53 (CE 503) STAN-II

2018

STRUCTURAL ANALYSIS - II

Paper : CE 503

Full Marks : 100

Time : Three hours

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

*Answer **any five** questions.*

1. *(a)* Define kinetic indeterminacy. 2

   (b) Analyze the beam shown in *fig-1* by slope deflection method. Also draw the BMD and SFD. The value of EI is constant. 18

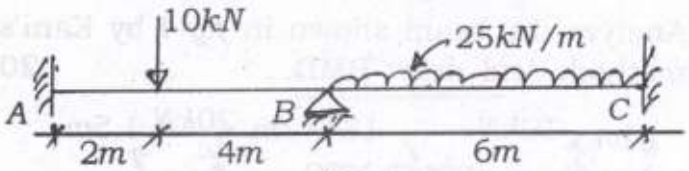
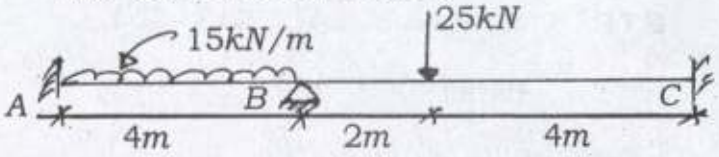


fig –1

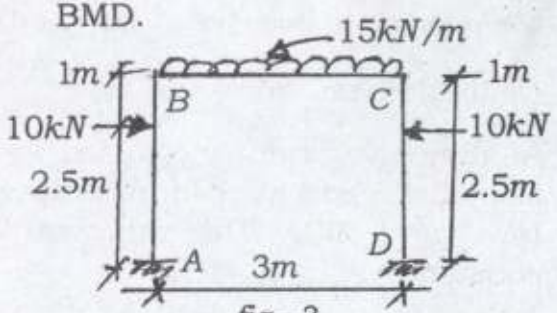
2. Analyze the continuous beam shown in *fig-2* by slope deflection method. And draw the BMD and SFD. Assume E.I. to be constant and support B settles by 5*mm* in the downward direction. 20



fig–2

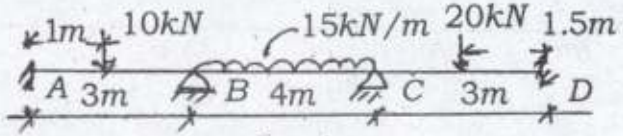
3. *(a)* Define Stiffness factor. 2

(b) Analyze the portal frame shown in *fig-3* by moment distribution method. Assume EI to be constant. And draw BMD. 18



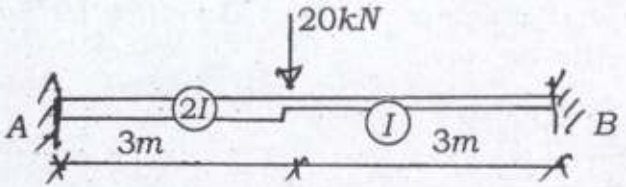
fig–3

4. Analyze the beam shown in *fig-4* by Kani's method. And draw BMD. 20



fig–4

5. Analyze the beam shown in *fig-5* using column analogy method. Also draw the BMD. 20



fig–5

6. *(a)* Define the following: 2×2=4

(i) Creep and

(ii) Fatigue

(b) A masonry dam of trapezoidal section is 12*m* high. It has a top width of 1.5*m* and bottom width of 6.5*m*. The water face of the dam have buffer of 1 in 10. If the water level is at the top of the dam, find the maximum and minimum normal stresses at the base. Masonry weighs $20000 N/m^3$ and water weighs $9810 N/m^3$. 16