DEPARTMENT OF CIVIL ENGINEERING

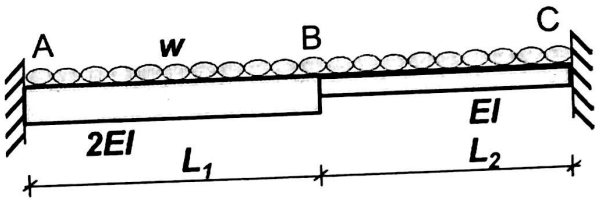
STRUCTURAL ANALYSIS-II (CVL341)

MAJOR EXAMINATION

Date: 23/11/16; *Venue: LH325* *Time : 8-10 AM* *Full Mark = 80*

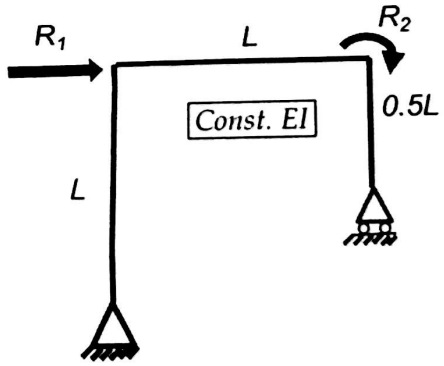
Notes: (i) Answer all questions; (ii) Start solution of a problem on a fresh page; (iii) Exchange of materials is strictly not allowed.

Question#1: Using *Rayleigh Ritz Method*, determine the deflection and slope at point "B" of a fixed-end beam as shown in the following figure. **(15 Marks)**



Question#2: Using *Matrix Force Method*, determine all the member forces (end moments) and the nodal displacements corresponding to the applied loads (R_1 and R_2) for the frame shown below.

(30 Marks)



Question#3: Consider a two-span continuous beam ABC which is fully-fixed at supports A and C. A uniformly-distributed load of 24 kN/m is applied to span AB and a concentrated load of 24 kN is applied at the mid-span of span BC. Analyze the structure using *Direct Stiffness Method*.

(i) Generate the structural stiffness matrix [K] and determine the joint displacements/rotations,

(ii) Determine the member end forces and support reactions,

(iii) Draw the shear force and bending moment diagram

(35 Marks)