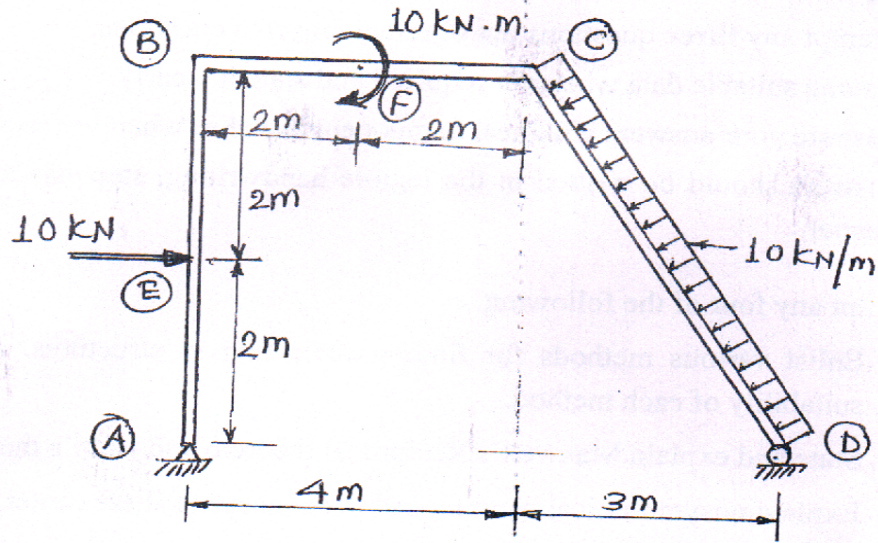


3. (a) Analyse the frame as shown in fig. Draw free body diagram of each member and construct AFD, SFD and BMD. 13



- (b) A column of hollow circular section with external diameter 300 mm and thickness 40 mm is 4 m long. It is pinned at both the ends. The column carries a load of 100 kN at an eccentricity of 40 mm, find out the stresses produced at extreme fibre of the column section. Take  $E = 200 \text{ Gpa}$ . 07
4. (a) The cables of a suspension bridge have span of 60 m and a central dip of 7.5 m. Each cable is stiffened by a girder hinged at the ends and also at the middle so as to retain a parabolic shape of the cables. The girder is subjected to a load of 10 kN/m and live load of 20 kN/m, 15 m long. Find the maximum tension in the cable when the leading edge of the live load (udl) is just at the center of the girder. Also draw S.F and B.M diagram for the girder. 12
- (b) A series of concentrated load traverses on a simply supported beam as shown in fig. Calculate absolute maximum bending moment in the beam. 08

