Example 1.1.5 – Figure 1 shows a plane, pin-jointed truss structure which is supported at *A* and *B* and carries a vertical load of 40 kN at *F* as shown. All six members have a cross-sectional area of 750 mm^2 and are made of steel with *E*=200 GPa.

a) Calculate the internal forces in all six members.

b) Calculate the horizontal and vertical components of the reactions at *A* and *B*.

c) Find the member with the highest **tensile** stress, state the magnitude of this stress, and calculate the extension (increase in length) of this member due to this stress.

d) Find the member with the highest **compressive** stress, state the magnitude of this stress, and calculate the contraction (reduction in length) of this member due to this stress.

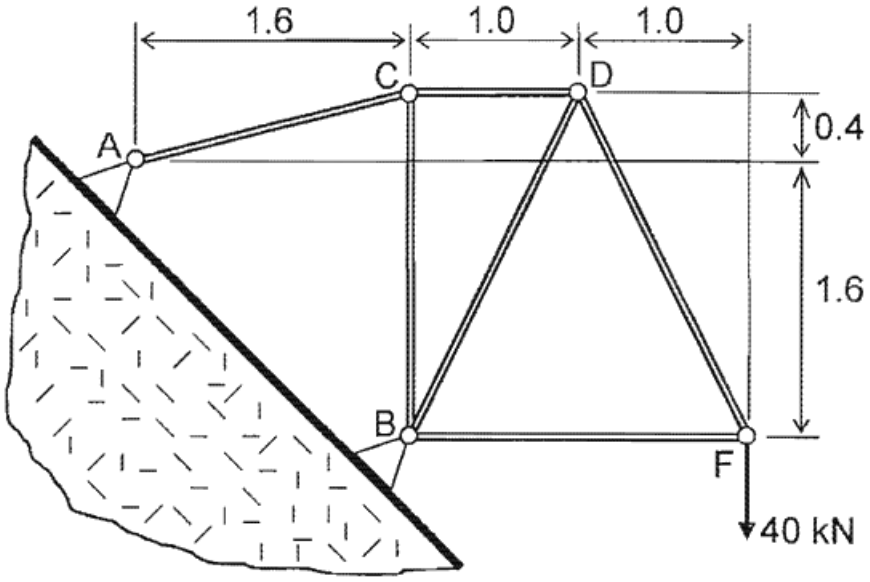

Figure 1: A plane pin-jointed structure (dimensions in metres).