

COURSE CODE(CREDITS): 18B1WCE631 (3)

MAX. MARKS: 35

COURSE NAME: Advanced Structural Analysis

COURSE INSTRUCTORS: Mr. Chandra Pal Gautam

MAX. TIME: 2 Hours

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q.1 (a) Differentiate between flexibility matrix and stiffness matrix and explain the reason why flexibility matrix method is not used in any software.

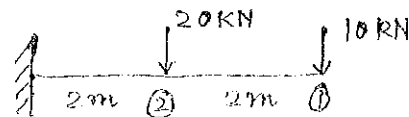
(b) State the basic properties of a stiffness matrix and how the size of stiffness matrix is determined.

(c) Mention the steps involved in solving a problem by using finite element method.

[CO- 5] [2+2+2 = 6]

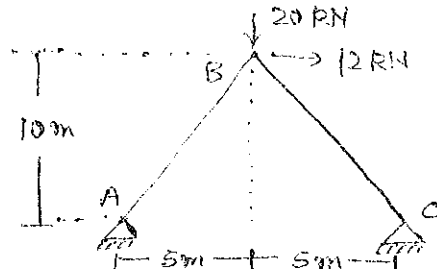
Q.2 Write the flexibility matrix of the given beam at the given nodes 1 and 2.

[CO- 4] [8]



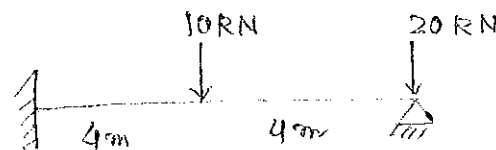
Q.3 Solve the given truss by using stiffness matrix method and find all the support reaction and displacements.

[CO- 3] [9]



Q.4 Solve the given beam by using stiffness matrix method and find unknown displacements and unknown forces.

[CO- 5] [8]



Q.5 Write the force matrix and displacement matrix for the given frame.

[CO- 4] [4]

