Department of Civil Engineering

NATIONAL INSTITUTE OF TECHNOLOGY CALICUT

CE2008D STRUCTURAL ANALYSIS I

Winter 2019-20

Homework Assignment 2 (Module: 3)

S is your class serial number; bring the completed assignment as and when you return to the campus

1. For the portal frame shown in Fig. 1, determine all the support reactions and draw the bending moment diagram. Also find the horizontal deflection of the load point *C*. $E = 200$ GPa, $I = (4+0.1\times S)\times 10^{-4}$ m^4, $w = 4+0.3\times S$ kN/m, $P = 18 + 0.5\times S$ kN. *Hint:* DSI = 2. Find the redundants. Then it is a statically determinate frame with all the external loads and reactions determined. You already know how to calculate the deflection of such a structure.

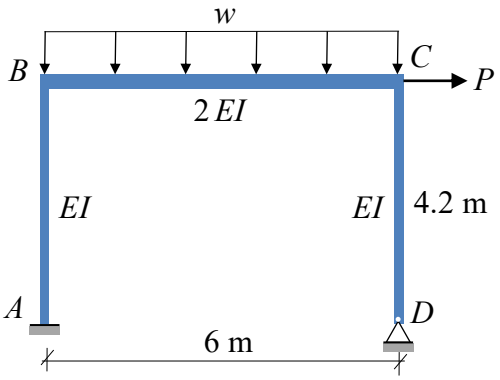

Figure 1

2. The frame shown in Fig. 2 is loaded as shown. Determine all the support reactions and draw the bending moment diagram. $E = 200$ GPa, $I = (3.8+0.1\times S)\times 10^{-4}$ m^4, $w = 6.3+0.2\times S$ kN/m, $P = 22 + 0.4\times S$ kN. Determine the vertical deflection of point *B*.

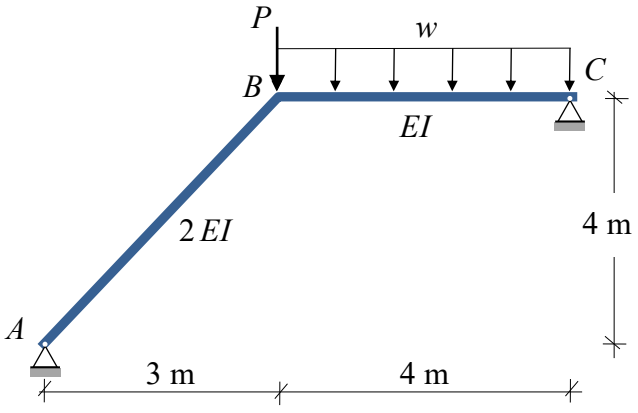

Figure 2