Minor 2   CEL 3432   21-03-2015   Design of Steel Structures

The question paper has two parts

Part A: Is closed book. You are supposed to submit the answer paper 1 before receiving the answer paper for part B.

Part B : Open book exam

Part A (Closed book)

1. Draw Euler's column, its basic differential equation, general solution, and calculation of P based on n.   10
2. Explain the significance of n in the above equation by drawing diagram for n = 3.   2
3. Draw Load deflection diagram showing the following
   a. Euler's case   2
   b. Elastic Large Deflection theory (Write what term changes)   4
   c. Elastic with eccentricity (write diagram and explanation)   4
4. Inelastic and with eccentricity   4
5. Provide a case of local buckling   4

Part B (Open book)

6. Design a column with single section, length = x, with top hinged and bottom fixed. Mention ideal and codal value of K. Draw line diagram and full diagram.   20
   a. 5 m 500 KN roll no ending with 1,7
   b. 6 m 500 KN roll no ending with 2,8
   c. 4 m 400 KN roll no ending with 3,9
   d. 3m 200 KN   roll no ending with 4,0
   e. 8 m 100 KN roll no ending with 5,6
7. Design a column with two I or channel section by lacing or bracing, length = x, with top hinged and bottom fixed. Mention ideal and codal value of K. Draw line diagram and full diagram.   50
   a. 10 m 1100 KN roll no ending with 1,7
   b. 8 m 1200 KN roll no ending with 2,8
   c. 10 m 1000 KN roll no ending with 3,9
   d. 12m 900 KN   roll no ending with 4,0
   e. 8 m 1100 KN roll no ending with 5,6