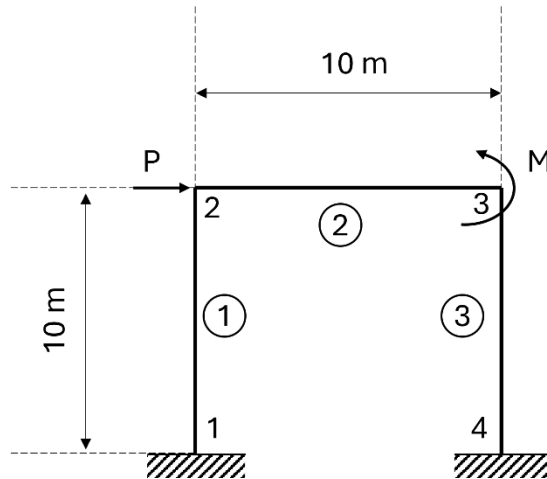# AM5450 - FUNDAMENTALS OF FINITE ELEMENT METHODS
ASSIGNMENT 6 – FRAMES

1. A frame (shown below) is fixed at nodes 1 and 4 and subjected to a positive horizontal force P at node 2 and to a positive moment M applied at node 3.

   Let E = 200 GPa, A = 6400 mm^2, I = 1.2 x 10^5 mm^4, P = 10kN, M = 5 kNm.

   Identify the (i) nodal displacements and rotations at node 2, 3, (ii) forces and moments in the element 1.

2. Compute buckling load (P) for the simply supported column.
   L = 12 m, E = 200 x 10^9 Nm, cross-section of beam = 300 x 500 mm