53 (CE 402) STAN-I

2018

STRUCTURAL ANALYSIS–I

Paper : CE 402

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. Draw shear force and bending moment diagram of *Fig.* 1. 20

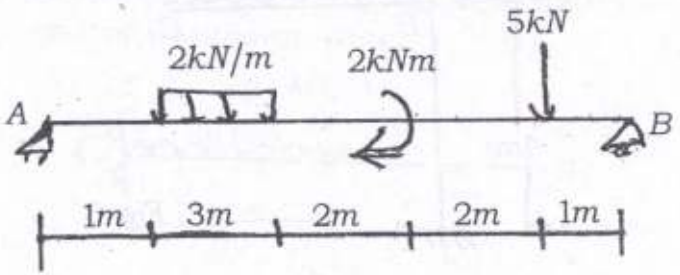

Fig. 1

2. A simply supported beam of span $12m$ is shown in *Fig.* 2. Determine the vertical deflection at D and rotation at E.

Take $EI = 20000 kNm^2$. 20

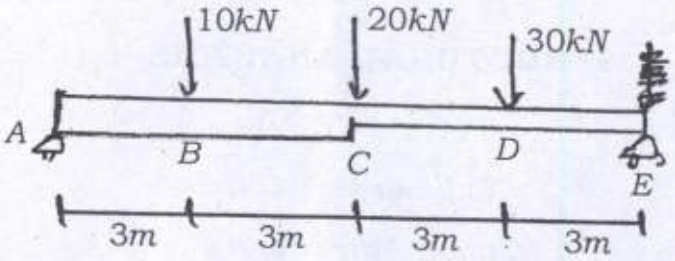

Fig. 2

3. Determine the vertical and horizontal displacement at C in the frame shown in *Fig.* 3.

Take $EI = 12 \times 10^{13} Nm^2$. 20

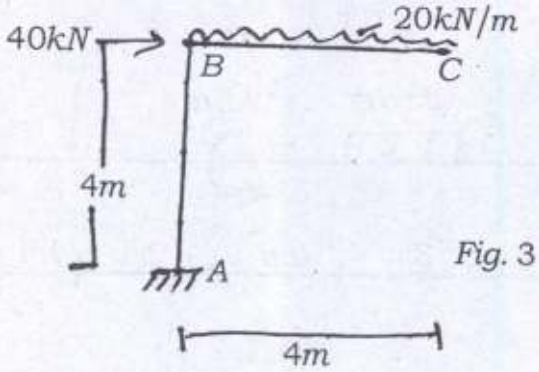

Fig. 3

4. Determine the forces in all the members of truss as shown in *Fig.* 4. 20

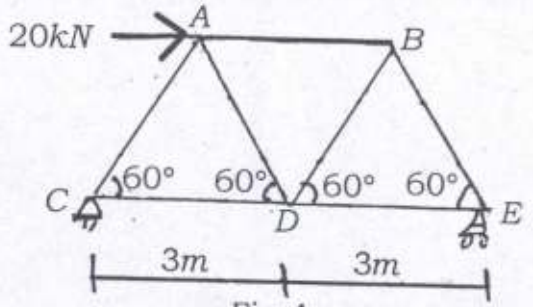

Fig. 4

5. Write short notes on : 5×4=20

   (a) Moment Area Method

   (b) Castigliano's Theorem

   (c) Different types of support conditions

   (d) Determinate and Indeterminate structures.

6. Derive the rotation and deflection at the free end of Cantilever beam in *Fig.* 5. 20

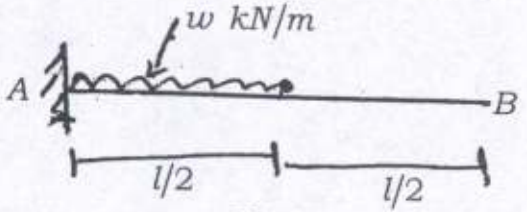

Fig. 5