28/9/13

Roll No. | | | | | | | | | | |

B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013

CIVIL ENGINEERING

Sixth Semester

CE382/CE9351 Structural Analysis -II

(Regulation 2004/2008)

Time: 3 Hours | Answer ALL Questions | Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. What are influence line diagrams?
2. What is meant by critical stress resultants?
3. State Muller-Breslau's principle.
4. Using Muller-Breslau's principle, how do you find the influence line for prop reaction?
5. What is meant by theoretical arch?
6. How do you consider the settlement of arches?
7. What do you mean by an unstiffened cable?
8. What are the advantages of space trusses?
9. Compare Elastic analysis and Plastic analysis.
10. State Upper bound theorem.

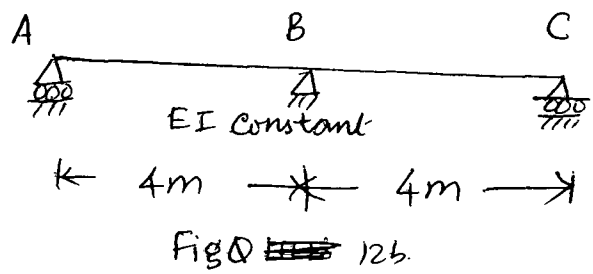
Part – B (5 x 16 = 80 marks)

11. A uniformly distributed load of 40kN/m run, 6m long crosses a simply supported girder of 30m span. Calculate the maximum shear force and bending moment at sections 5m, 10m and 15m from the left hand support. Construct the maximum shear forces and bending moment diagrams.

12. a) Make neat diagrams of the influence lines for shearing force and bending moment at a section 3m from one end of a simply supported beam,12m long. Use the diagrams to calculate the maximum shearing force and the maximum bending moment at this section due to a uniformly distributed rolling load,5m long of 2kN per meter intensity. Use Muller-Breslau's principle.

(OR)

b) Determine the influence line for R_a for the continuous beam shown in FigQ12.b. Compute the ordinates at every 1m interval. Use Muller-Breslau's principle.



FigQ 12b.

13. a) A three hinged circular arch having span 16m and carries two point loads of 100kN and 80kN at the left and right quarter span points respectively. Determine the resultant reactions at the supports. Find the bending moment, normal thrust and radial shear at a section 6m from the left support.

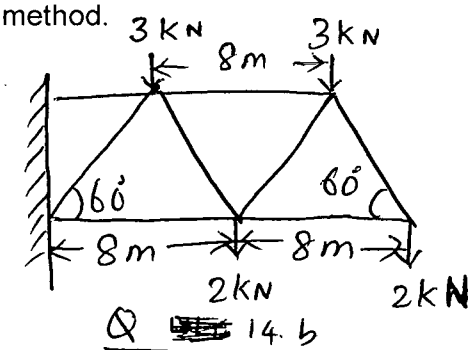
(OR)

b) A fixed parabolic arch of span 20m and central rise 4m has moment of Inertia at any section $I=I_o \sec\Theta$, where I_o is the moment of Inertia at the crown and Θ is the inclination of the tangent with the horizontal. The left hand half-span of the arch carries a uniformly distributed load of 40kN/m of horizontal span of the arch. Determine the reactions at the supports.

14. a) A suspension cable with 130m horizontal span is supported at the same level. It is subjected to UDL of 28.5kN/m per horizontal metre. If the maximum tension in the cable is limited to 6000kN, calculate the minimum central dip needed.

(OR)

b) Determine the forces in the members of the truss shown in Fig.Q14b. by tension coefficient method.



Q 14. b

15. a) Calculate the shape factor for the I-section 200mm wide and 250mm deep has a mean flange thickness of 20mm and a web thickness of 10mm.

(OR)

b) A beam fixed at both ends is subjected to a to UDL 'W' on the right half portion. Determine the value of collapse load W_c. The beam is of uniform plastic moment M_p.