D 30959 (Pages : 4) Name.....

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION OCTOBER 2012

CE 09 505—STRUCTURAL ANALYSIS—II

(2009 Scheme)

Time : Three Hours Maximum : 70 Marks

Part A

All *questions are* compulsory.

1. Explain kinematic indeterminacy with examples.
2. Obtain the expression for distribution factor.
3. Explain the term rotation factor.
4. What is meant by substitute frame ?
5. Explain (i) Mechanism. (ii) Shape factor.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

1. Analyse the beam show in Fig.1. by slope deflection method. Draw B.M.D., EI = constant.

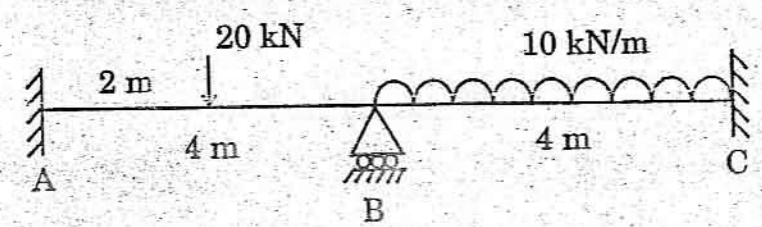

Fig. 1

2. Analyse and draw B.M.D. Use moment distribution method. EI is constant throughout Fig. 2.

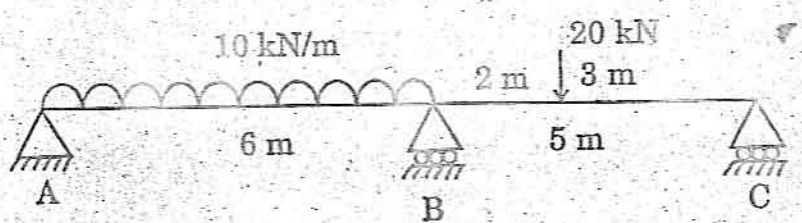

Fig. 2

3. Analyse and draw B.M.D. Use Kani's method.

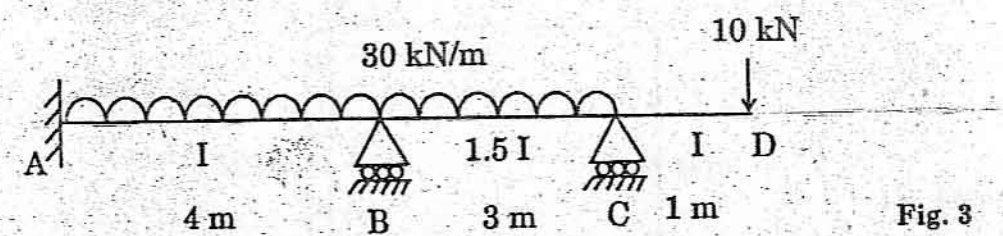

Fig. 3

Turnover

4. Analyse the portal frame shown below by cantilever method. Draw B.M.D. Assume columns have same cross-sectional areas.

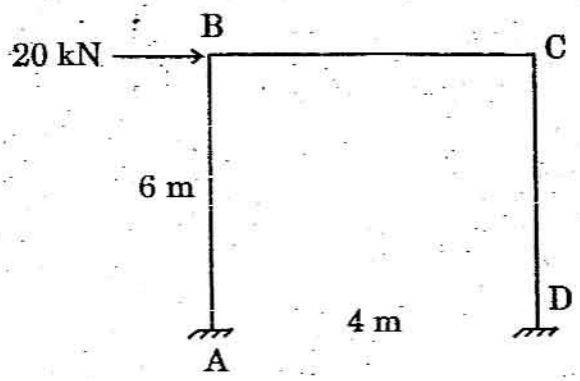

Fig. 4

5. Obtain shape factor for a T-Section with flange width 100 mm, overall depth 100 mm, thickness of web and flange 10 mm.
6. Obtain the collapse load for a propped cantilever carrying u.d.l. w/m run. The beam is of uniform section throughout.

(4 × 5 = 20 marks)

Part C

Answer any **one** *questions from each module.*

1. Analyse using slope deflection method. Draw B.M.D.

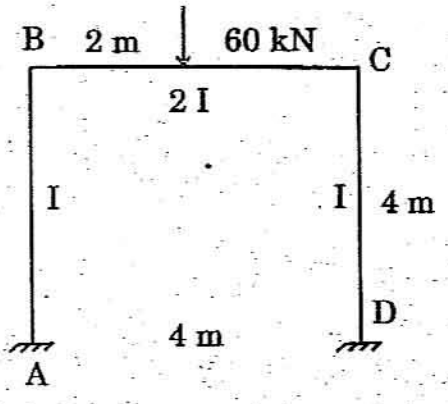

Fig. 5

Or

2. Analyse the portal frame by Moment distribution method. Draw B.M.D.

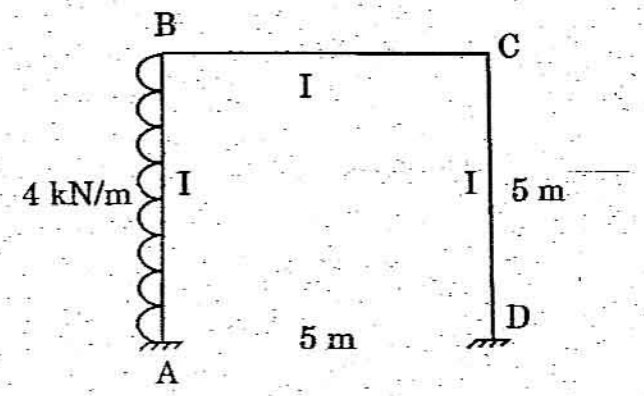

Fig. 6

3. Analyse the beam shown below using Three moment Theorem. Draw B.M.D.

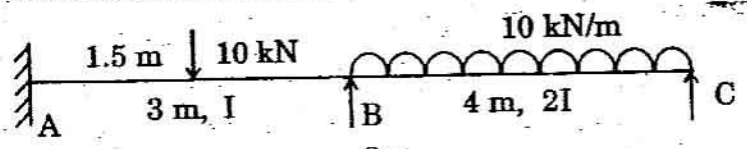

Fig. 7

Or

4. Analyse the portal frame using Kani's method. Draw B.M.D.

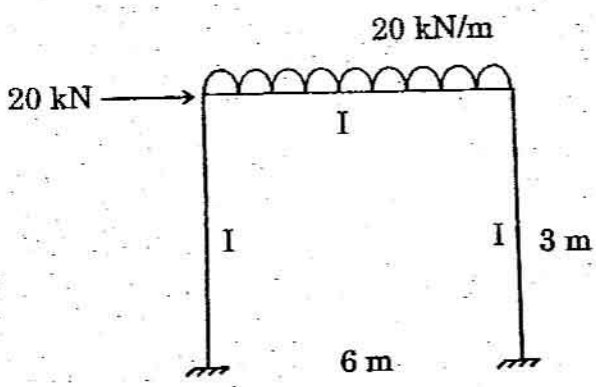

Fig. 8

5. In a multi-storeyed building, the frame shown below are spaced at 4 m intervals. Dead load from the slab is 3 kN/m^2 and the live load is 5 kN/m^2. Analyse the beam BC for midspan positive bending moment. Self wt. of the beam may be ignored. Use substitute frame method. Assume uniform section for all the members.

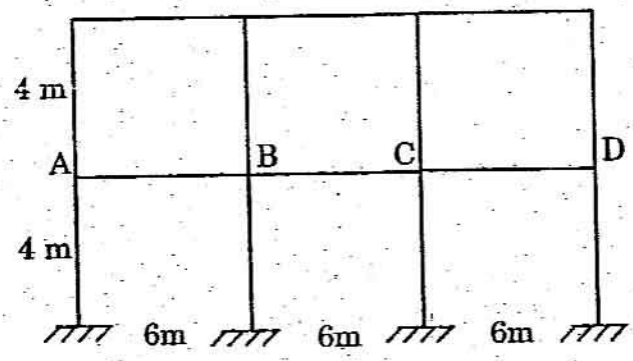

Fig. 9

Or

6. Analyse by portal method. Draw B.M.D.

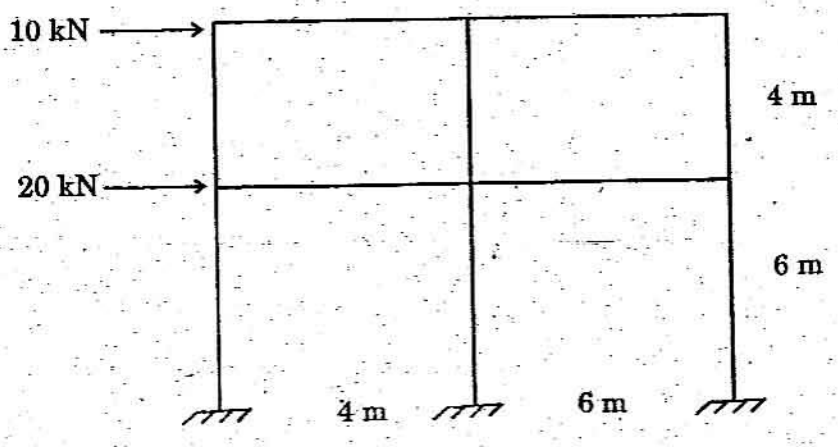

Fig. 10

7. Find the shape factor and fully plastic moment for the section shown below. Assume $f_y = 250$ MPa.

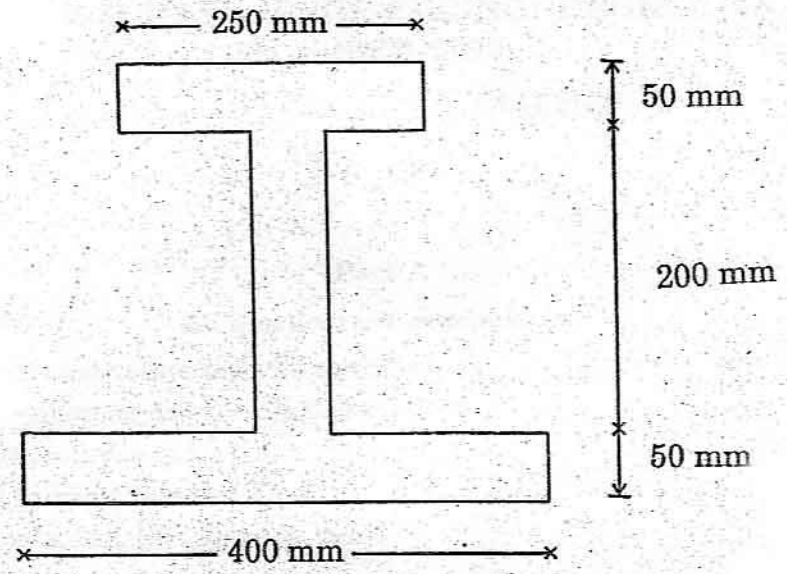

Fig. 11

Or

8. Find the collapse load for the portal frame shown.

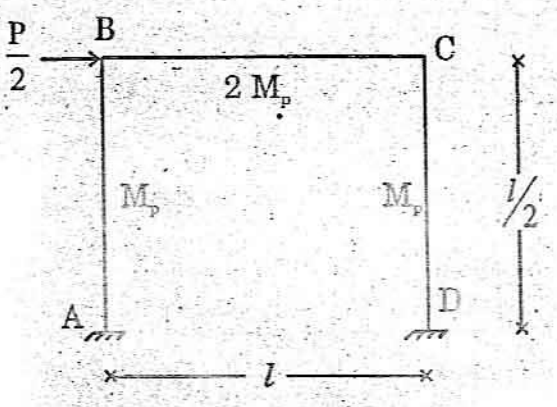

Fig. 12

(4 × 10 = 40 marks)