



VIT
Vellore Institute of Technology
(Decreed by the University under section 3 of UGC Act, 1956)

Continuous Assessment Test – II
Winter Semester 2018-19

Programme Name & Branch: B.Tech Civil Engineering

Course Name & Code: STRUCTURAL ANALYSIS & CLE2003

Class Number: 3420 Slot: C1+TC1 Exam Duration: 90 Minutes. Maximum Marks: 50

Answer all questions

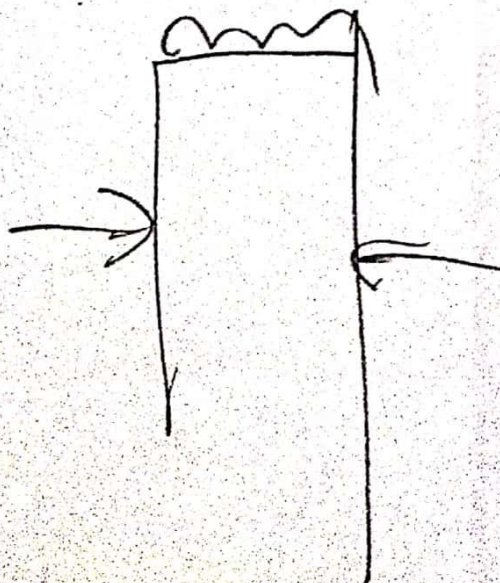
Section – A (1x 10 = 10 Marks)

1. A continuous beam 'AEC' is simply supported at 'A' and 'C' and propped at 'B'. 'AB' = 5 m and 'BC' = 6 m. A point load of 8 kN acts at the mid span of 'AB'. The entire span 'BC' is subjected to a UDL of 3 kN/m. Analyze the beam using strain energy method.

Section – B (2x 20 = 40 Marks)

2. A continuous beam 'ABCD' is fixed at 'A', simply supported at 'D' while 'B' and 'C' are propped. 'AB' = 6 m, 'BC' = 7 m and 'CD' = 8 m. Two point loads of 10 kN and 6 kN act at a distance of 4 m and 9 m from support 'A' respectively. The entire span CD is subjected to a UDL of 2 kN/m. The support 'B' and 'C' sinks by 15 mm and 20 mm respectively. The moment of inertia of the whole beam is $2.2 \times 10^6 \text{ mm}^4$ and $E = 2 \times 10^5 \text{ N/mm}^2$. Analyze the beam using slope deflection method.
3. A portal frame 'ABCD' is fixed at 'A', simply supported at 'D'. The column 'AB' = 5 m and 'DC' = 7 m. The beam 'BC' = 6 m. A horizontal point loads of +10 kN and -6 kN act at mid span of 'AB' and 'DC' respectively. The entire span 'BC' is subjected to a UDL of 1 kN/m. The moment of inertia of the whole beam is $2.2 \times 10^6 \text{ mm}^4$ and $E = 2 \times 10^5 \text{ N/mm}^2$. Analyze the beam using moment distribution method.

-X-X-X-



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