[Total No. of Questions - 9]   [Total No. of Printed Pages - 4]
(2125)

15163

B. Tech 5th Semester Examination

Structural Analysis-II (NS)

CE-311

Time : 3 Hours   Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt one question each from sections A, B, C and D. Section E is compulsory. All questions carry equal marks.

SECTION - A

1. For the frame shown in Figure 1, determine by **Cantilever method** all column end and beam end moments and shears due to lateral loads shown.   (20)
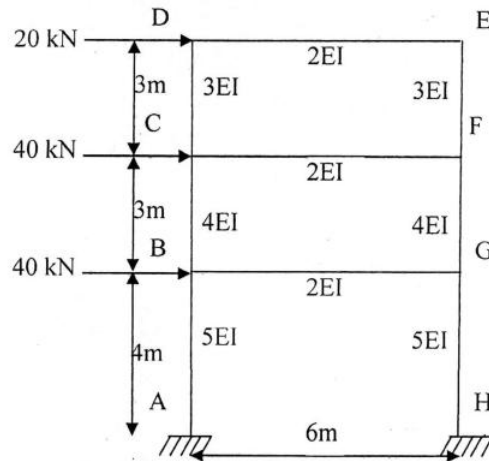

Figure 1   **[P.T.O.]**

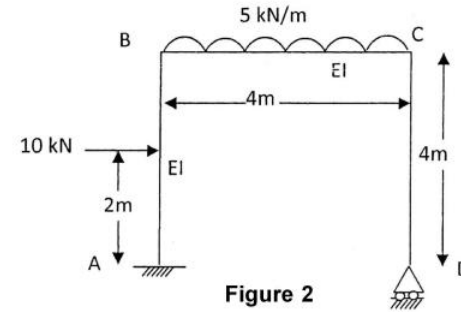2. Using Castigliano's 2nd theorem, analyse the frame shown in Figure 2 and draw SFD and BMD.   (20)

Figure 2

SECTION - B

3. Using Kani's method, analyze the frame and draw SFD and BMD.   (20)
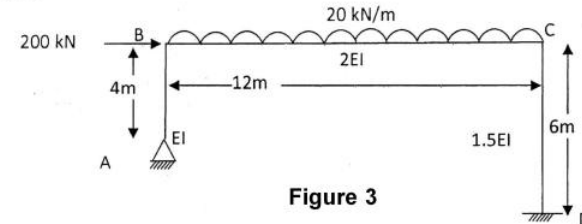

Figure 3

4. Analyze the frame shown in Figure 4 using Slope deflection method and draw the axial force, shear force and bending moment diagram.   (20)
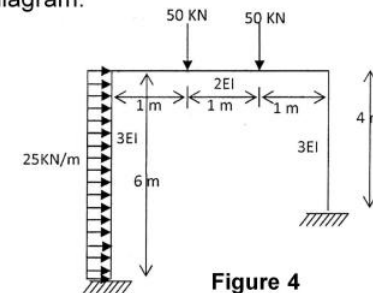

Figure 4

SECTION - C

5. Draw the influence line diagram for forces in members U1U2, U1L2, L1L2 and U1L1 of the truss shown in Figure 5.   (20)
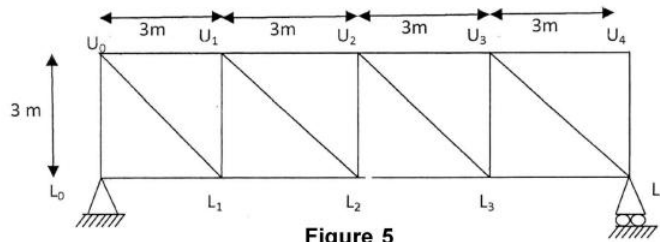

Figure 5

6. Draw the influence line diagram for bending moment at point D on beam shown in Figure 6 and calculate ordinates at 1 m interval.   (20)
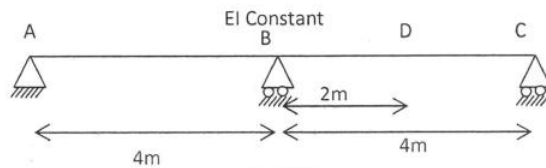

Figure 6

SECTION - D

7. (a) Distinguish between statical method and mechanism of kinematic method for analysis of collapse load.   (10)

   (b) A uniform beam is fixed at one end and simply supported at the other. What is the maximum concentrated load which may be carried at the third point closest to the fixed end?   (10)

8. Determine the collapse load for the rigid frame shown in Figure 7 and obtain interaction diagram between P and W.   (20)
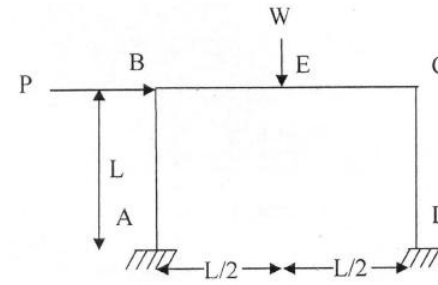

Figure 7

SECTION - E

9. Attempt any Five.

   (a) Illustrate and explain how the moment distribution method for analysis of structure works.

   (b) Evaluate the shape factor for a circular section with diameter D.

   (c) State and illustrate with a suitable example Muller Breslau's principle.

   (d) Define Static and kinematic indeterminacy and difference thereof.

   (e) Explain conjugate beam method to determine slopes and displacements in indeterminate structures.

   (f) State and demonstrate principle of virtual work. How is it related to principle of virtual displacements and principle of virtual work?   (5×4=20)