Total number of printed pages–4

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 out of* ***six.***

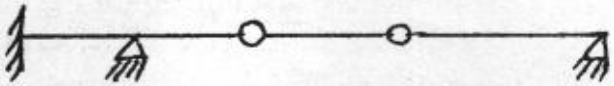
1. *(a)* What is Plane Frame and Space Frame? Determine the degree of indeterminacy (Static and Kinematic) of a plane and space frame structure.

2+4+4=10

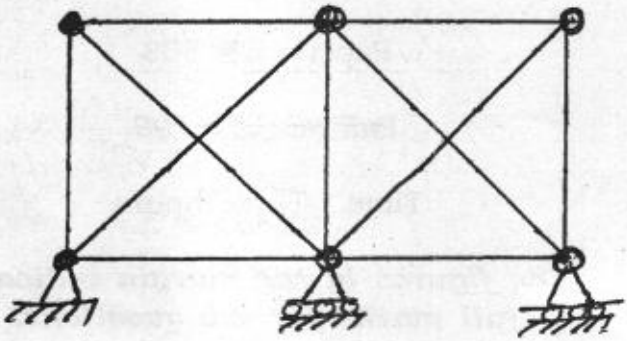
Contd.

(b) Determine the static and kinematic indeterminacy of the following plane frame structure : 5+5=10

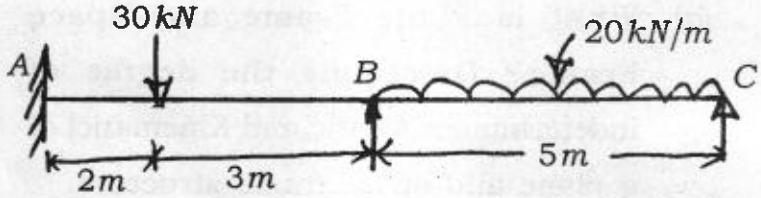
(i)



(ii)



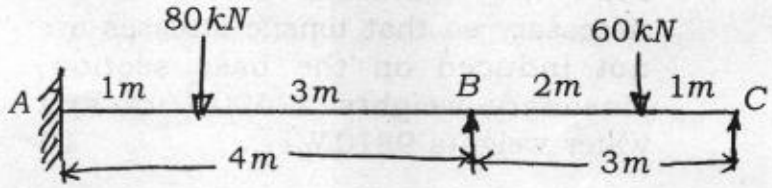
2. Using Slope Deflection Method, solve the following indeterminate beam and draw its SFD and BMD diagrams. 10+5+5=20



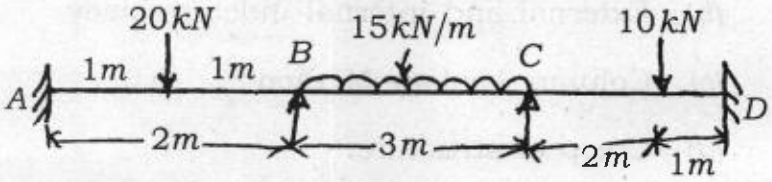
EI = Constant

3. A continuous beam ABC consist of two spans $AB = 4m$ and $BC = 3m$, the end A being fixed. The span AB carries a point load of $80kN$ at $1m$ from A while span BC carries a point load of $60kN$ at $1m$ from C. $I_{ab} : I_{bc} = 2:1$. Find the support moment and draw its BMD. Take E as const.

15+5=20



4. Determine the support moments for the continuous beam using moment distribution method. 10+5+5=20



Take,

$$E = 200kN/mm^2$$

$$I = 3{\cdot}5 \times 10^7 mm^4$$

Also draw its SFD and BMD.

5. *(a)* What is Active and Passive earth pressure ? Determine the expression for active and passive earth pressure. 2+2+6=10

(b) A masonary dam of trapezoidal section is $12m$ high with a top width of $2m$. The water face has a batter of 1 in 12. Find the minimum bottom width necessary so that tensile stresses are not induced on the base section. Masonary weights $22500N/m^3$ and water weights $9810N/m^3$. 10

6. Write short notes of the following : 4×5=20

(a) Fatigue of a structure

(b) External and internal indeterminacy

(c) Column Analogy Method

(d) Creep of structure.