Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐☐ Total No. of Pages : 03

Total No. of Questions : 08

M.Tech.(Civil Engineering) (2016 Onwards)   (Sem.–1)
# ADVANCED STRUCTURAL ANALYSIS
Subject Code : CE-505
M.Code : 35206

Time : 3 Hrs.   Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.
3. Missing data if any can be suitable assumed, clearly stating the same.
4. Wherever possible support the answer with suitable sketches.
5. Use of relevant codes is allowed.

1) Write short answer for the following :

   a) What are the basic unknowns in stiffness matrix method?

   b) What is the basic aim of the stiffness method?

   c) How are the basic equations of stiffness matrix obtained?

   d) What is meant by generalized coordinates?

   e) Write the element stiffness matrix for a truss element.

   f) Give the formula for the size of the Global stiffness matrix.

   g) Why the stiffness matrix method also called equilibrium method or displacement.

   h) Define displacement vector.

   i) Define load vector.

   j) Define compatibility in force method of analysis.

2) Analyze the continuous beam shown in figure by the flexibility method and draw the bending moment diagram.   (20)
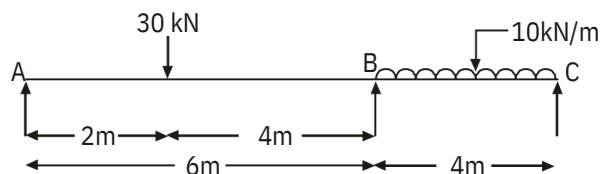

FIG. 1

3) Analyze the frame shown in the figure by the matrix flexibility method.   (20)
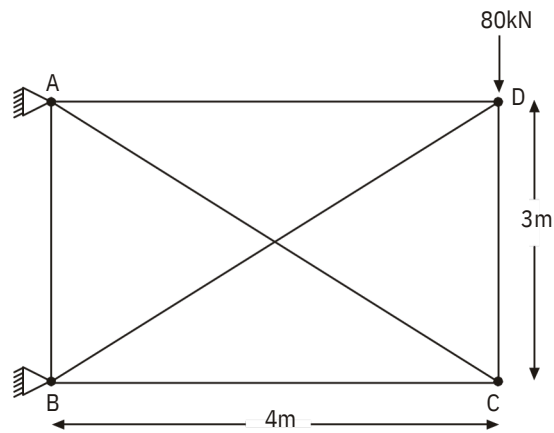

FIG. 2

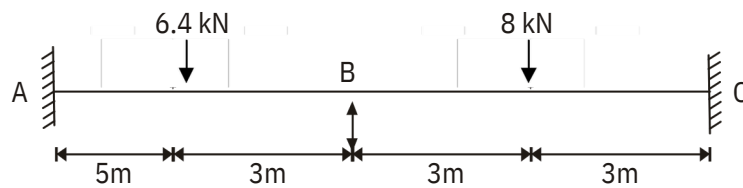4) Analyze the continuous beam by matrix stiffness method.   (20)

FIG. 3

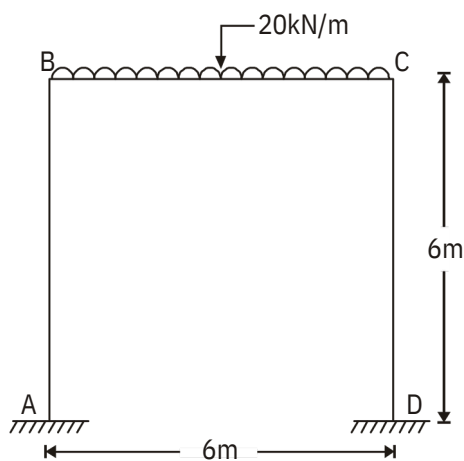5) Analyze the frame shown in figure by the matrix stiffness method.   (20)

FIG. 4

6) a) What are the assumptions in pure bending? (5)

b) Derive the governing differential equation of a plate subjected to lateral loads from fundamentals. (15)

(8)

7) a) Explain about the various types of shells with neat sketches?

(12)

b) Derive the membrane equation for shells.

(10)

8) a) Explain the concept of Non-linear analysis due to plasticity in frames.

(10)

b) Explain the moment distribution method for analysis of folded plates.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.