

Total No. of printed pages = 6

43(4) STRU-VI 4.5

2013

STRUCTURE – IV

Paper : ENG 4.5

Full Marks – 100

Pass Marks – 40

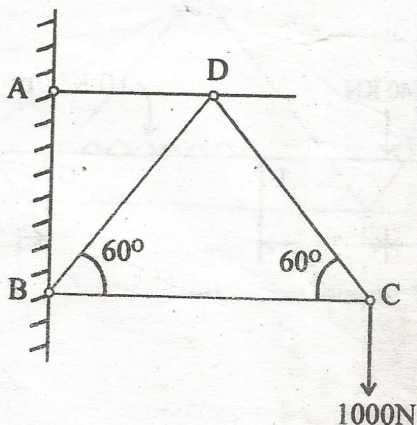
Time – Three hours

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

Question Nos. 3 and 10 are compulsory. Answer any *four* from the rest.

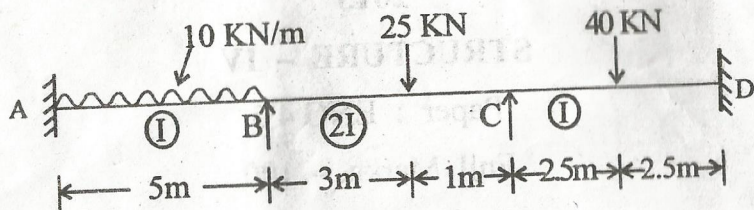
1. Determine analytically the magnitude and nature of forces in members of the truss shown below.

15



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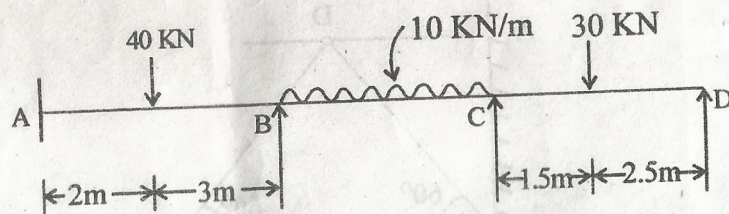
2. Analyse the continuous beam loaded as shown below by the moment distribution method. Sketch the B.M.D and S.F.D. 15



3. (a) Write a note on the moment distribution method.

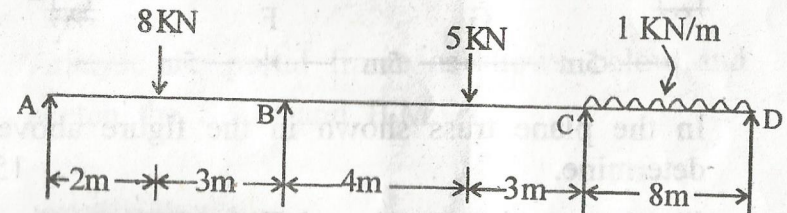
- (b) Analyse the continuous beam loaded as shown in the figure below by the method of moment distribution. Sketch the bending moment and shear force diagrams.

5+15=20

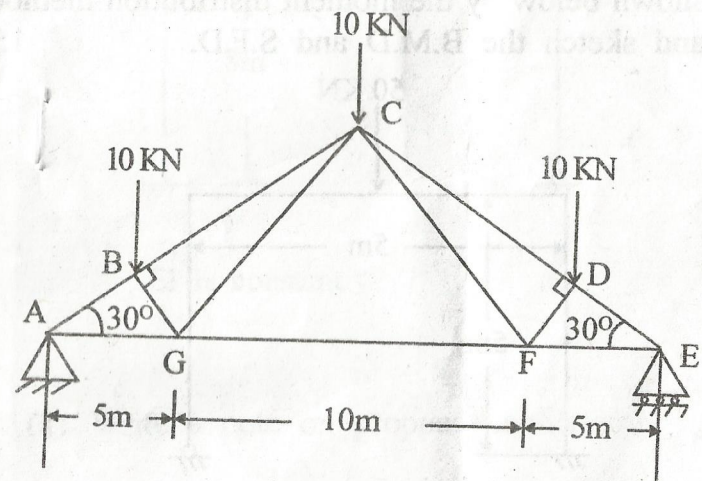


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4. A continuous beam ABCD, 20m long is simply supported at its ends and is propped at the same level at B and C as shown in the figure. Analyse the beam by moment distribution method and sketch the bending moment diagram. 15

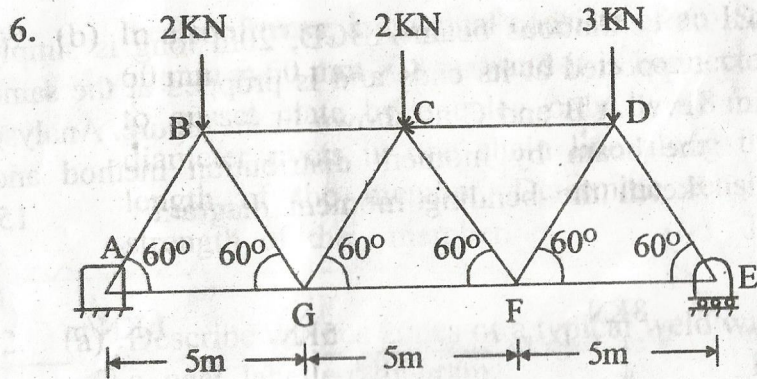


5. Use method of joints to determine stresses in all the members of the truss shown below : 15



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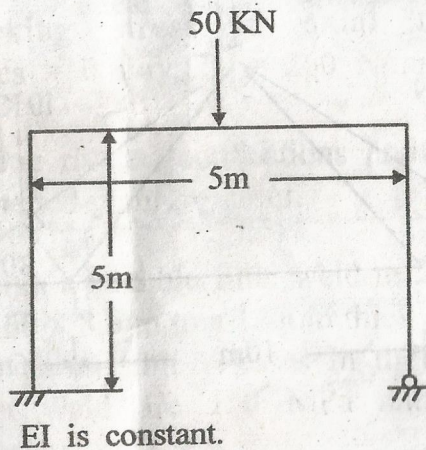
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In the plane truss shown in the figure above, determine. 15

- (i) the reactions at A and E
- (ii) forces in the members AB and AG.

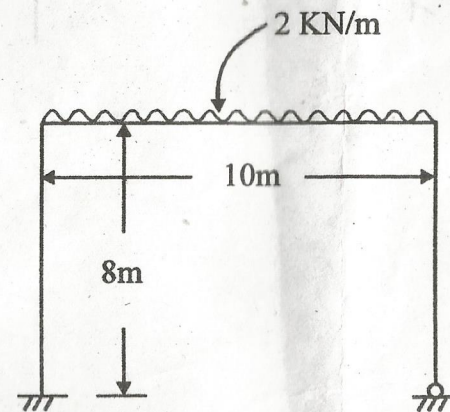
7. Analyse the portal frame loaded in the figure shown below by the moment distribution method and sketch the B.M.D and S.F.D. 15



8. Write short notes on the following :  $5 \times 3 = 15$

- (a) Fixed end moments
- (b) Relative stiffness
- (c) Distribution factor.

9. Analyse the portal frame as shown below and sketch the S.F.D and B.M.Ds. 15



EI is constant.

10. (a) Write a note on propped cantilever.

- (b) A cantilever 4m long and propped at the free end carries U.D.L at the rate of 50 KW/m run. Draw B.M and S.F diagrams and write down B.M at significant points.

Take  $E = 2 \times 10^4 \text{ KN/cm}^2$  and  $I = 28000 \text{ cm}^4$ .

5+15=20

