Total No. of printed pages = 3

CT-401/Struct. Analy/4th Sem/2014/N

STRUCTURAL ANALYSIS

Full Marks – 70

Pass Marks – 28

Time – Three hours

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

Answer any *five* questions.

1. Define and or explain : 14

   (a) Degree of indeterminacy

   (b) Point of contraflexure

   (c) Unit load method

   (d) Relation between original beam and its conjugate beam.

2. A circular arch of span 25m with a central rise of 5m is hinged at the crown and springing. It carries a point load of 100 kN at 6m from the left support.

[Turn over

Calculate : 14

(i) The reactions at the supports

(ii) The reactions at the crown

(iii) Moment at 5m from the left support.

3. (a) Discuss influence line diagram. 3

(b) Using influence line diagrams, determine the shear force and bending moment at section C in the simply supported beam shown in Fig. 1. 11

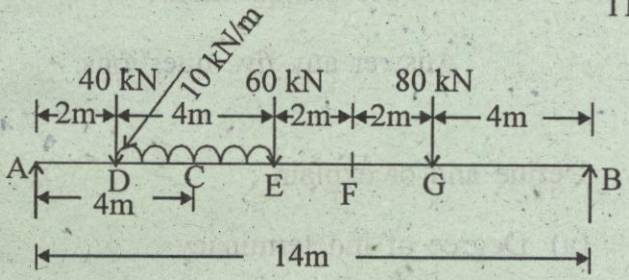

Fig. 1

4. Determine the slope and deflections at B and C in the cantilever beam shown in Fig. 2. 14

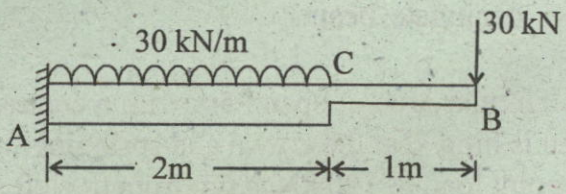

Fig. 2

5. Determine the vertical and the horizontal deflection at the free end of the bent shown in Fig. 3. Assume EI constant throughout. 14

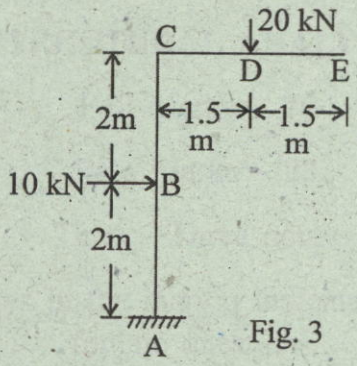

Fig. 3

6. (a) Define and explain moment area theorems. 4

(b) Determine the slope and deflection at the free end of a cantilever beam as shown in Fig. 4 by moment area method. 10

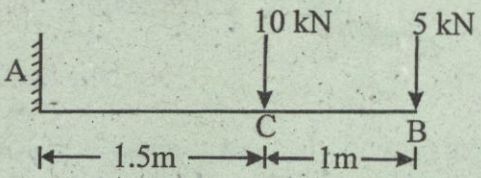

Fig. 4