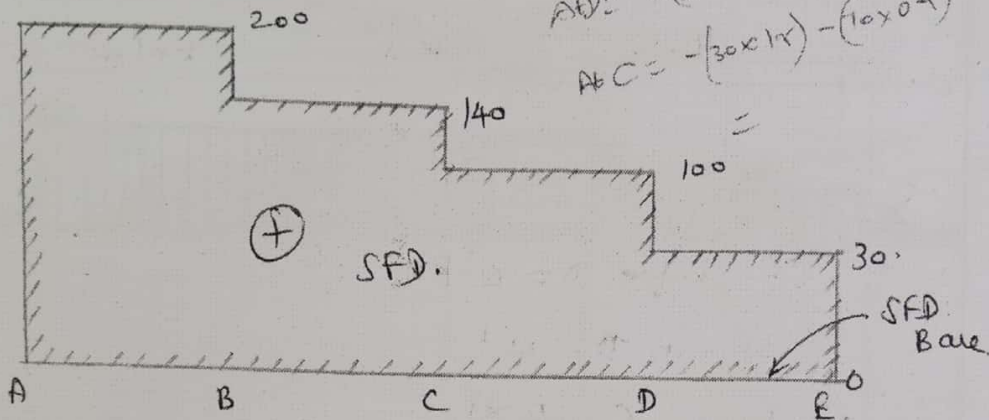
Description Formula Sign Shape Units	SFD	BMD
	$\downarrow \uparrow$	$\ominus \oplus$
	KN	KNM

Shear force diagram
 Before E, $SF_E = 0 \text{ KN}$.
 At E, $SF_E = +30 \text{ KN}$.
 Before D, $SF_D = +30 \text{ KN}$.
 At D, $SF_D = +30 \text{ KN}$.
 $= +100 \text{ KN}$
 Before C, $SF_C = +100 \text{ KN}$.
 At C, $SF_C = +100 + 40$.
 $= +140 \text{ KN}$.
 Before A, $SF_A = +200 \text{ KN}$.
 At A, $SF_A = +200 \text{ KN}$.

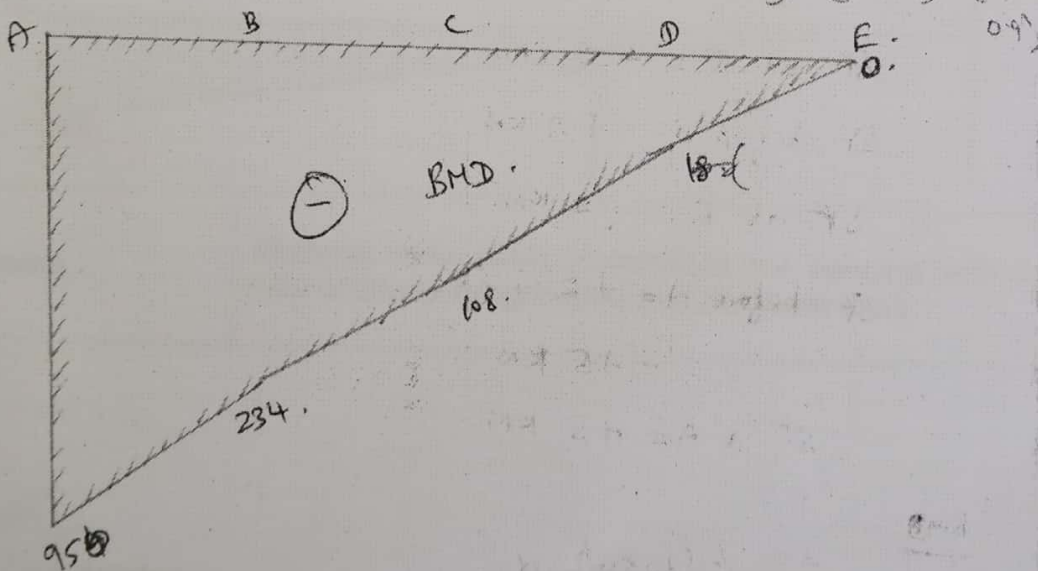
Bending moment diagram
 At E, $BM_E = 30 \times 0 = 0$.
 At D, $BM_D = (10 \times 3) + (-30 \times 0)$.
 $= +30 \text{ KNm}$.
 At C, $BM_C = -1.5 = (10 \times 2) + (-30 \times 0)$.
 $= -18 \text{ KNm}$.
 $BM \text{ at C} = -(30 \times 1.5) - (10 \times 0)$.
 $= -45 \text{ KNm}$.
 $BM \text{ at B} = -(30 \times 2.5) - (10 \times 1.5) - (40 \times 0)$.
 $= -234 \text{ KNm}$.
 $BM \text{ at A} = -(30 \times 6) - (10 \times 4) - (40 \times 4.5) - (60 \times 3.5)$.
 $= -450 \text{ KNm}$.



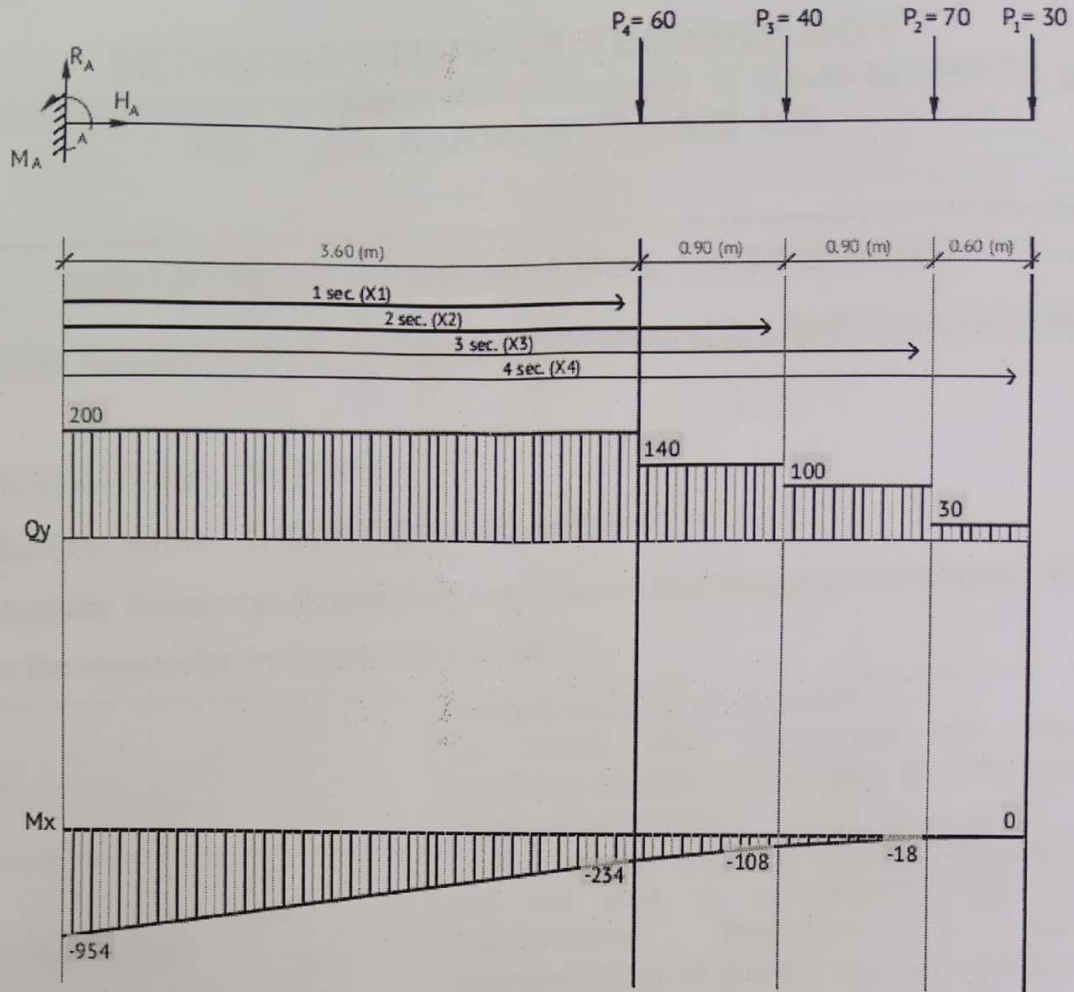
$$\begin{aligned}
 R &= 0 \\
 A_D &= -(30 \times 0.6) = -18 \\
 A_C &= -(30 \times 1.8) - (10 \times 0.9) \\
 &= -63 - 9 = -72
 \end{aligned}$$



$$\text{at B} = -(2.4 \times 30) - (10 \times 1.8) - (70 \times 0.9)$$



ONLINE TOOL OUTPUT



Outcome

Students were easily understood the concept with the help of Group assignments and Software tools.

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HOD - Mechanical

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