Department of Civil Engineering

NATIONAL INSTITUTE OF TECHNOLOGY CALICUT

CE2008D STRUCTURAL ANALYSIS I

End Semester Examination–25 Apr 2022

(Note: Questions are from the last two chapters only. This need not be followed this year)

Time: 2 Hours | Maximum Marks: [25]

Note: *Answer* ***all*** *questions; Assume missing data after stating clearly; Read questions carefully before answering*

1. Find all the support reactions of the continuous beam *ABC* shown in Fig. 1 if the middle support *B* settles down by 5 mm. Treat the vertical reaction at *B* as the redundant. Given: $E = 200$ GPa and $I = 5\times10^8$ mm^4. Also draw the BMD. [9]

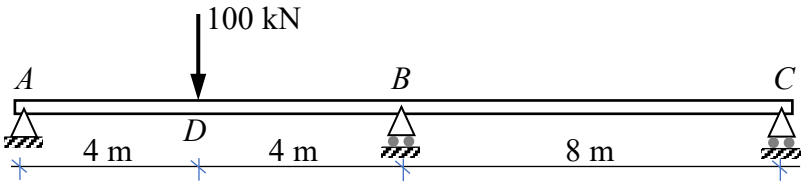

Figure 1

2. Find all the support reactions of the plane frame loaded as shown in Fig. 2 if *EI* is a constant. Also draw the BMD. [9]

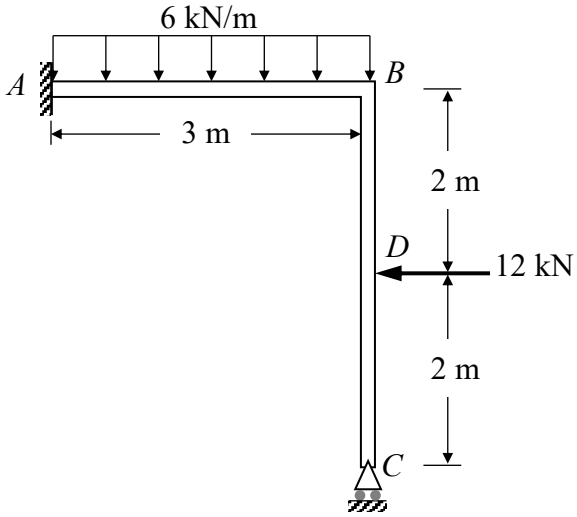

Figure 2

3. Determine the forces in all the members of the truss shown in Fig. 3. The area of cross-section of the vertical and horizontal members are 600 mm^2 each and the two diagonal members (AC and BD) are 1200 mm^2 each. Consider member *BD* as the redundant member. $E = 200$ GPa. [9]

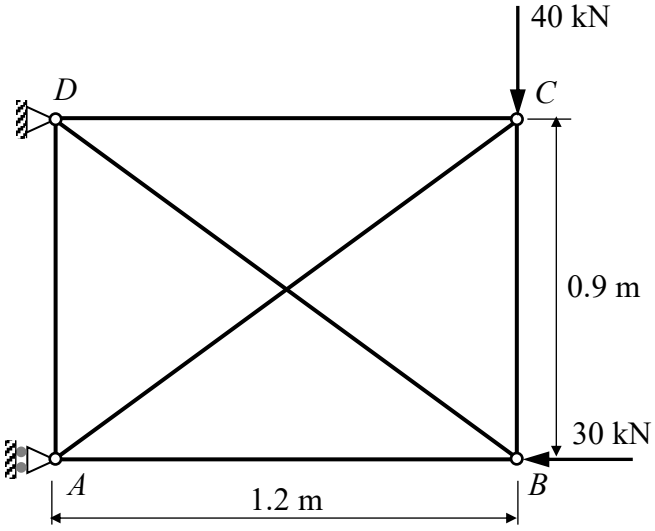

Figure 3