



**King Saud University
College of Engineering
Department of Civil Engineering**

FINAL EXAM

GE201 Statics - First Semester 1427 - 28 H

Wednesday, 5th Muharram 1428

Time allowed: 3 hrs (8.00 – 11.00 AM)

Student name (in Arabic)	
Student number	
Section	

Total number of Questions: 6

Answer all questions

Questions	Maximum Marks	Marks obtained
Q # 1	10	
Q # 2	10	
Q # 3	8	
Q # 4	8	
Q # 5	8	
Q # 6	6	
Total marks		<div>50</div>

Total marks obtained (in words): _____

Instructor



Student name

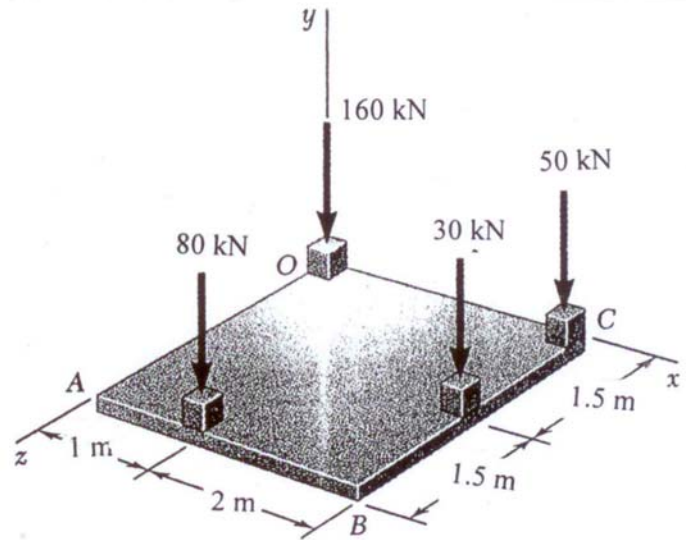
Student number

Marks obtained for Q1

Question # 1 (10 points)

A square foundation mat supports the four columns as shown in the figure.

Determine the magnitude and point of application of the resultant of the four loads.



Solution:



Student name

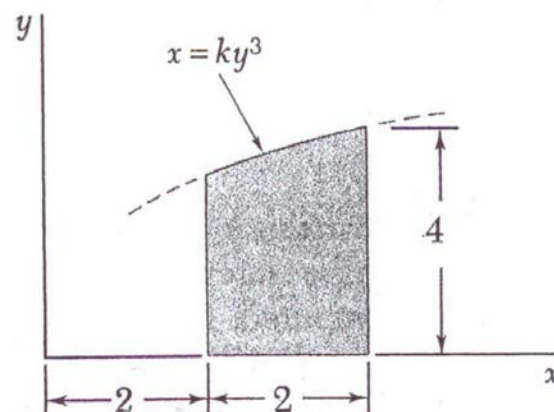
Student number

Marks obtained for Q2

Question # 2 (10 points)

For the shaded area as shown in the figure, determine:

- (a) the x - and y - coordinates of the centroid.
- (b) the moment of inertia about x -axis.



Solution:



Student name

Student number

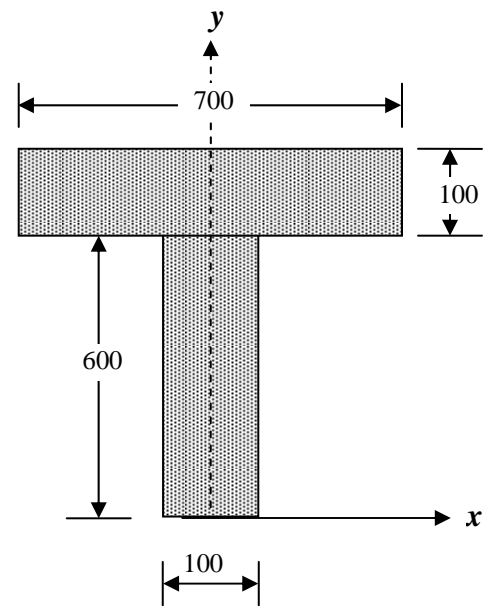
Marks obtained for Q3

Question # 3 (8 points)

For the section shown in the figure, determine:

- (a) the x - and y - coordinates of the centroid.
- (b) the moment of inertia about x -axis (I_x).
- (c) the moment of inertia about the x -axis passing through the centroid (\bar{I}_x).

(all dimensions in mm)



Solution:



Student name

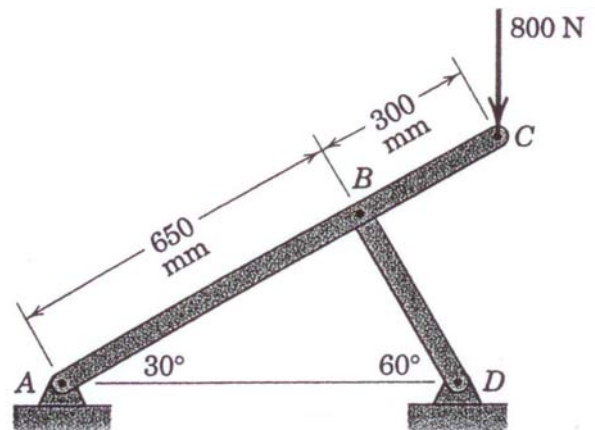
Student number

Marks obtained for Q4

Question # 4 (8 points)

Determine the magnitudes of all pin reactions for the loaded frame.

Solution:





Student name

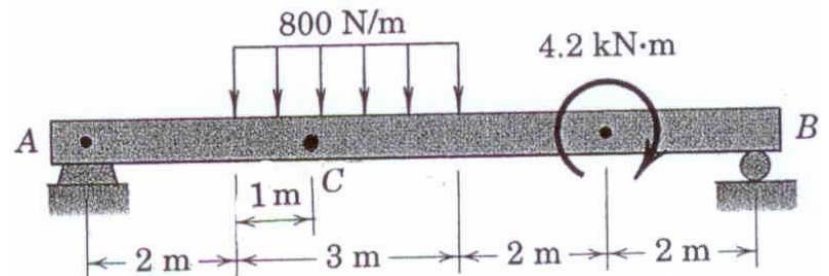
Student number

Marks obtained for Q5

Question # 5 (8 points)

For the beam shown in the figure, determine:

- the reactions at supports **A** and **B**.
- the shear force and bending moment values at the section passing through point **C**



Solution:



Student name

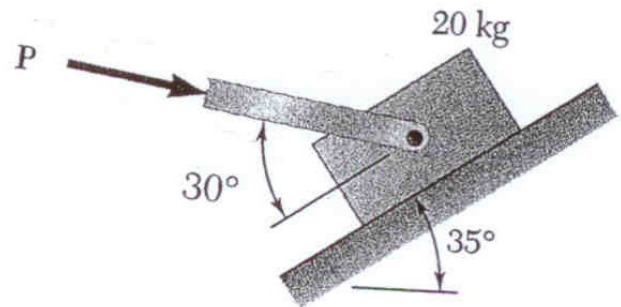
Student number

Marks obtained for Q6

Question # 6 (6 points)

Calculate the minimum value of force **P** necessary
to prevent the block from sliding downwards.

The static coefficient of friction, $\mu_s = 0.30$.



Solution: