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Question Paper Code: 56101C

B.E./B.Tech. DEGREE EXAMINATION, SEP 2020

Sixth Semester

Civil Engineering

15UCE601- STRUCTURAL ANALYSIS – II

(Regulation 2015)

Duration: One hour

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer Any Six of the following Questions)

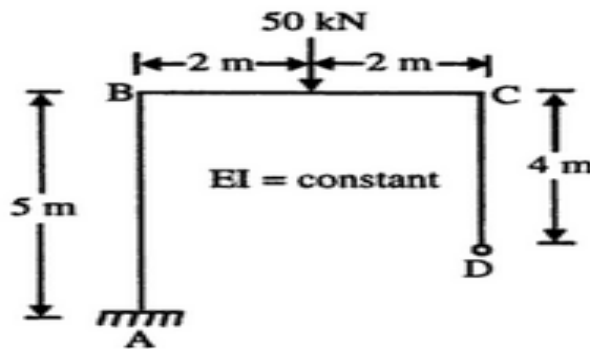
1. The _____ is defined as the ratio of the plastic moment of a section to the yield moment of the section. CO1- R
(a) Elastic factor (b) Shape factor (c) Moment factor (d) Plastic factor
2. The expression for plastic modulus of section (Z_p) CO1- R
(a) $Z_p = I/y$ (b) $Z_p = y/I$ (c) $Z_p = A/2(y_1 + y_2)$ (d) $Z_p = I/z$
3. Static indeterminacy value of a continuous beam ABC, fixed at A and hinged at B and C is CO2- R
(a) 1 (b) 2 (c) 3 (d) 4
4. $[P] = [k][\Delta]$ where k is CO2- R
(a) Flexibility (b) stiffness (c) Load (d) Displacement
5. Flexibility matrix method is known as CO3- R
(a) Force method (b) Displacement method
(c) Equilibrium method (d) Graphical method
6. The relation between flexibility and stiffness is CO3- R
(a) directly proportional (b) inversely proportional
(c) both are same (d) None of the above
7. The intersections of the sides of the elements are known as _____. CO4- R
(a) Nodal lines (b) Nodes (c) Linear elements (d) Nodal planes

8. Most of the FEM software use CO4- R
 (a) displacement method (b) force method (c) stress method (d) hybrid method
9. One practical application of curved beam is CO5- R
 (a) Circular tanks (b) Industrial buildings (c) Bridges (d) Arches
10. _____ is a three dimensional assemblage of line members, CO5- R
 each member being joined at its ends.
 (a) Space frame (b) Penta frame (c) Cantilever beam (d) Propped beam

PART – B (3 x 8= 24 Marks)

(Answer Any three of the following Questions)

11. Determine the shape factor and plastic moment of the symmetrical steel section (I section). Assume yield stress of steel is 250 MPa. Total depth=600 mm CO1- App (8)
 Breadth of each flange= 250 mm
 Depth of each flange =30 mm
 Thickness of web= 12 mm
12. Write the step by step procedure of matrix stiffness method. CO2- U (8)
13. Analyse the frame using matrix flexibility method. CO3- Ana (8)



14. What are all the Basic steps involved in Finite Element Method? Explain. CO4- U (8)
15. A suspension bridge is of 160 m span. The cable of the bridge has a dip of 12 m. The cable is stiffened by a three hinged girder with hinges at either end and at centre. The dead load of the girder is 15kN/m. Find the greatest positive and negative bending moments in the girder when a single concentrated load of 340 kN passes through it. Also find the maximum tension in the cable. CO5- U (8)