Total number of printed pages–4

53 (CE 503) STAN-II

2019

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. 6+4+10=20

(a) What is the difference between static and kinematic indeterminacy ?

(b) Calculate the degree of static indeterminacy for the following :

(i)

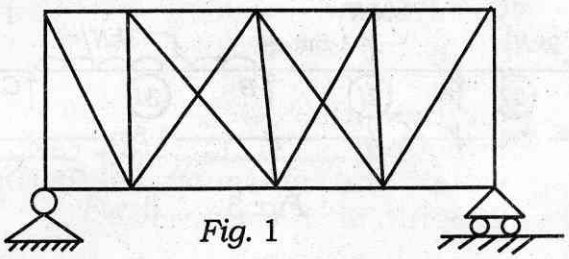

Fig. 1

Contd.

(ii)

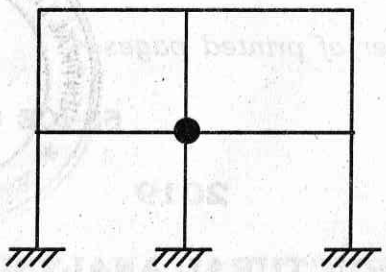

Fig. 2

(c) Define the following :

(i) Flexural Rigidity

(ii) Stiffness factor

(iii) Creep

(iv) Fatigue.

2. Find the moments at the supports for the continuous beam shown in *Fig.* 3 and draw the B.M. diagram. 20

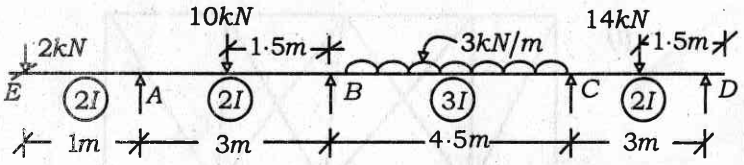

Fig. 3

3. Analyze the continuous beam shown in *Fig.* 4, if supports *B* and *C* sink by 3*mm* and 5*mm* respectively. For the beam take $I = 4 \times 10^7 mm^4$ and $E = 200 kN/m^2$. Also draw the B.M. diagram for the beam 20

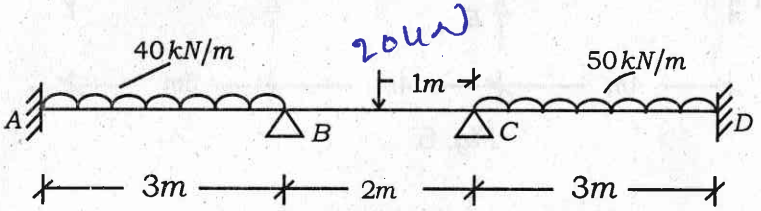

Fig. 4

4. Analyze the frame shown in *Fig.* 5 by moment distribution method and draw the B.M. diagram. 20

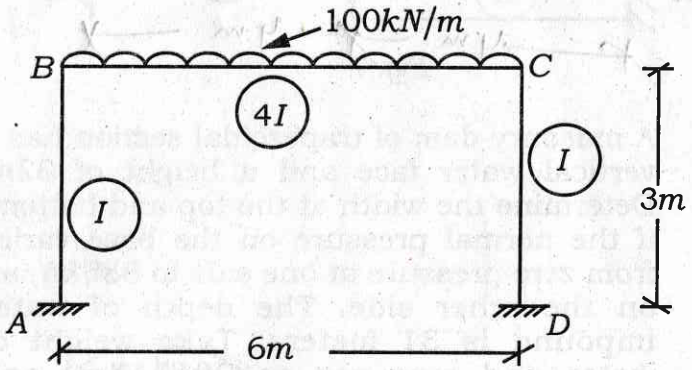

Fig. 5

5. Determine the support moments using Kani's method for the continuous beam shown in *Fig.* 6 and draw the B.M. diagram. 20

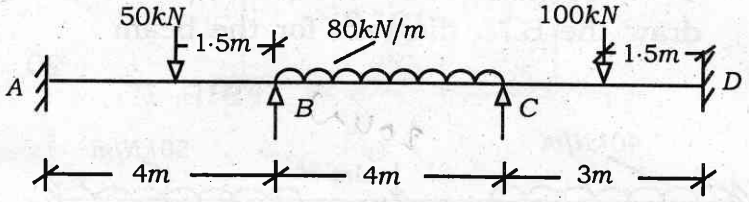

Fig. 6

6. Analyze the fixed beam shown in *Fig.* 7 using column analogy method. And also draw the B.M. diagram. 20

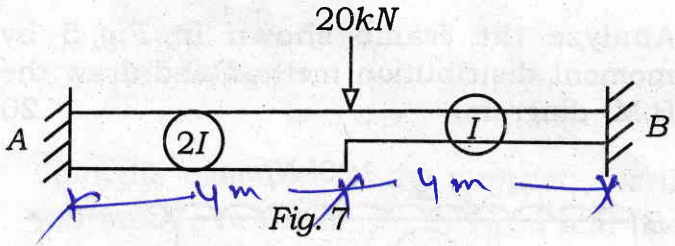

Fig. 7

7. A masonry dam of trapezoidal section has a vertical water face and a height of 32*m*. Determine the width at the top and bottom, if the normal pressure on the base varies from zero pressure at one side to $885 kN/m^2$ on the other side. The depth of water impound is 31 meters. Take weight of water and masonry as $9810 N/m^3$ and $22560 N/m^3$ respectively. 20