

Total number of printed pages-4

53 (CE 503) STAN-II

2016

STRUCTURAL ANALYSIS-II

Paper : CE 503

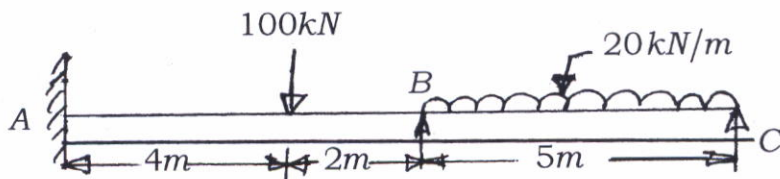
Full Marks : 100

Time : Three hours

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

Answer **all** questions.

1. Analyse the two span continuous beam ABC by slope deflection method. Draw also the bending moment and shear force diagram. Take EI as constant. 10+5=15



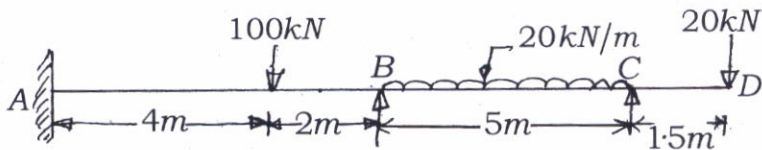
Contd.

2. Analyse the following beam by slope deflection method. The support B sinks by 15mm . Draw also the BMD and SFD.

Take $E = 200 \times 10^5 \text{ kN/m}^2$

$$I = 120 \times 10^{-6} \text{ m}^4.$$

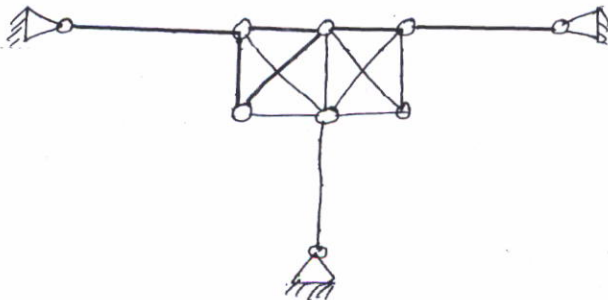
$$10+5=15$$



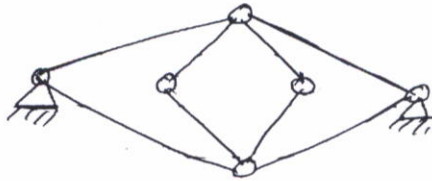
3. Explain the different types of indeterminacy of a structure w.r.to plane frame and space frame. 10

4. Calculate the degree of kinematic indeterminacy of the following structure 5+5=10

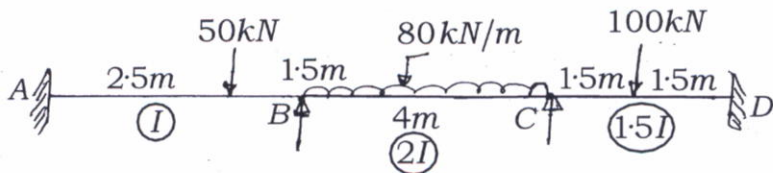
(a)



(b)



5. Determine the support moments at A, B, C and D for the continuous beam shown below. Use Kani's Method. 10



6. A masonry dam of trapezoidal section has a vertical water face and a height of 30 metres. Determine the widths at the top and bottom if the normal pressure on the base varies from zero pressure at one side to 880kN/m^2 at the other side. The depth of water impounded is 29 metres. Take the weight of water and masonry as 9810N/m^3 and 22560N/m^3 respectively. 15

7. A retaining wall 6m high has a smooth vertical back. The backfill has a horizontal level surface, level with the top of the wall. The soil surface is subjected to an external vertical load of 45 kN/m^2 . The soil has an angle of internal friction of 30° and its cohesion is zero. The backfill has a specific weight of 19 kN/m^3 . Find the magnitude and the point of application of active earth pressure on the wall per metre run of the wall. 15

8. Analyse the frame as shown below. Assume EI as constant. Draw BMD and S.F.D. also. 10

