

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2014 COURSE)
B.Tech.Sem - IV CIVIL :SUMMER- 2022
SUBJECT : STRUCTURAL ANALYSIS-I

Day : Friday
 Date : 24-06-2022

S-12714-2022

Time : 10:00 AM-01:00 PM
 Max. Marks : 60

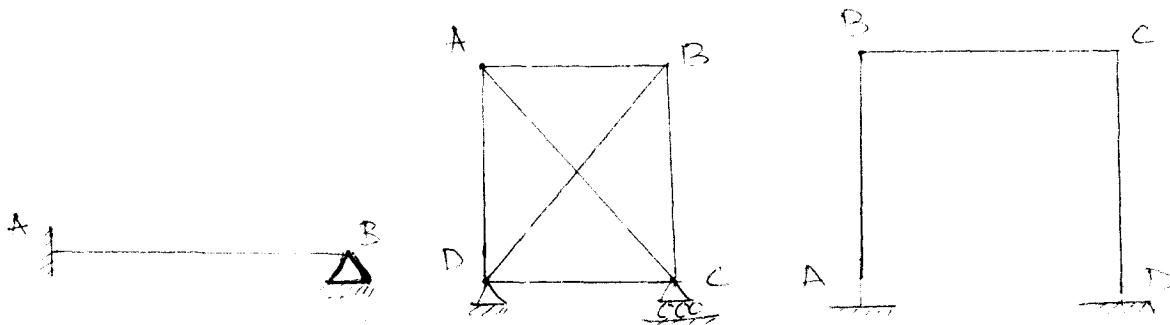
N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate **FULL** marks.
- 3) Use of non-programmable calculator is **allowed**.
- 4) Assume suitable data **WHEREVER** necessary.

Q.1 What is Strain Energy? Explain Strain Energy stored in member due to Axial force (10) and due to Bending moment.

OR

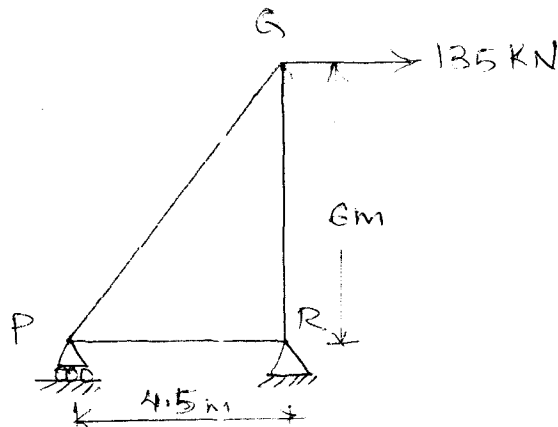
Q.1 Calculate degree of static and kinematic indeterminacy for following structures. (10)



Q.2 What is Conjugate Beam? Compare actual beam with conjugate beam. (10)

OR

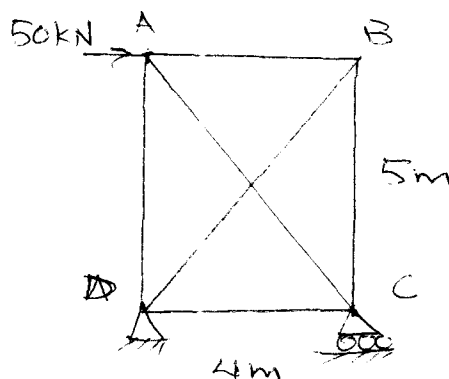
Q.2 Calculate horizontal deflection at joint 'Q' for the truss shown in figure. Take $E=200\text{GPa}$. $A=100\text{ mm}^2$ for all members. (10)



Q.3 State and explain Castiglions second theorem and explain effect of lack of fit for truss. (10)

OR

Q.3 Analyse the truss shown in figure. Take E and A same for all members. (10)

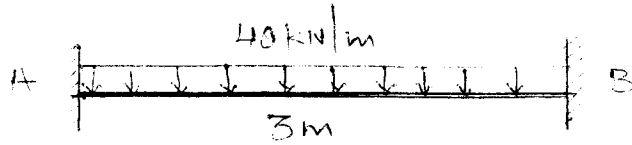


PTO

Q.4 What is fixed end moment? Write fixed end moment for different loading cases. (10)

OR

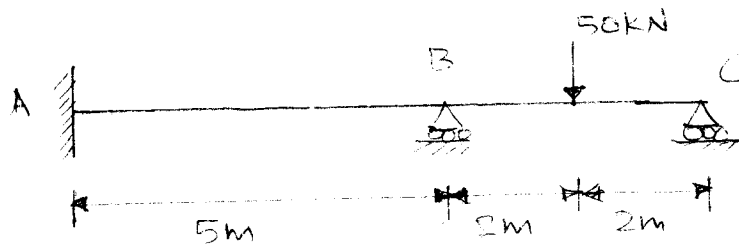
Q.4 Analyse fixed beam shown in figure and draw SFD and BMD. (10)



Q.5 State and explain Slope deflection method with suitable example. (10)

OR

Q.5 Analyse beam shown in figure using slope deflection method. Take 'EI' same for all members. (10)



Q.6 What is a) Flexural stiffness b) Relative stiffness c) Distribution factor d) Carry over moment. Explain with suitable examples. (10)

OR

Q.6 Analyse beam shown in figure using moment distribution method. Take 'EI' same for all members. (10)

