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Question Paper Code : 57186

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Sixth Semester

Civil Engineering

CE 6602 – STRUCTURAL ANALYSIS – II

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Differentiate between determinate and indeterminate structures.
2. Define force transformation matrix.
3. Compare the flexibility and stiffness matrix method.
4. What is the relation between flexibility and stiffness matrix ?
5. What is meant by discretization ?
6. What is CST Element ?
7. Define load factor.
8. What are the assumptions made in plastic analysis of structures ?
9. What are the forces developed in beams curved in plan ?
10. Write the Temperature effect on Cables.

PART - B (5 × 16 = 80 Marks)

11. (a) Analyse the beam given in Fig. Q. 11 (a) by flexibility matrix method.

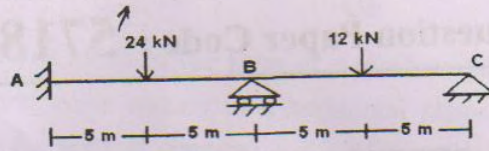


Fig. Q. 11 (a)

OR

- (b) Analyse the frame given in Q. 11 (b) by flexibility matrix method. Take EI as constant.

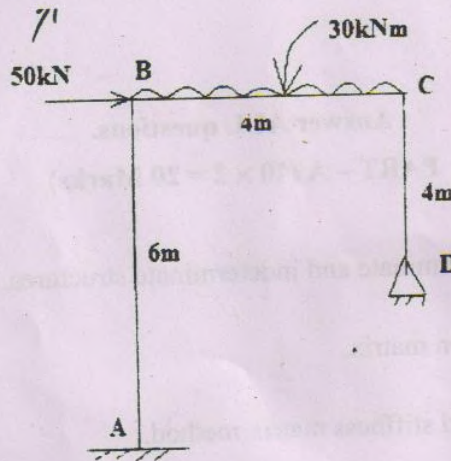


Fig. Q. 11 (b)

12. (a) Analyse the continuous beam shown in figure Q. 12 (a) using stiffness matrix method.

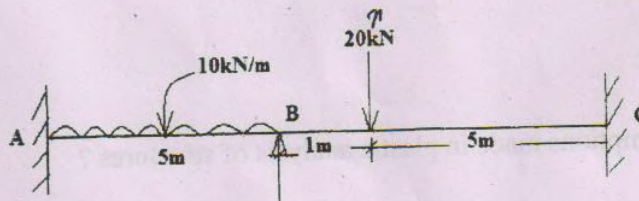


Fig. Q. 12 (a)

OR

- (b) Analyse the frame given in Fig. Q. 12 (b) by stiffness matrix method. AE is equal to unity.

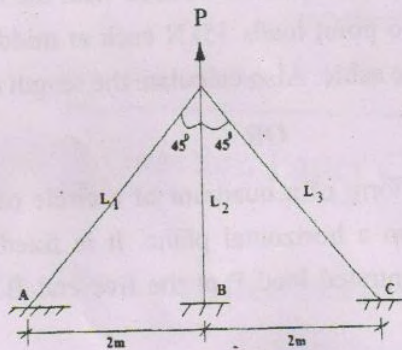


Fig. Q. 12 (b)

- (a) Write short notes on :

- (i) Classification of elements in FEA. (8)
 (ii) Assembly of stiffness matrix and force vector. (8)

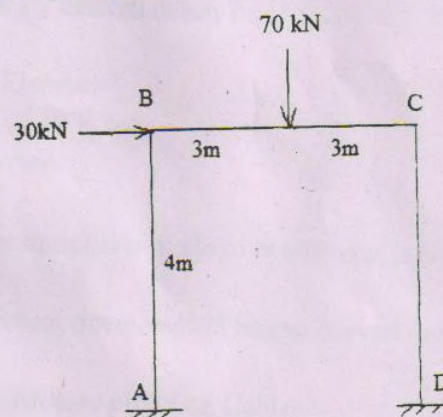
OR

- (b) Construct the shape functions for 4 noded beam element.

14. (a) A two span continuous beam of section is fixed at A and hinged at B and C. Span AB is 8 m and BC is 6 m long. Two point loads of 50 kN each are acting on AB at 2 m from A and B. Span BC is loaded with uniformly distributed load of intensity 10 kN/m. Determine the Plastic Moment.

OR

- (b) Determine the plastic moment capacity of the section required for the frame shown in figure. The loads shown are the working loads. Take load factor = 1.50. Assume same plastic moment capacity for all the members.



15. (a) A suspension cable, having supports at the same level, has a span of 45 m and the maximum dip is 4 m. The cable is loaded with the udl of 15 kN/m run over the whole span and two point loads 35kN each at middle third points. Find the maximum tension in the cable. Also calculate the length of cable required.

OR

- (b) A curved beam in the form of a quadrant of a circle of radius R and having a uniform cross section in a horizontal plane. It is fixed at A and free at B. It carries a vertical concentrated load P at the free end B. Determine the vertical deflection of the end B.