

Total No. of Questions :6]

SEAT No. :

P57

OCT. -16/BE/Insem. - 109

[Total No. of Pages :2

B.E. (Civil Engineering)

MATRIX METHODS OF STRUCTURAL ANALYSIS

(2012 Pattern) (Elective - II) (Semester - I)

Time : 1 Hour]

[Max. Marks :30

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicates full marks.
- 4) Use of electronic pocket calculator is allowed .
- 5) Assume suitable data if necessary.

Q1) Solve the set of equations by Gauss Seidel Method

[10]

$$x + 2y + 4z = 6$$

$$3x + y + 2z = 5$$

$$2x + 4y + z = 4$$

OR

Q2) Solve the set of equations by Gauss Elimination Method

[10]

$$x + y + z = 5$$

$$2x + 3y + 5z = 8$$

$$4x + 5z = 2$$

Q3) Analyze the continuous beam ABC as shown in Figure 1 using flexibility matrix method. Take EI constant

[10]

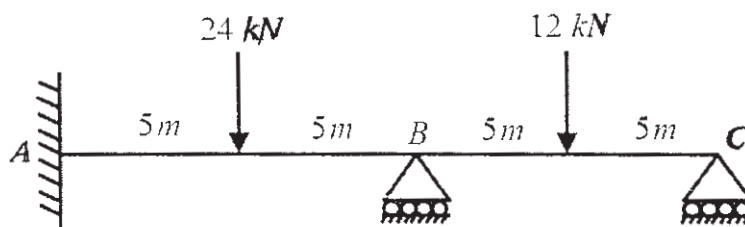


Figure 1.

OR

P.T.O.

Q4) Analyze the rigid jointed portal frame shown in Figure 2 using flexibility matrix method. Take EI constant. [10]

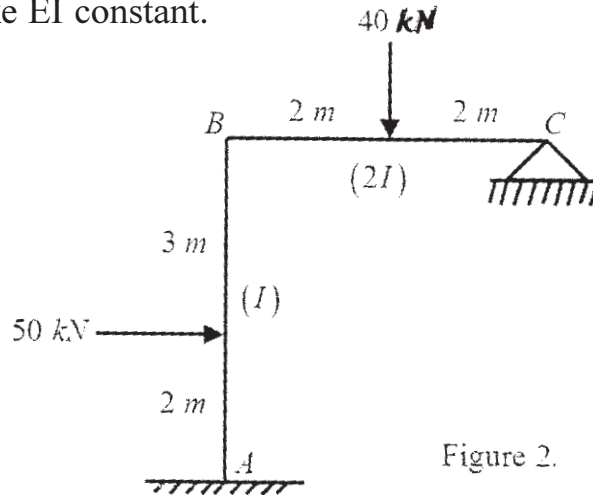


Figure 2.

Q5) A circular steel rod ABCD of different cross-section is loaded as shown in Figure 3. Find the displacements at all joints using stiffness matrix method. Take $E = 200 \text{ GPa}$. [10]

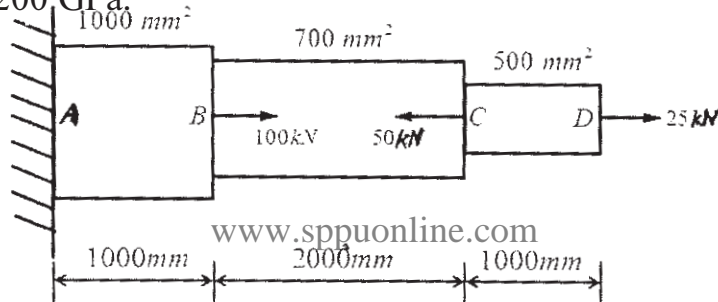


Figure 3.

OR

Q6) For the two bar truss shown in Figure 4 determine the displacements at the loaded joint using stiffness matrix method. Take $A = 200 \text{ mm}^2$ and $E = 70 \text{ GPa}$. [10]

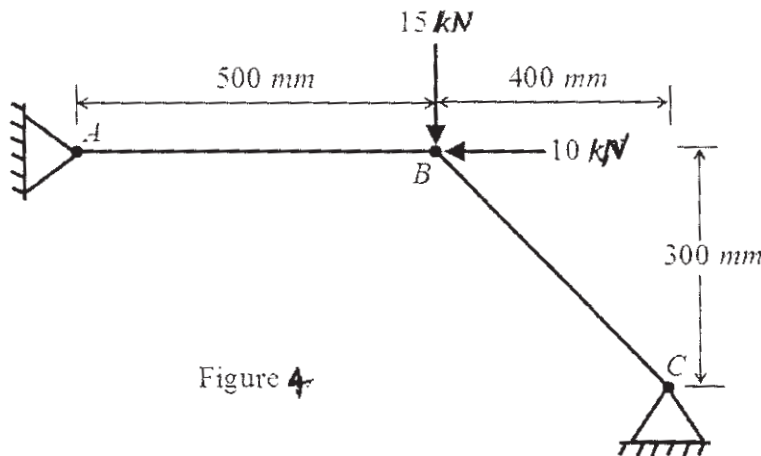


Figure 4

