Reg. No: | | | | | | | | | | |

MANIPAL INSTITUTE OF TECHNOLOGY

(Constituent College of MAHE – Deemed University)

Manipal – 576 104.

THIRD SEMESTER B.E. (CIVIL)

MAKE - UP EXAMINATION JANUARY - 2007

SRUCTURAL ANALYIS – I (CIE –203)

(Revised Credit System)

TIME: 3 HRS.] [MAX. MARKS: 50

*Note: 1. Answer **any FIVE FULL** questions.*

2. Missing data, if any, may be suitably assumed and indicated

1. Determine slopes at A, B and C and deflection at C for the beam shown in fig. 1. (10)

2.A. State and explain Castigliano's first theorem. (02)

2.B. Determine the reaction components and the forces in the members of the frame shown in fig. 2 B. Treat V_B as redundant. All members have the same cross sectional area. (08)

3.A. Analyse the propped cantilever shown in fig. 3A. Draw BMD and SFD showing point of contraflexure and point where maximum bending moment occurs. (05)

3.B. Analyse the fixed beam shown in fig. 3.B. Draw SFD and BMD showing points of contraflexure and points where the values are maximum. (05)

4.A. For the three-hinged parabolic arch shown in fig. 4.A., draw BMD showing points of contraflexure and points of maximum bending moment values. (06)

4.B. For the cable shown in fig. 4.B. Determine the maximum and minimum tensions in the cable. Where do they occur. If the permissible tensile stress in the cable is 200 N/mm^2, find the area of cross section of the cable required. (04)

5.A. A u.d.l of 40kN/m and of length 6m traverses a simply supported beam AB of span 30m. Determine F_x max.– ve , F_x max. +ve, M_x max. and maximum M_x max. in the beam. AX = 10m. (06)

5.B. Draw ILD for forces in the members (1) and (2) of the frame shown in fig. 5.B. Determine the forces in these members due to the set of loads shown. (04)

6. A. State and explain Muller Breslau's principle. (02)

6. B. Draw I.L.D for M_B for the continuous beam of two spans AB = 4m, BC = 6m. Find M_B when a u.d.l of 20 kN/m covers AB and two concentrated loads of 100 kN and 80 kN act at 2m from B and C respectively, on span BC. (08)

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