Total number of printed pages: 03 **Programme(UG)/6th/UCE601**

2024

STRUCTURAL ANALYSIS - II

Full Marks : 100

Time : Three hours

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

*Answer **any five** questions.*

1. (a) Define statically indeterminate structure. Determine the degree of indeterminacy for the following shown in figure 1 & 2: 2+4=6

(i)

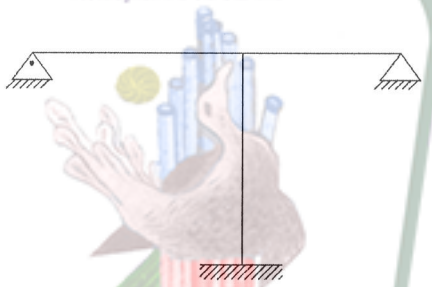

Figure-1

(ii)

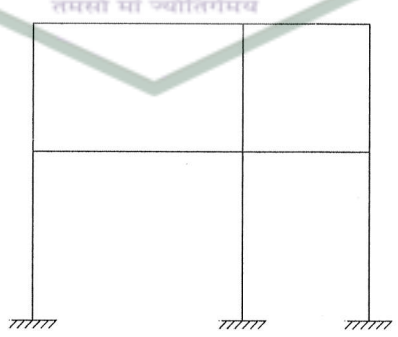

Figure-2

(b) For the continuous beam shown in figure-3, determine the support moments using three moment theorem. Draw the bending moment diagram. EI is constant. 14

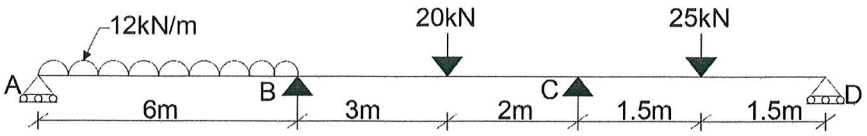

Figure-3

2. Analyze the continuous beam shown in figure-4 by slope deflection method where the support B sinks by 15mm. EI for members is indicated in the figure. 20

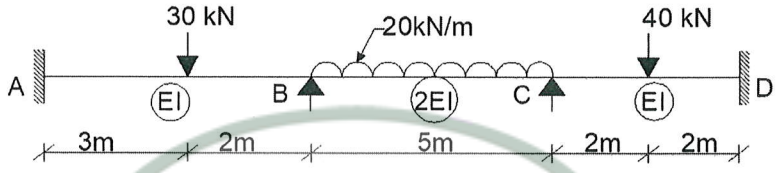

Figure-4

3. For the frame shown in figure-5, analyze by Moment Distribution Method. Draw the bending moment. The EI as unity for all members. 20

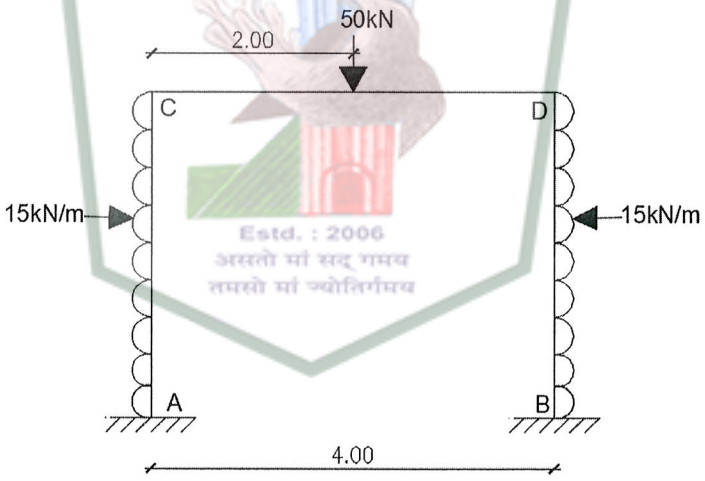

Figure-5

4. Analyze the three span continuous beam shown in figure-6 by Kani's method. The support at A and D are fixed. Take flexural rigidity of all the members as unity. 20

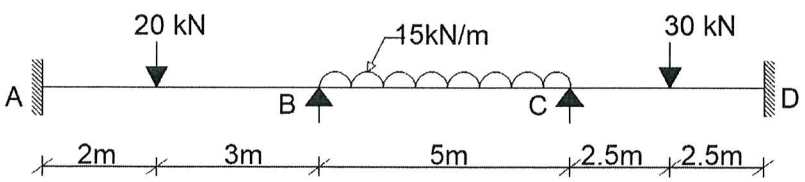

Figure-6

5. (a) Define the following: 04

(i)Flexural Rigidity and (ii)Distribution factor

(b) For the beam shown in figure-7 determine the fixed end moments using column analogy method. Take EI as unity. 16

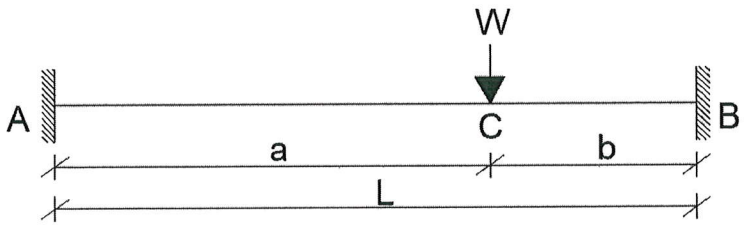

Figure-7

6. (a) Explain the causes of failure of a masonry dam. 07

(b) A masonry dam of trapezoidal section is 15m high. The top width is 2.5m while the bottom width is 8.0m. The water face of the dam has a batter of 1in 15. If the water level is at the top of the dam, find the maximum and minimum stresses at the base. Take unit weight of masonry as 22000N/m^3 and unit weight of water as 9810 N/m^3. 13

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