CEL332 Steel Structures 6/5/2010 **Total 70**

Answer the first four questions first in the open book answer book to receive the note required for open book exam.

Closed ~~Open~~ Book Part

1 Explain the concept of Plastic hinge used a Beam fixed at both end 5

2 I-section beam at a point has Shear Stress V. Show the stress-distribution along the section 5

3 Explain the role of vertical stiffeners and horizontal stiffeners. Where are the horizontal stiffeners generally placed. 5

4 Explain the concept of web buckling 5

Open ~~Closed~~ Book Part

5 A Roof of a hall measuring 6m x 12 m consists of 100 mm thick RCC slab (25 kN/m^3) supported of Steel I beams spaced 3 m apart as shown in the figure. The finishing load may be taken as 1.5 kN/m^2 and live load as 1.5 kN/m^2. Design the steel beam. 10

6 a) An ISBM 450 Beam transmits an end reaction of 220 KN to the web of a column ISHB 300. Design and sketch a stiffened seated connection. Use M24 black bolts. 10

b) Check the section for web buckling and web crippling for the beam. 10

7 Design a welded plate girder of span 30 m to carry on superimposed load of 35 kN/m. 20