Seat No

King Mongkut's University of Technology Thonburi

Final Examination
Semester 2 Academic Year 2014

CVE 237: Structural Analysis I

Date: 11th May 2015 Time 13:00 – 16:00

Instructions :

1. The exam has **5** questions in **10** pages. Total points are **40** points with each question not of equal points.
2. Read the questions carefully and strictly follow instruction.
3. Textbooks and written materials **are not allowed** in the examination room.
4. A calculator is allowed.
5. Write your name on every page.
6. Perform your work in the examination paper.

Examiner: Assistant Professor Aphinat Ashakul
Tel. 02-470-9148

This examination paper has been approved by the Department of Civil Engineering

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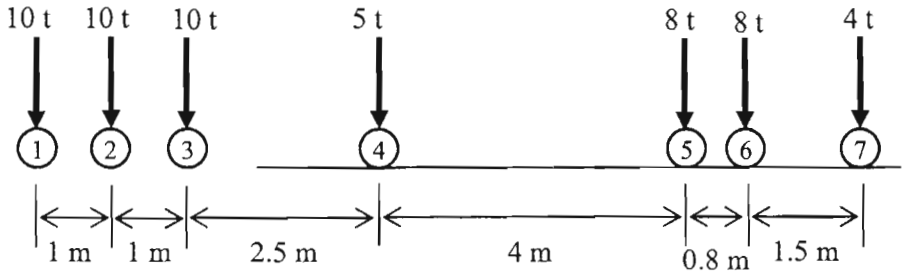
for **Associate Professor Dr. Sutat Leelataviwat**
Head of the Civil Engineering Department

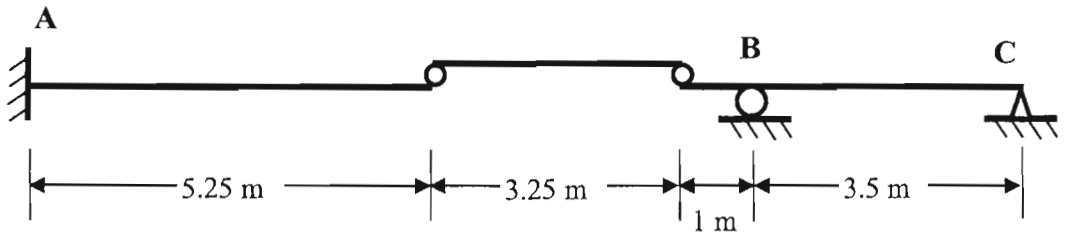
Student Name & I.D._____

1. Calculate the maximum positive bending moment on the 18-m simple beam caused by the moving load shown. **(4 Points)**



Student Name & I.D._____

2. Construct the influence line for R_A, M_A, R_B, $V_{B(right)}$, M_B, and R_C of the beam shown. Also, use the influence line to calculate R_A and M_A if there is a uniform load of 2 t/m acting on the entire span of the beam, i.e., from A to C. **(8 Points)**



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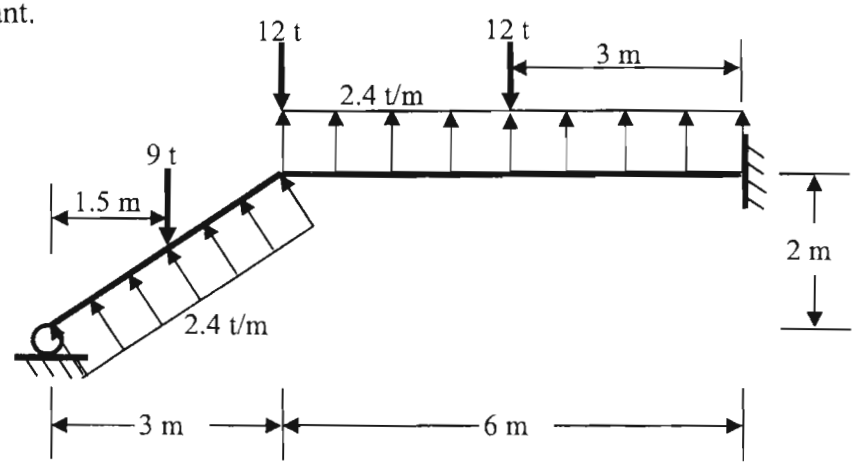
3. You are tasked to investigate the frame under the uplift pressure and the gravity load shown. To check with the output from the program, calculate **all the reactions** of the frame by using the method of consistency. **(10 Points)**

EI is constant.



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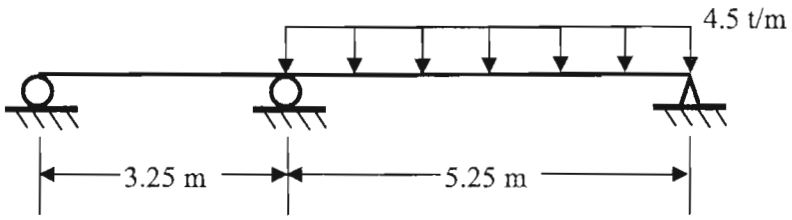
4. Draw Shear Force and Bending Moment Diagrams of the beam shown. A complete shear force diagram should include locations where shear is zero; and a complete bending moment diagram should include values for max. positive and negative moments including its locations, and locations of points of inflection. EI is constant. **(12 Points)**



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5. Calculate the horizontal displacement at point D of the truss shown. Answer in terms of AE, which is constant. **(6 Points)**