

※ 考生請注意：本試題可使用計算機

1. The beam ABC shown in Fig. 1 is linked by a cable BD to the support D. A uniformly distributed load of 3kN/m is applied to the beam ABC.

(a). Draw the shear and moment diagrams of beam ABC.

(15%)

(b). If beam ABC is made of reinforced concrete (RC), draw the locations where main reinforcement (鋼筋) should be placed to resist tensile stress in the beam. (5%)

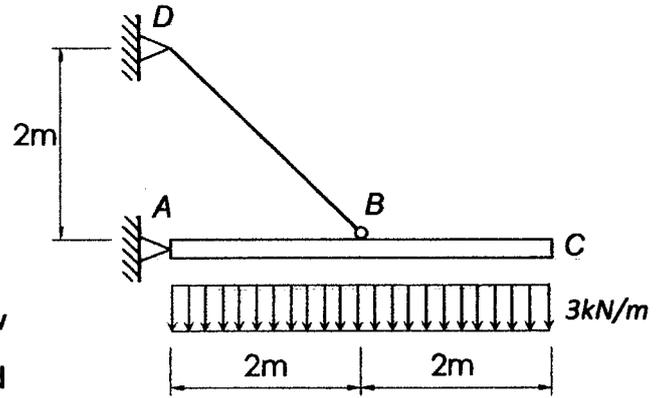


Fig. 1

2. For the truss shown in Fig. 2.

(a). Determine the axial force in every member. (10%)

(b). Find the vertical deflection at point E. The elastic modulus  $E=2000t/cm^2$ , section area  $A=30cm^2$ , moment of inertia  $I=2000cm^4$  for all the members. (15%)

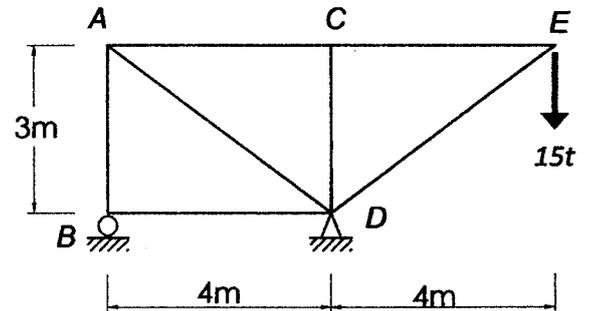


Fig. 2

3. For the rigid frame shown in Fig. 3, draw the axial force, shear, and moment diagrams. Assume that  $EI=constant$  for every member. (25%)

4. Draw examples of the following structure: (10%)

(a). An unstable truss.

(b). A rigid frame that is statically indeterminate to the 5th degree.

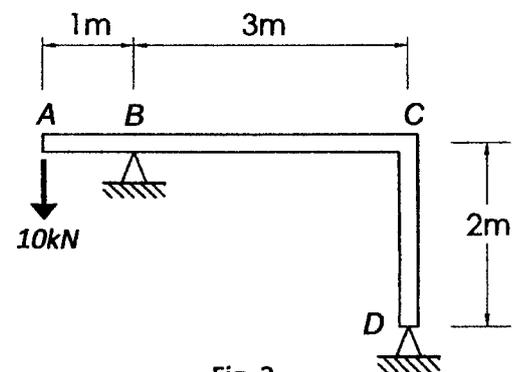


Fig. 3

5. Describe the meaning of the following terms: (Chinese is acceptable) (20%)

(a). Three-hinged arch

(b). Strain hardening

(c). Tuned mass damper

(d). Vierendeel frame