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Question Paper Code: 56101

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 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) $Z_p = I/z$
2. Shape factor of square section is CO1- R
(a) 1.0 (b) 1.5 (c) 2.0 (d) 2.5
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. The relation between flexibility and stiffness is CO3- R
(a) Directly proportional (b) Inversely proportional
(c) Both are same (d) None of the above
6. Flexibility matrix method is known as CO3- R
(a) Force method (b) Displacement method
(c) Equilibrium method (d) Graphical method
7. Flexibility method in structural analysis is also known as
(a) Slope-deflection method (b) Moment-distribution method
(c) Consistent-deformation method (d) Stiffness method

8. A triangular plane stress element has _____ degree's of freedom. CO4- R
 (a) 3 (b) 4 (c) 5 (d) 6
9. Most of the FEM software use CO4- R
 (a) Displacement method (b) Force method
 (c) Stress method (d) Hybrid method
10. Three noded triangular element is known as CO4- R
 (a) CST (b) QST (c) LST (d) NLST

PART – B (3 x 8 = 24 Marks)

(Answer any Three of the following Questions)

11. A two span continuous beam ABC has span lengths AB = 6 m and BC = 6 m and carries a uniformly distributed load of 30 kN/m completely covering the spans AB and BC. A & C are simply supports. If the load factor is 1.8 and the shape factor is 1.15 for the 'I' section, find the section modulus needed. Assume yield stress for the material as 250N/mm². CO1- App (8)
12. Write the step by step procedure of matrix stiffness method. CO2- U (8)
13. Analyze the continuous beam ABC using flexibility matrix method where support A is fixed and B and C are over rollers. Span AB = 4m and BC = 3 m. AB is loaded with a UDL of 60 kN/m and BC is loaded with a central point load of 100 kN. CO3- Ana (8)
14. Explain the basic steps involved in Finite element of analysis of a structure. CO4- U (8)
15. What are all the Basic steps involved in Finite Element Method? Explain. CO4- U (8)