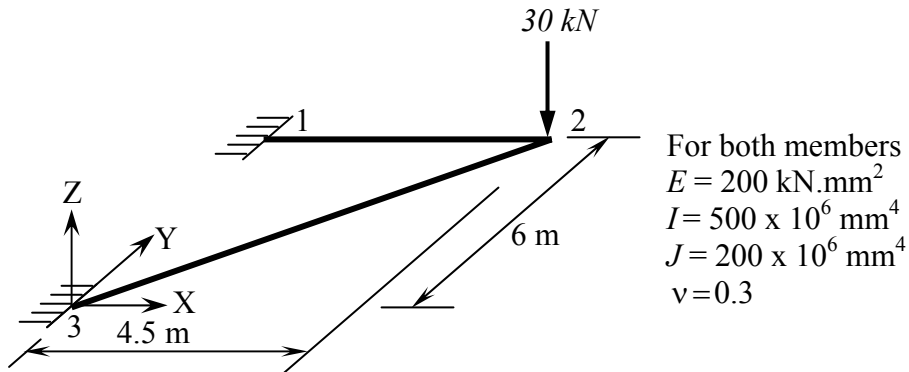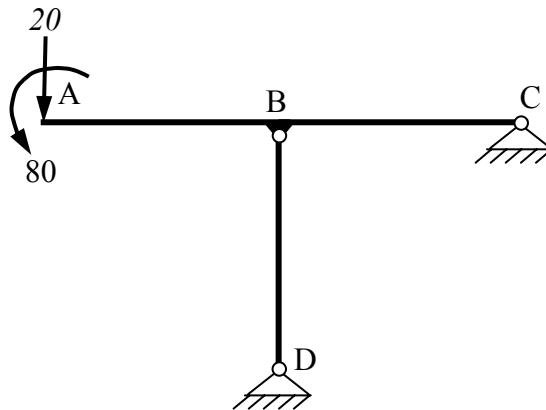1. Using stiffness method find joint deflections, member end forces, and reactions for the Grid shown in **Fig. 1**

30 kN

For both members
$E = 200$ kN.mm^2
$I = 500$ x 10^6 mm^4
$J = 200$ x 10^6 mm^4
$v = 0.3$

6 m

Z

Y

X

3   4.5 m

1   2

Fig.1

2. Using stiffness method find joint deflections, member end forces, and reactions for the Beam-Truss shown in **Fig. 2**. Use material and geometric properties from Fig.1 and I/A=3000mm^2

20

A   B   C

80

D

Fig. 2