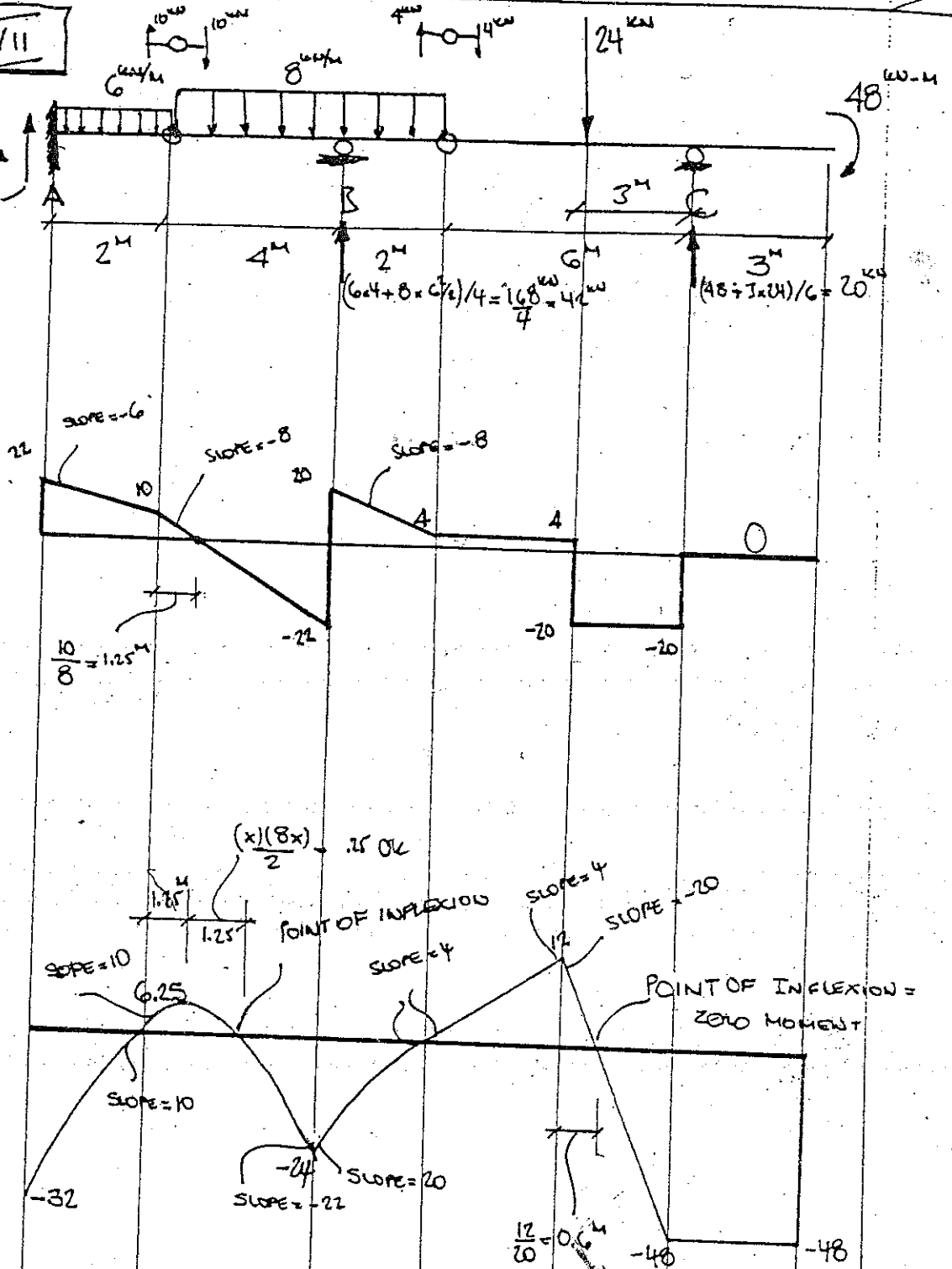


PROBLEM VII

WED
NOV 13

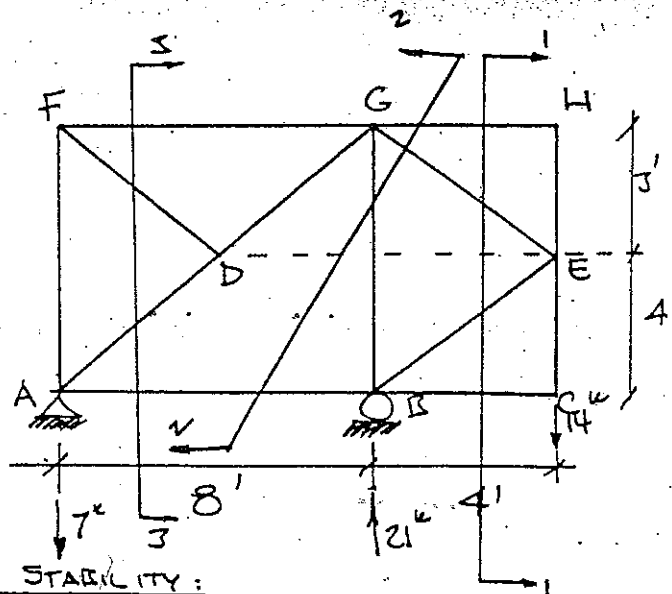
SHEAR
DIAGRAM
(KN)

MOMENT
DIAGRAM
(KN-M)



PROBLEM V

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1- DETERMINANCY & STABILITY:

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3 EXTERNAL REACTIONS

1 IN X-, 2 IN Y-, NONCONCURRENT

NO OF JOINTS = 8 } $8 \times 2 = 16$ OK

NO REACTIONS = 3 } $16 = 16$

NO MEMBERS = 13

STRUCTURE DETERMINANT & STABLE

2- JOINT METHOD:

FIND REACTIONS: $\sum M_A = 0 \Rightarrow R_{BY} = 14 \times \frac{12}{8} = 21k \uparrow$

$\sum M_B = 0, R_{AY} = 14 \times \frac{4}{8} = 7k \downarrow$

JOINT C: $\sum F_x = 0, T_{CB} = 0$ $\sum F_y = 0, T_{EC} = 14k (T)$ ①

JOINT H: $\sum F_x = 0, T_{CH} = 0$ $\sum F_y = 0, T_{EH} = 0$ ②

JOINT D: $\sum F_x = 0, T_{DF} = 0$ $\sum F_y = 0, T_{AD} = T_{DG}$ ③

JOINT F: $\sum F_x = 0, T_{FG} = 0$ $\sum F_y = 0, T_{AF} = 0$ ④

JOINT A: $\sum F_y = 0, T_{AD} \times \frac{7}{\sqrt{13}} = 7, T_{AD} = T_{DG} = 10.63k (T)$ ⑤

JOINT G: $\sum F_x = 0, T_{GD} = \frac{8}{\sqrt{13}} = T_{GE} = \frac{4}{5}, T_{GE} = 10k (T)$ ⑥

$\sum F_y = 0, T_{GB} = -\left(8 \times \frac{7}{\sqrt{13}} + T_{GE} \times \frac{4}{5}\right) = -13 = 13k (C) = T_{GB}$ ⑦

JOINT B: $\sum F_y = 0, T_{GB} + 21 + T_{BE} \times \frac{\sqrt{2}}{2} = 0, T_{BE} = -11.31 = 11.31k (C) = T_{BE}$ ⑧

3. SECTION METHOD:

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SECTION 1-1: KNOWING $T_{CH}=0, T_{AC}=0$

$$\Sigma M_B = 0 \rightarrow \text{FIND } T_{CE}$$

$$\Sigma M_G = 0 \rightarrow \text{FIND } T_{DE}$$

$$\text{CHECK } \Sigma F_y = 0$$

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SECTION 2-2: KNOWING $T_{CH}=0, T_{CE}$ FROM ABOVE

$$\Sigma M_G = 0 \rightarrow \text{FIND } T_{AB}$$

$$\Sigma F_y = 0 \rightarrow \text{FIND } T_{GD}$$

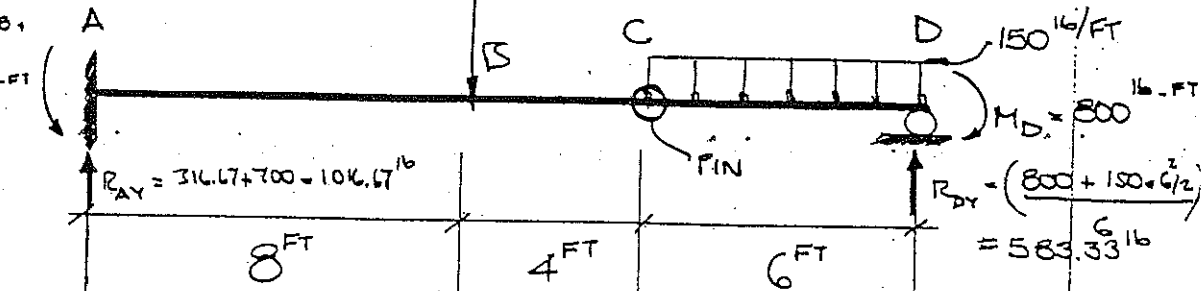
SECTION 3-3: KNOWING $T_{FG}=0, T_{ED}=0$

$$\Sigma F_y = 0 \rightarrow \text{FIND } T_{AD}$$

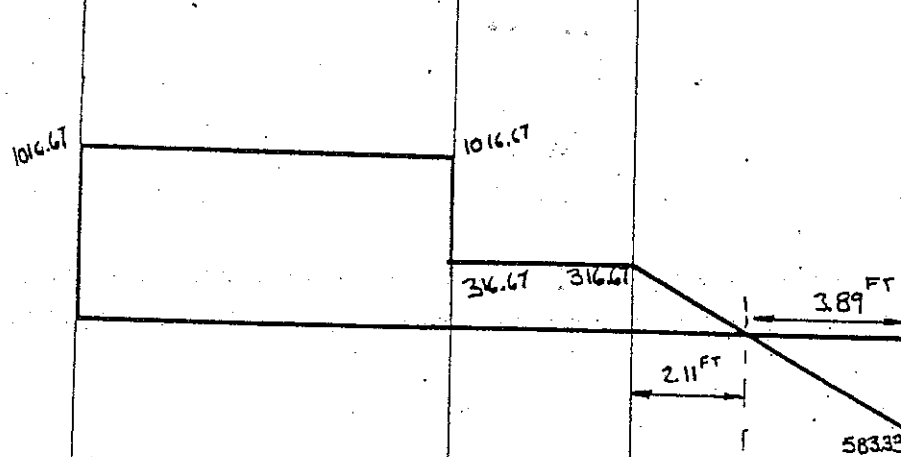
PROBLEM VIII:

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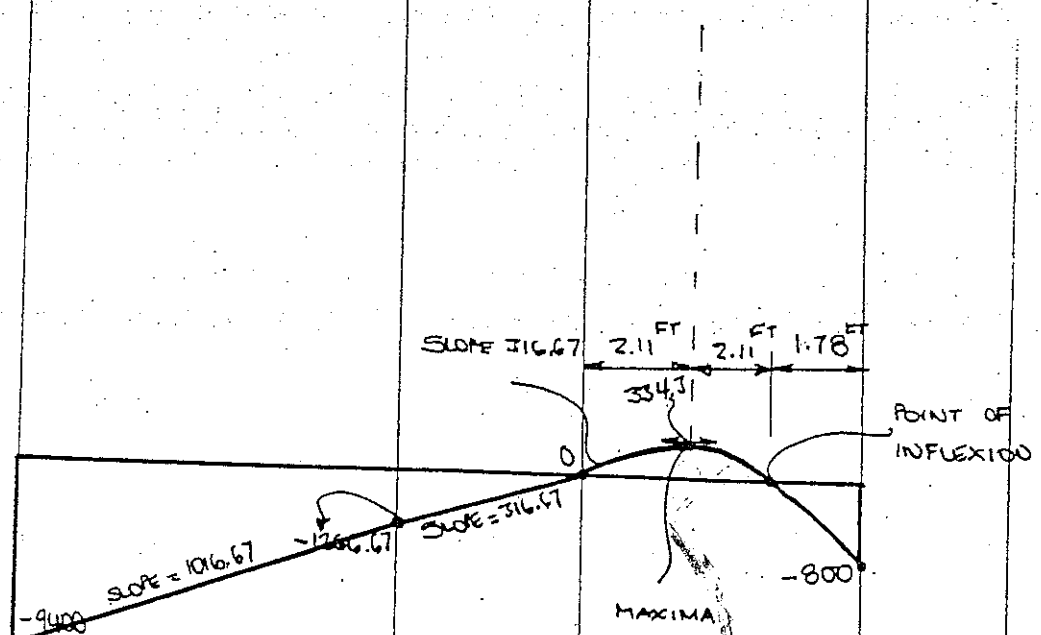
$$M_A = 316.67 \cdot 18 + 700 \cdot 8 = 9400 \text{ lb-ft}$$



SHEAR
DIAGRAM
(lb)



MOMENT
DIAGRAM
(lb-ft)



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American University of Beirut
Department of Civil and Environmental Engineering
Fall 2005-2006 Instructor: Professor Fouad Kasti

CIVE 210	Statics	Exam # 2	Sat Dec 17, 05	1/1
1 / 2 Hour Exam, Closed Books				

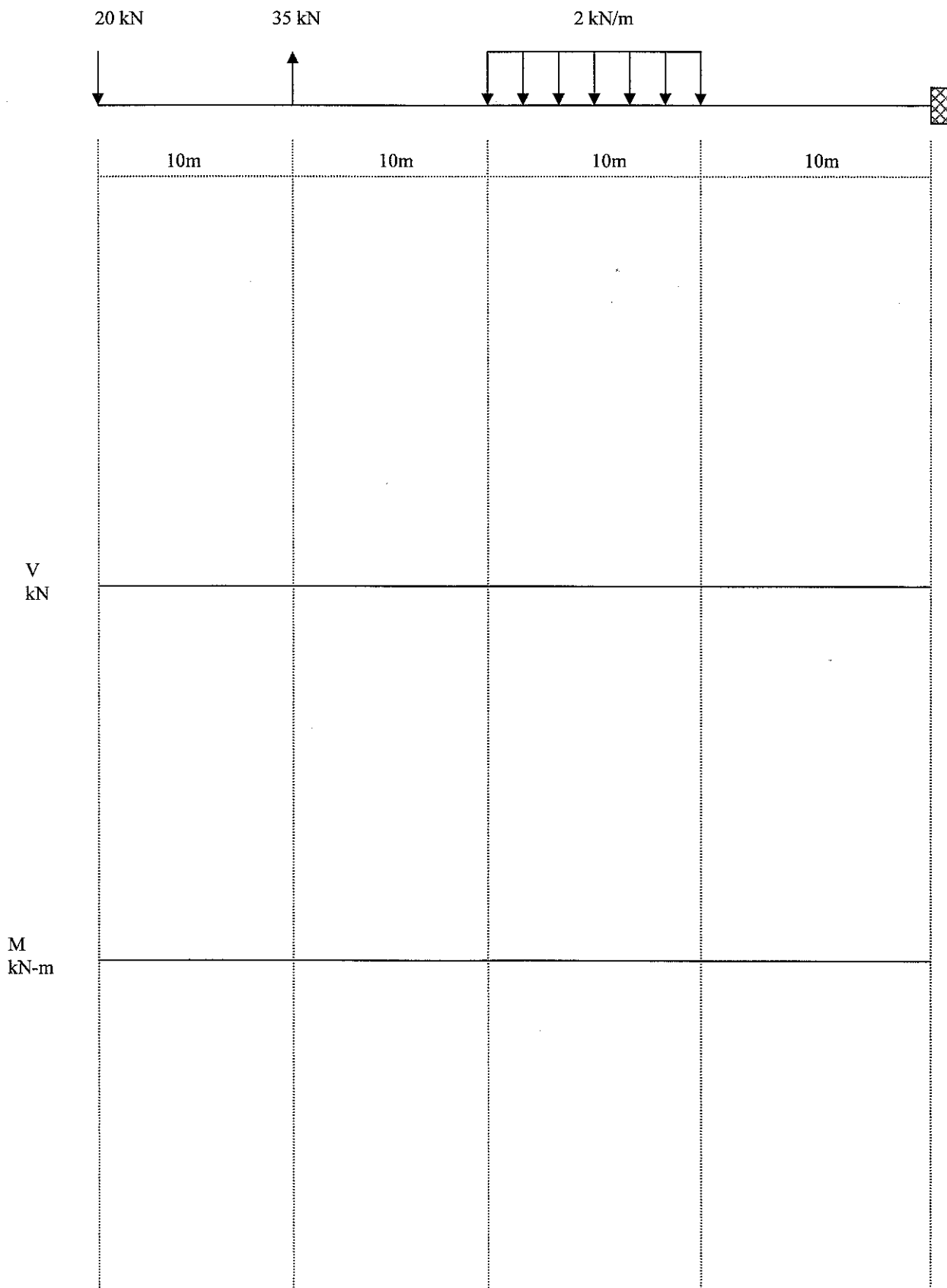
Problem #1: (25%)

For the one dimensional frame supported at the right end only and shown in the attached sheet:

- 1- Briefly study stability and determinacy (3 points)
- 2- Compute the reactions at the full fixity located at the right end of the frame (4 points)
- 3- Draw **to scale** the shear diagram on the attached sheet, below the frame system (9 points). **Indicate relevant information to key points** including slopes, ordinates, location of 0 shear, type of functions, minimum-maximum and other relevant information to key points.
- 4- Draw **to scale** the moment diagram on the attached sheet, below the frame system (9 points). **Indicate relevant information to key points** including slopes, ordinates, location of 0 moment, type of functions, minimum-maximum and other relevant information to key points.

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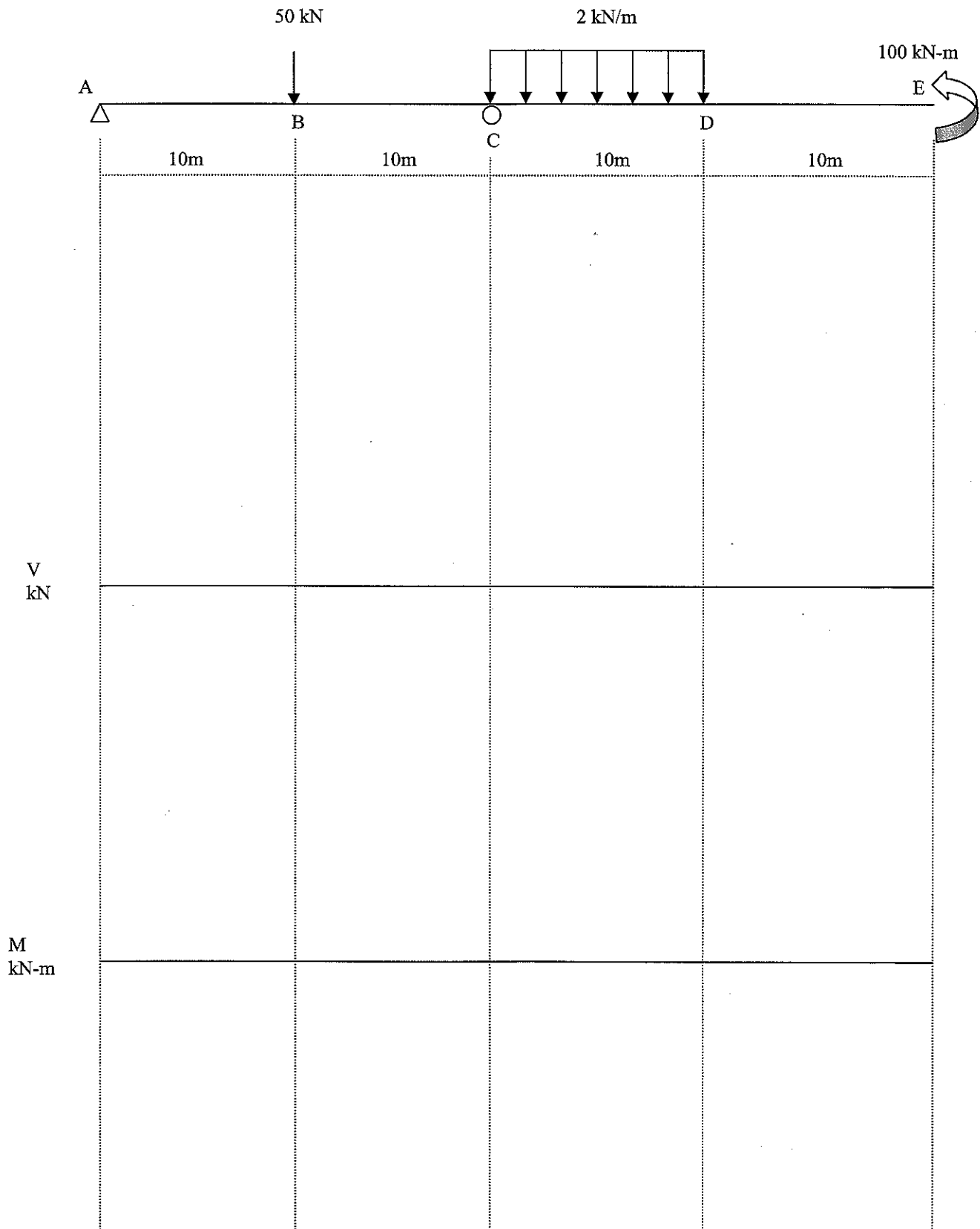
CIVE 210	Statics	Exam # 2	Fri Apr 5, 06	1/1
3/4 Hour Exam, Closed Books				

Problem #1: (25%)

For the one dimensional frame hinge supported at A, roller supported at C, with a concentrated load 50 kN at B, concentrated moment 100 kN-m at E and a 2 kN/m uniform load between C and D as shown in the attached sheet:

- 1- Briefly study stability and determinacy (3 points)
- 2- Compute the reactions at the hinge support at A and roller support @ B (4 points)
- 3- Draw to scale the shear diagram on the attached sheet, below the frame system (9 points). **Indicate relevant information to key points** including slopes, ordinates, location of 0 shear, type of functions, minimum-maximum and other relevant information to key points.
- 4- Draw to scale the moment diagram on the attached sheet, below the frame system (9 points). **Indicate relevant information to key points** including slopes, ordinates, location of 0 moment, type of functions, minimum-maximum and other relevant information to key points.

American University of Beirut
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 Spr 2005-2006 Instructor: Professor Fouad Kasti



Eng. F. KASTI

American University of Beirut
Department of Civil and Environmental Engineering
Spring 2005-2006 **Instructor: Professor Fouad Kasti**

CIVE 210	Statics	Exam # 2 Makeup	Mon May 22, 06	1/2
3/4 Hour Exam, Closed Books				

Problem #1: (25%)

For the one dimensional frame hinge supported at A, roller supported at C, with a concentrated load 10 kN at D, concentrated counter-clockwise moment 100 kN-m at E and a 2 kN/m uniform load between A and C as shown in the attached sheet:

- 1- Briefly study stability and determinacy (3 points)
- 2- Compute the reactions at the hinge support at A and roller support @ B (4 points)
- 3- Draw **to scale** the shear diagram on the attached sheet, below the frame system (9 points). **Indicate relevant information to key points** including slopes, ordinates, location of 0 shear, type of functions, minimum-maximum and other relevant information to key points.
- 4- Draw **to scale** the moment diagram on the attached sheet, below the frame system (9 points). **Indicate relevant information to key points** including slopes, ordinates, location of 0 moment, type of functions, minimum-maximum and other relevant information to key points.

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