Name: – – – – – – – – – – –

I.D.: – – – – – – – – – – –

Higher Technological Institute

Total Mark

30

Q	1	2	3	4
B.N.				

Civil Engineering Department

Mid Term Exam - (Mar./June 2013/2014)

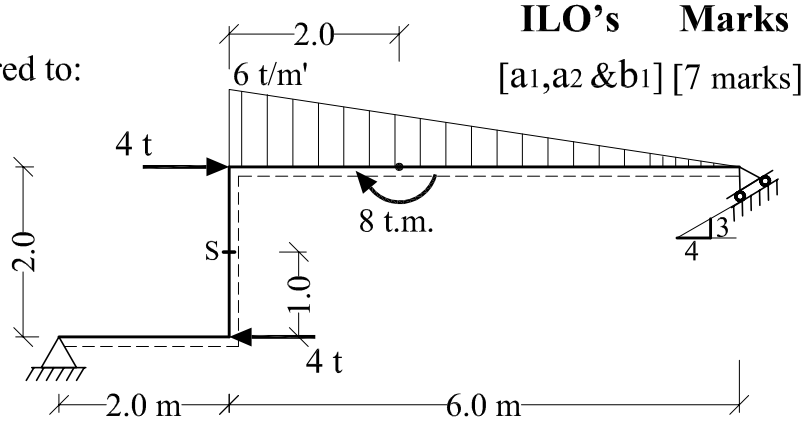
Dr. M. F. Abdel-Mongy | Structural Analysis (I) | Time: 1 ½ hrs.

ILO's **Marks**

Q1 For the following problem, it is required to: [a_1,a_2 &b_1] [7 marks]

a) Calculate the support reactions.

b) Calculate the internal forces at section (S).



ILO's **Marks**

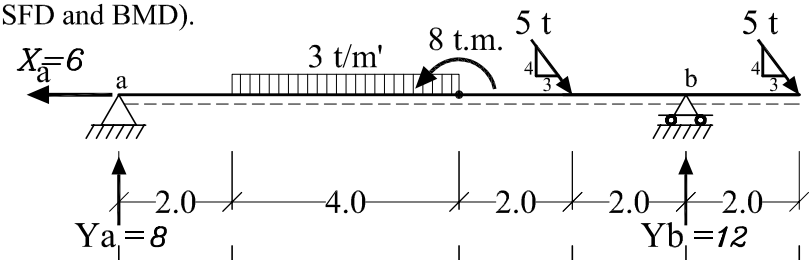
Q2 [a2,b1,c2&d1][11marks]

For the following beam,

I) Draw the internal forces diagrams (NFD, SFD and BMD).

II) Find and locate the maximum bending moment.

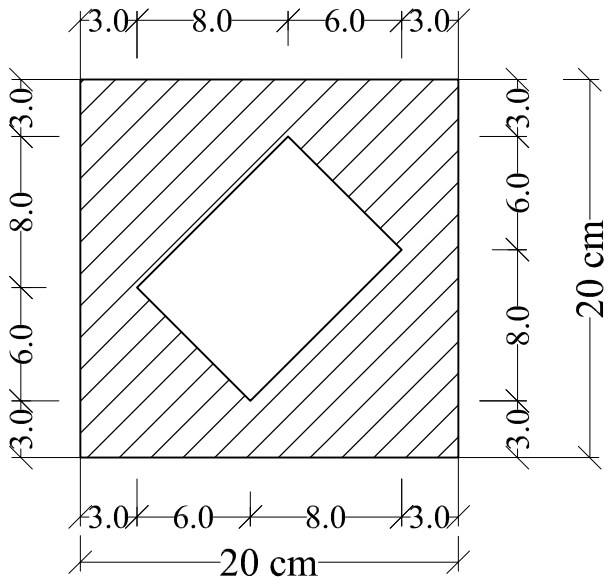
Note, use the provided reactions.



Calculations of the maximum bending moment and its location:

ILO's **Marks**

Q3 For the shown section below, find the following properties of section: [b3,c3&d1] [6marks]
(A area , C centroid, principal axes, principal moments of inertia I_1 , I_2).

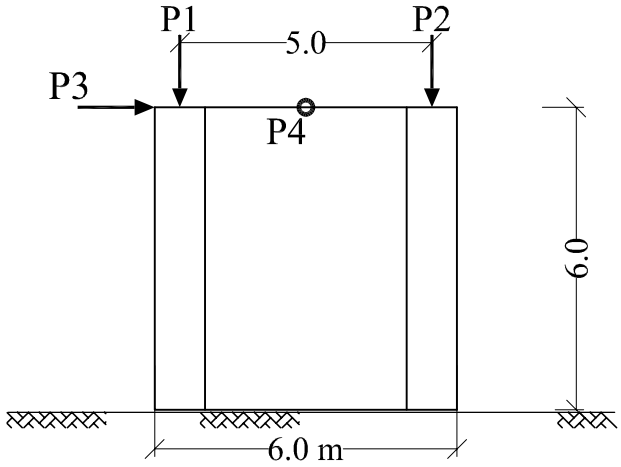
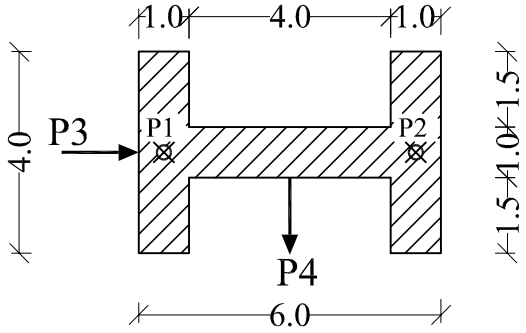
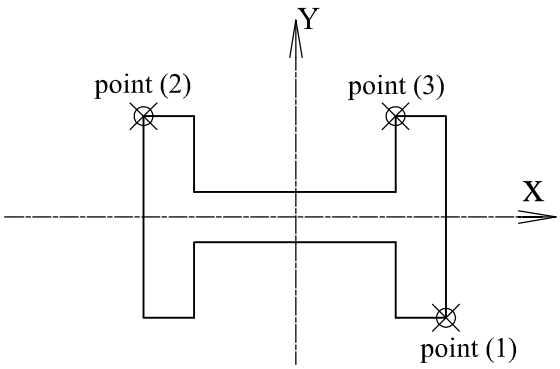


ILO's **Marks**

Q4 [a3,c3&d3] [6marks]

For the concrete block shown in the figure, it is required to find the stresses at the base of the concrete block at points (1), (2) and (3) using the following Straining Actions:

N = - 264 ton

M_x = +120 t.m.

M_y = - 180 t.m.