Hall Ticket Number:

Code No.: 32017 AS

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (Civil Engg.) III Year II-Semester Advanced Supplementary Examinations, June/July-2017

Theory of Structures-II

Time: 3 hours

Max. Marks: 70

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

1. A single point load 100 kN moves across a simply supported girder of span 12 m. Find the absolute maximum bending moment.

2. Explain EUDLL and indicate its practical applications.

3. What is the nature of stress in the top and bottom chord members of the warren truss when the load is acting at bottom chord panel points?

4. A three hinged parabolic arch of span 40 m and rise 4 m carries a point load of 100 kN at a distance of 10 m from the left support. Find the horizontal thrust using influence line diagram.

5. What are the conditions that to be satisfied by the solution of an indeterminate structure? Explain.

6. Define cross flexibility and direct flexibility coefficients.

7. The stiffness method is developed on the basis of writing joint equilibrium equations in terms of _____ and _____.

8. What is structure stiffness matrix?

9. Write the member stiffness matrix for a bar member.

10. Write the properties of a global stiffness matrix.

Part-B (5 × 10 = 50 Marks)

11. a) Write the condition for the maximum bending moment and shear force at a section in a simply supported beam due to moving uniformly distributed load shorter than the span. [3]

    b) Two point loads 10 kN and 20 kN spaced at 3 m apart cross a simply supported girder of span 12 m from left to right with 10 kN load leading. Construct the maximum quantity diagrams for shear force and bending moment. [7]

12. a) Explain main components of suspension bridge with neat sketch. What is the main function of the stiffening girder in suspension bridges? [4]

    b) Draw influence line diagrams for forces in members of a Pratt truss in second panel top chord, bottom chord and diagonal members, if there are six panels each 5 m and height 4 m. Determine the force in these members due to dead load of 15 kN/m. [6]

13. a) A beam is having a degree of redundancy 2 and degree of freedom 5. Which method (stiffness/flexibility) you prefer to analyze the beam? Explain. [3]

    b) Analyse the frame shown in fig. 1 using flexibility method and draw the bending moment diagram. [7]
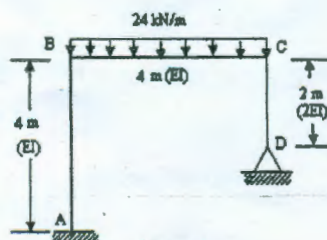

Figure 1