

# *King Fahd University of Petroleum & Minerals*

## Department of Civil Engineering

### CE 201 – Static

**Semester:** 111  
**Examination:** Final  
**Date (Day):** January 7, 2012 (Saturday)  
**Time:** 07:30 – 10:30 a.m.

Section	1 & 6	2 & 5	3	4 & 13	7	8	9	10	11	12
Instructor	Tayyib	Mandil	Qahtani	Hussein	Chowdhury	Qadhib	Amoudi	Shamshad	Malack	Arifulzaman
Time	07:00 & 10:00	08:00 & 10:00	09:00	08:00 & 07:00	10:00	11:00	11:00	13:10	07:00	09:00
Tick										

<b>Student</b>	<b>Name:</b>	<b>ID:</b>
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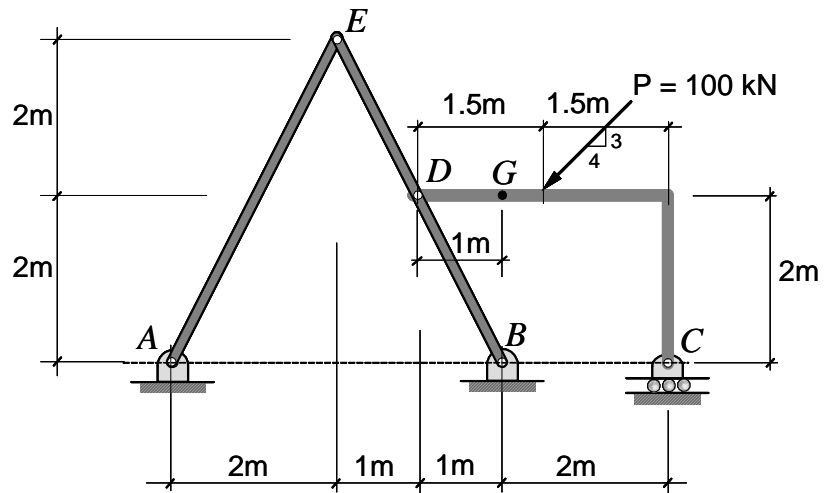
Problem	Assigned Grade	Earned Grade
1	20 (Points)	
2	25 (Points)	
3	25 (Points)	
4	15 (Points)	
5	15 (Points)	
<b>Total</b>	<b>100 (Points)</b>	

*Good Luck*

### Problem 1 (20 Points)

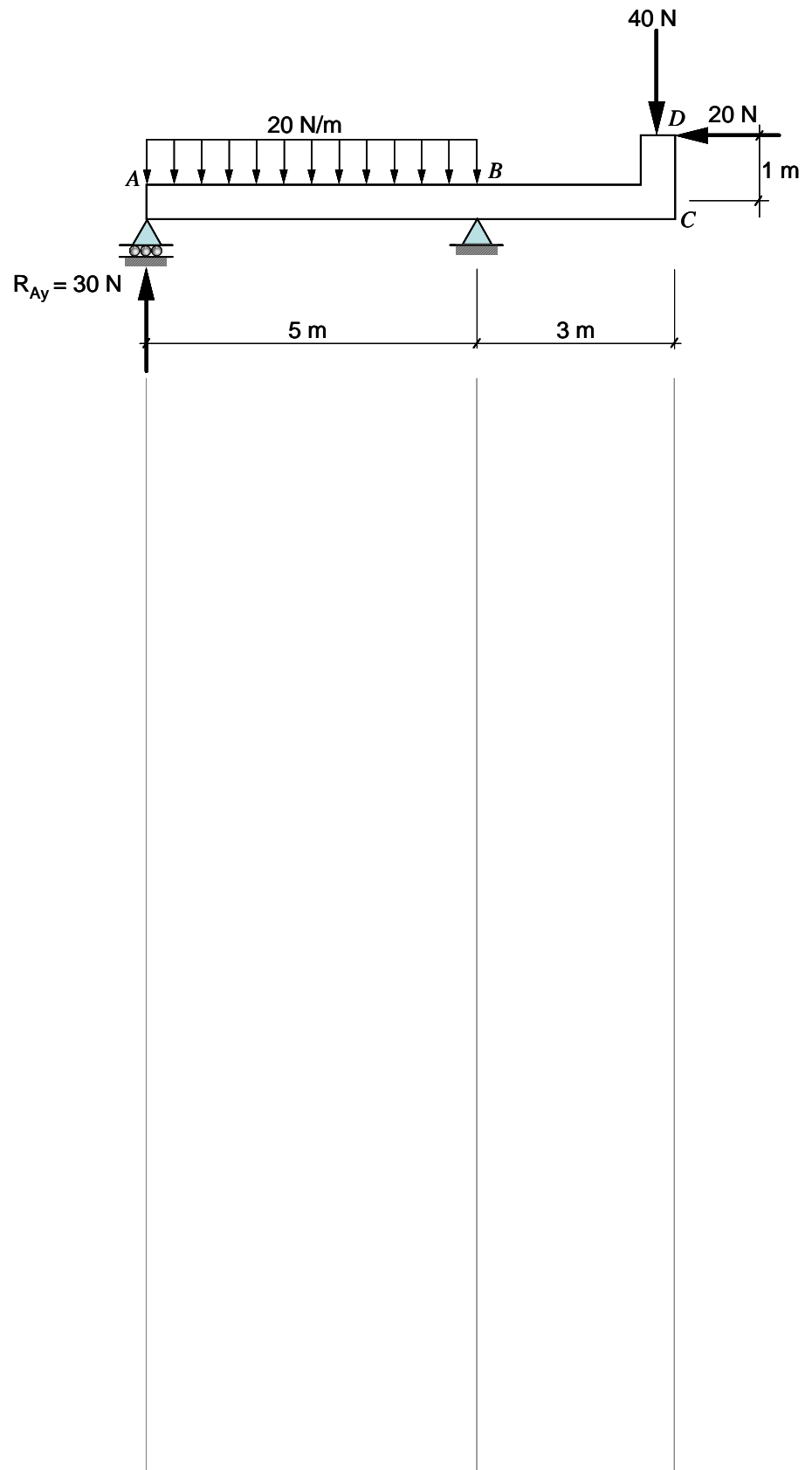
For the Figure shown below:

- (15 Points) (a) Determine the horizontal and vertical components of the forces at pin E.
- (5 points) (b) Determine the internal normal force, shear force and bending moment at point G.



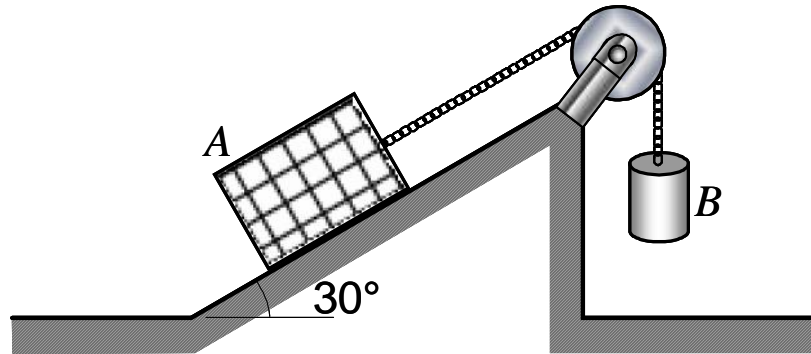
## Problem 2 (25)

Draw the shear and moment diagrams for the ABC beam shown below.



**Problem 3 (a) (10 Points)**

Box A is connected to box B with a rope passing over a frictionless pulley, as shown in the Figure below. Box A weighs 100 kg and placed on a ramp inclined at  $30^\circ$ . The coefficient of static friction between box A and ramp is 0.30. Determine the minimum weight of box B required to prevent box A from sliding down on the ramp.



**Problem 3 (b) (15 Points)**

The 100 N uniform ladder (AB) is held in the position by the force P, as shown in the Figure below. Determine the smallest value of the force P needed to hold the ladder in equilibrium. The coefficient of static friction at A and B is 0.20.

