
M R
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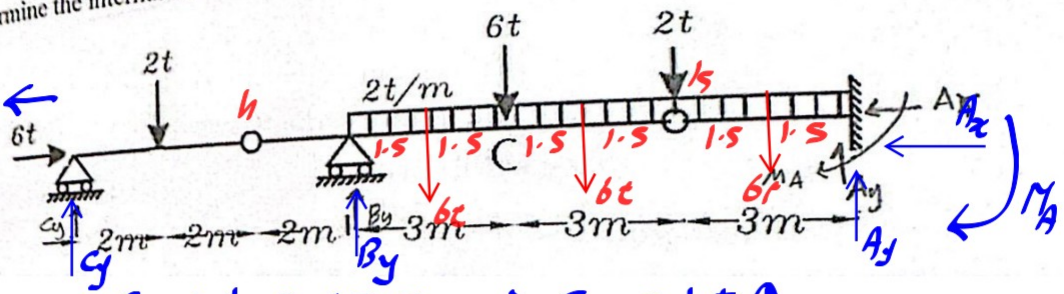
فيزياء
استاتيكا
دوائر كهربية
الكـــترونيات
ميكانيكا الانشائات
هيدروليكا
مدرس خصوصي
اونلاين
حضوري
يحصل الطالب علي
. مقاطع فيديوهات لشرح المقرر بشكل وافي
. ملخص للمادة Pdf للمذكرة والمراجعة
. محاضرات مباشرة علي برنامج زووم
لمناقشة الأجزاء الغير مفهومة
. تواصل مستمر مع معلم المادة
للتواصل
0567630097
0565657741

MRAHMEDMAHDY
ONLINE COURSES

$\Sigma f_x = 0, \quad \Sigma f_y = 0, \quad \Sigma M = 0$

$\Sigma M_{left} = 0, \quad \Sigma M_{right} = 0$

Question One
Calculate the reactions of the beam loaded with both distributed and concentrated loads and then determine the internal forces at point c)



$A_x = 6t \leftarrow$

$\Sigma M_{left_T} = C_y * 4 - 2 * 2 = 0 \Rightarrow C_y = 1t \uparrow$

$\Sigma M_{right_T} = -6 * 1.5 - 6 * 3 - 6 * 4.5 + B_y * 6 - 2 * 10 + 1 * 12 = 0$

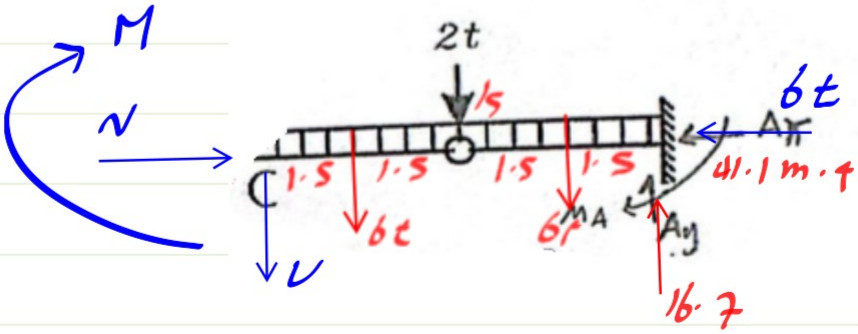
$B_y = 10.3t \uparrow$

$\Sigma f_y = 1 - 2 + 10.3 - 6 - 6 - 6 - 2 - 6 + A_y = 0$

$A_y = 16.7t \uparrow$

$\Sigma M_{right_T} = 6 * 1.5 - 16.7 * 3 + M_A = 0$

$M_A = 41.1\ t.m$



$N = 6t \rightarrow$

$\Sigma f_y = -V - 6 - 2 - 6 + 16.7 = 0 \Rightarrow V = 2.7\ t$

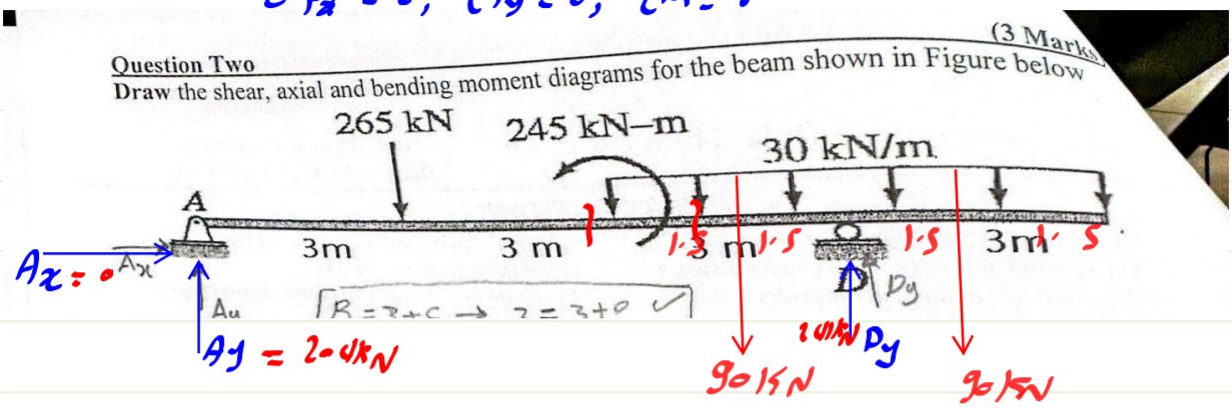
$\Sigma M = M + 6 * 1.5 + 2 * 3 + 6 * 4.5 - 16.7 * 6 + 41.1 = 0$

$M = 17.1\ m.t$

$\Sigma f_x = 0, \quad \Sigma f_y = 0, \quad \Sigma M = 0$

Question Two (3 Marks)

Draw the shear, axial and bending moment diagrams for the beam shown in Figure below

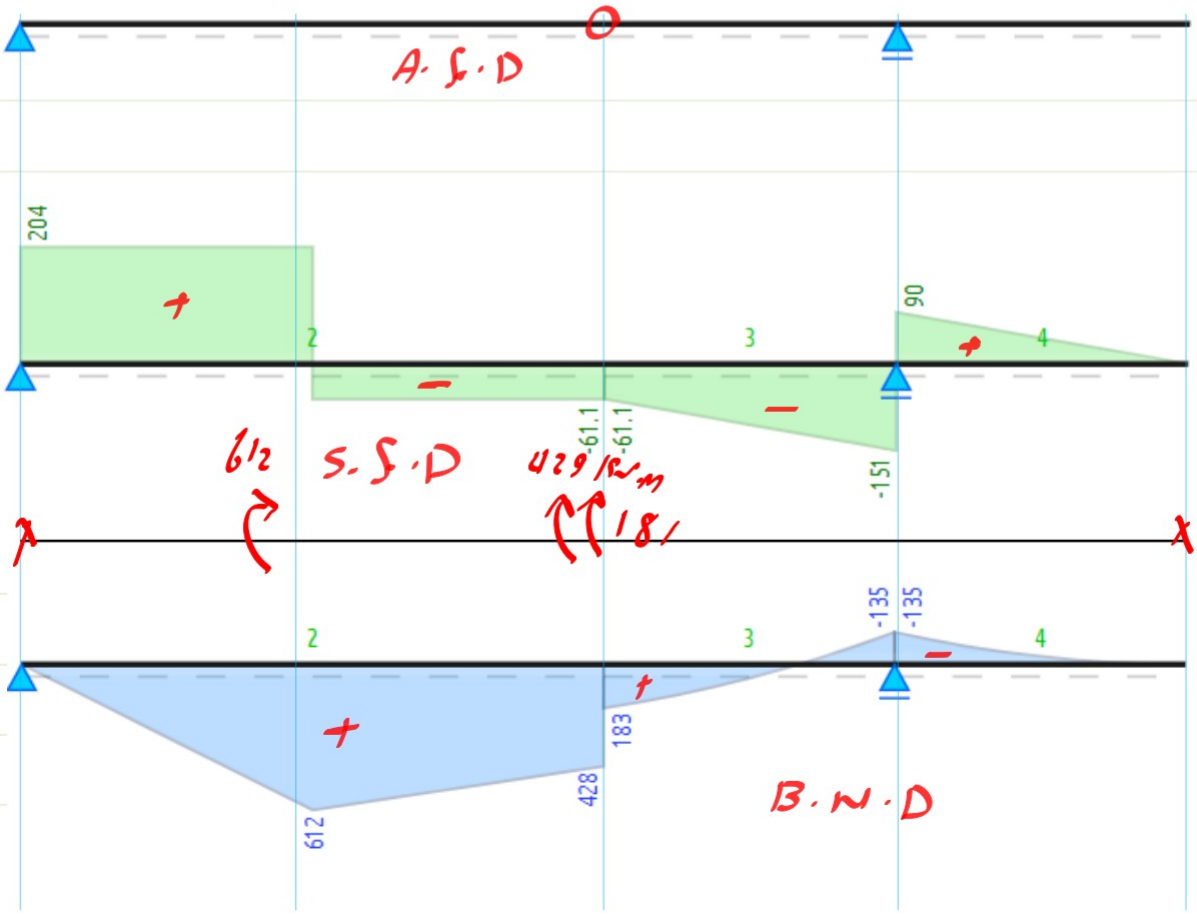


$\Sigma M_A = 265 * 3 - 245 + 90 * 7.5 - D_y * 9 + 90 * 10.5 = 0$

$D_y = 241\ kN$

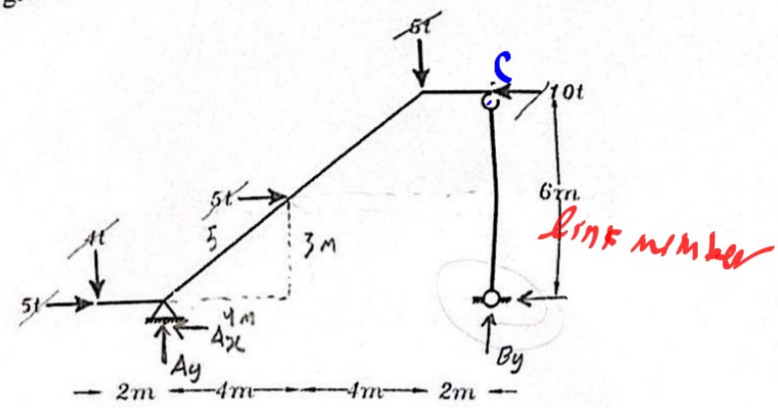
$\Sigma f_y = A_y - 265 - 90 + 241 - 90 = 0$

$A_y = 204\ kN$



Question Three (3 Marks)

Determine the supports reactions for the statically, rigid- jointed frame is indicated in figure below for the loading given.



$\Sigma f_x = 0$

$\Sigma f_y = 0$

$\Sigma M = 0$

$\Sigma M_{C\,lR} = 0$

First number

$$\Sigma f_x = 5 + 5 - 10 + A_x = 0 \Rightarrow A_x = 0$$

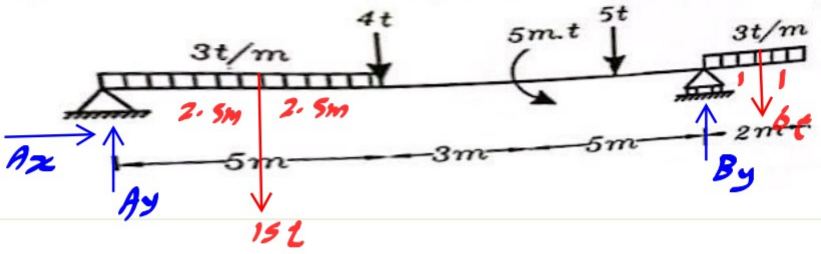
$$\Sigma M_A = -4 \times 2 + 5 \times 3 + 6 \times 8 - 10 \times 6 - B_y \times 10 = 0$$

$$B_y = -0.5t \uparrow = 0.5t \downarrow$$

$$\Sigma f_y = -4 + A_y - 6 - 0.5 = 0 \Rightarrow A_y = 10.5t \uparrow$$

Question Three (6 Marks)

Draw the axial force, shearing force and bending moment diagrams for the beam with an overhang subjected to the loads shown in Figure below.



$$\Sigma F_x = A_x = 0$$

$$\Sigma M_A = 15 \times 2.5 + 4 \times 5 - 5 + 5 \times 10.5 - B_y \times 13 + 6 \times 14 = 0$$

$$B_y = 10.5\,t$$

$$\Sigma F_y = A_y - 15 - 4 - 5 + 10.5 - 6 = 0$$

$$A_y = 15.5\,t \uparrow$$