

Professeur : Ph. Bouillard

Assistants : V. Everaert, Y. Dechamps, G. Al Zohbi

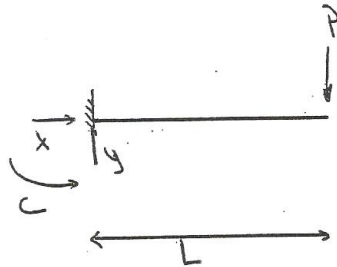
Année académique 2012-2013

CNST-H-300 – MÉCANIQUE DES STRUCTURES ET RESISTANCE DES MATERIAUX

Corrigé de la séance 2

Exercice 1

a)

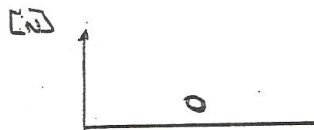


Réaction de liaison :

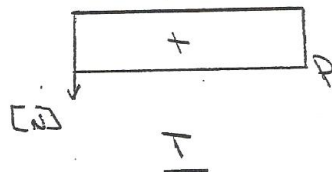
$$X = 0$$

$$Y = P$$

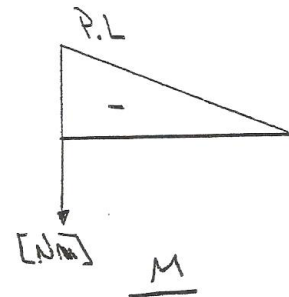
$$C = P \cdot L$$



N



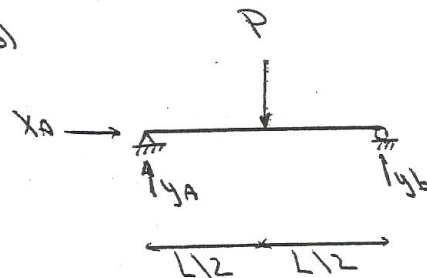
T



[Nm]

M

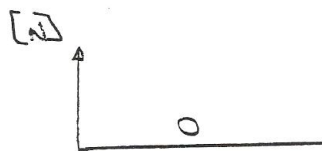
b)



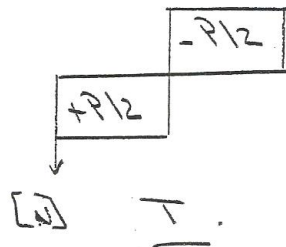
Réaction de liaison :

$$X_A = 0$$

$$y_A = y_B = \frac{P}{2}$$

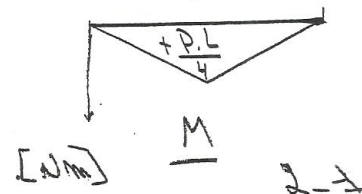


N



[N]

T



[Nm]

M

2-1

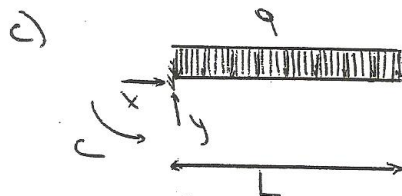
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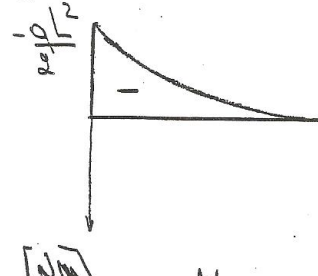
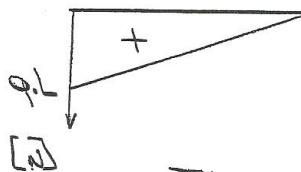
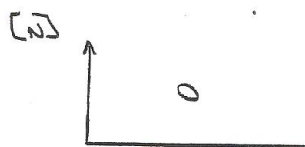


Reactions de liaison

$$X = 0$$

$$Y = q \cdot L$$

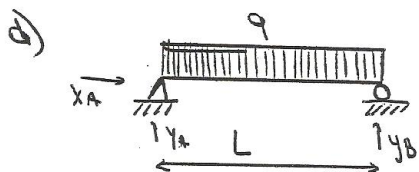
$$C = \frac{qL^2}{2}$$



N

T

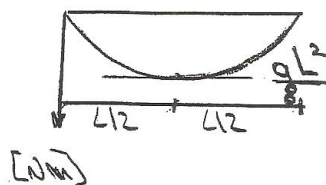
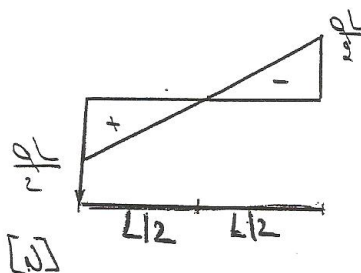
M



Reactions de liaison

$$X_A = 0$$

$$Y_A = Y_B = \frac{q \cdot L}{2}$$



N

T

M

2-2

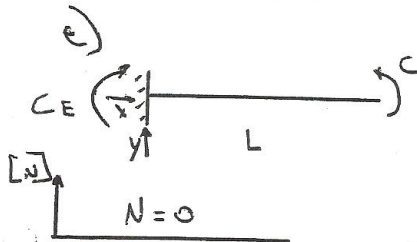
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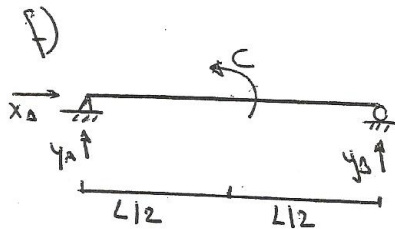
Corrigé de la séance 2



Réactions de liaison :

$$x = y = 0$$

$$C_E = C$$

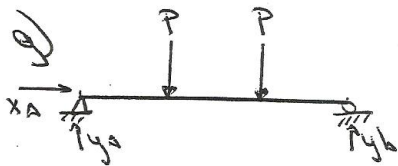
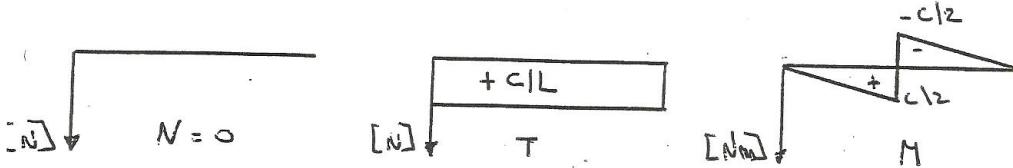


Réaction de liaison

$$x_A = 0$$

$$y_A + y_B = 0 \rightarrow y_A = C/L$$

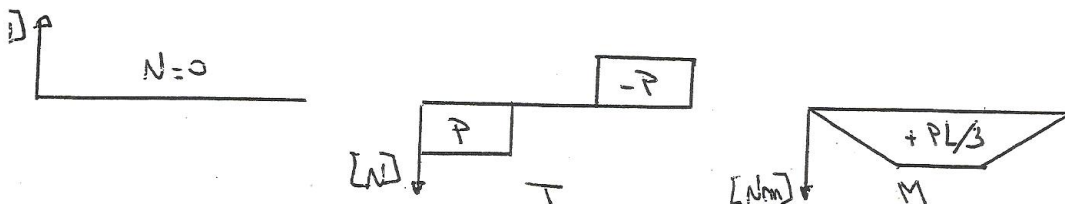
$$y_B = -C/L$$



Réactions de liaison

$$x_A = 0$$

$$y_A = y_B = P$$



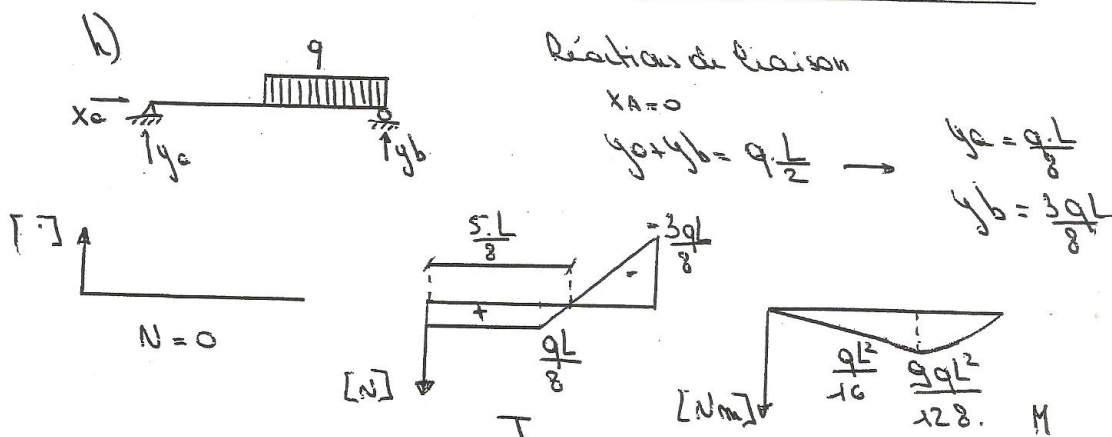
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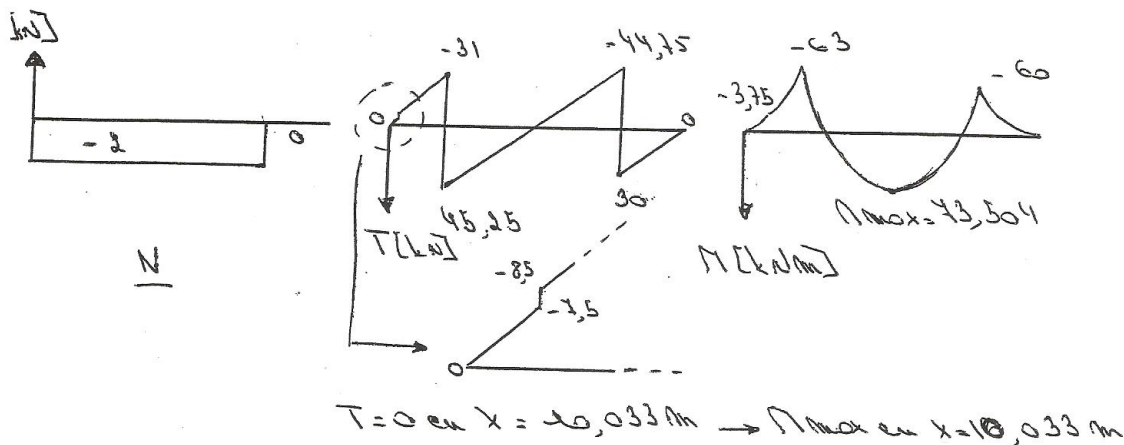
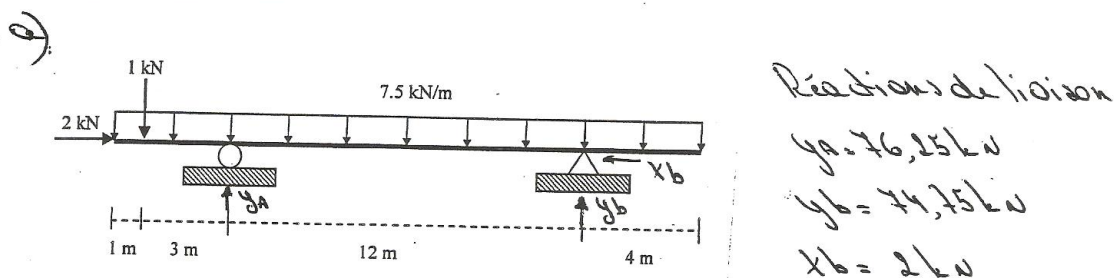
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Corrigé de la séance 2



Exercice 2



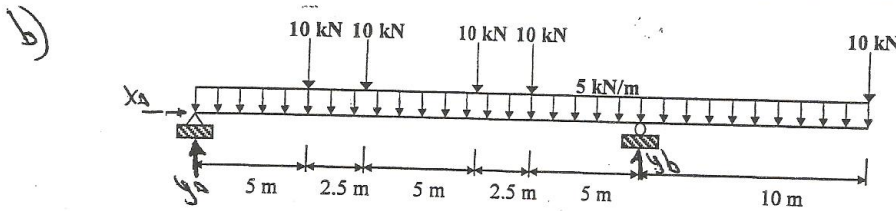
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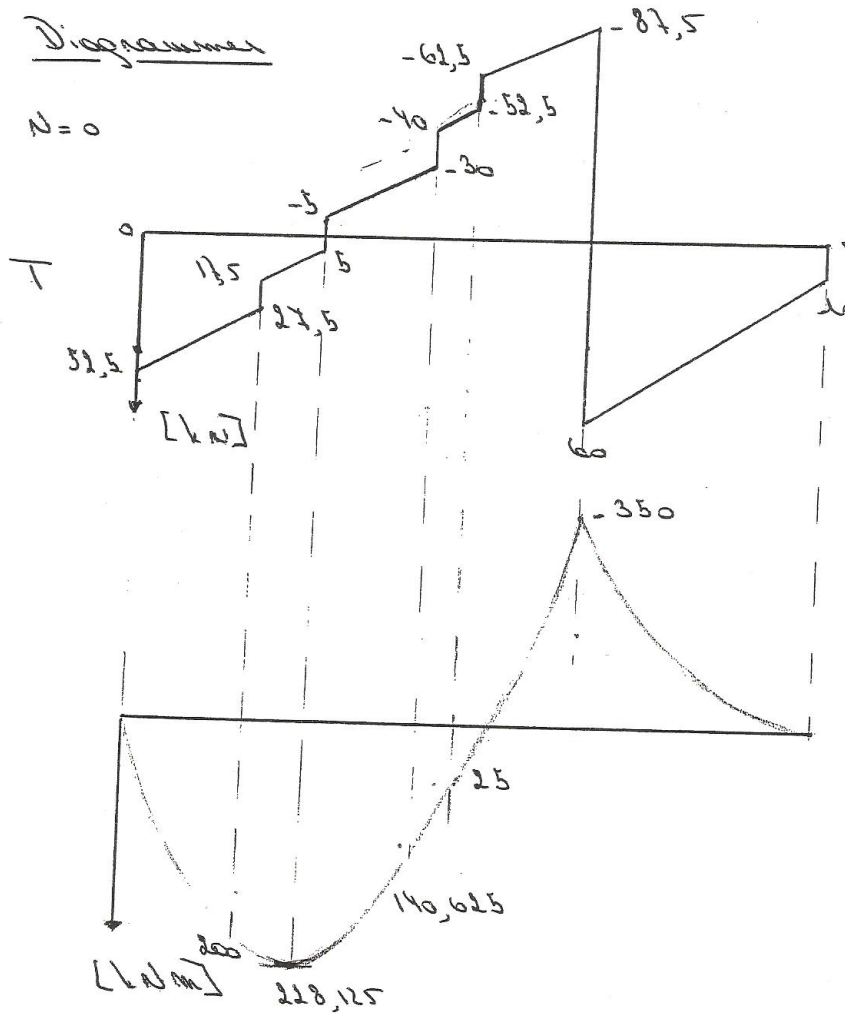
Corrigé de la séance 2



Réactions de liaison : $x_A = 0 \text{ kN}$; $y_A = 52,5 \text{ kN}$; $y_B = 147,5 \text{ kN}$

Diagrammes

$N = 0$



2-5.

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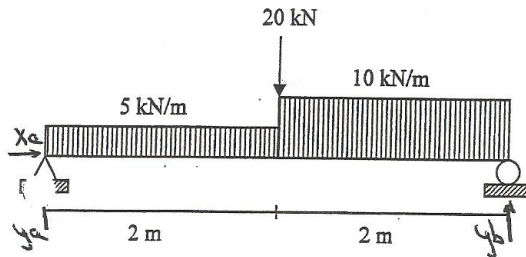
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CNST-H-300 – MECANIQUE DES STRUCTURES ET RESISTANCE DES MATERIAUX

Corrigé de la séance 2

c)

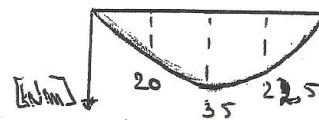
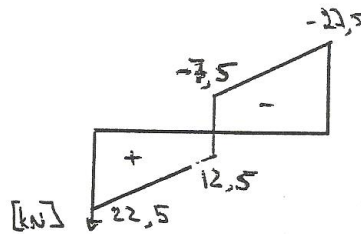
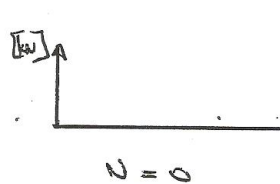


Réactions de liaison

$$x_A = 0$$

$$y_A = 22,5 \text{ kN}$$

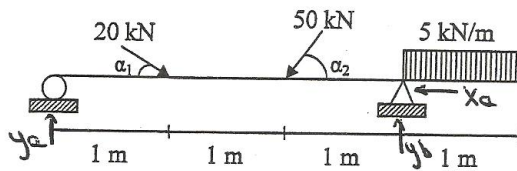
$$y_B = 27,5 \text{ kN}$$



T

M

d)



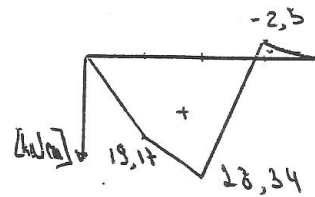
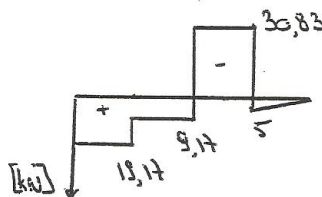
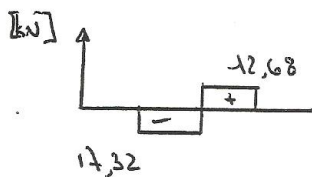
où $\alpha_1 = 30^\circ$ et $\alpha_2 = 53,13^\circ$

Réactions de liaison

$$x_A = -12,68 \text{ kN}$$

$$y_A = 19,17 \text{ kN}$$

$$y_B = 35,83 \text{ kN}$$



N

T

M

2-G