Entrance Examination for International Master's Program 2024 Mechanics of Materials

Number _____

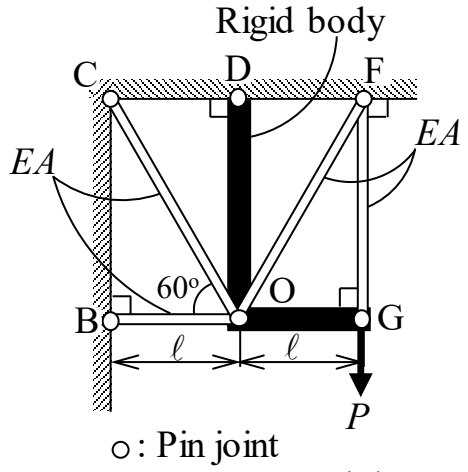
Applicant of INTERNATIONAL MASTER'S PROGRAM should answer in English.

(I) Answer the following three questions for Fig. 1. (25 points)

(1) Write the equation for the balance of moment around Point D.
The axial force of elastic bars OB, OC, OF, and FG are defined as Q, R, S, and T.

(2) Obtain the axial forces Q, R, S, and T.

(3) Obtain the displacement δ_{GV} of point G in the loading direction.



○ : Pin joint
E : Young's modulus
A : Cross-sectional area

Fig. 1

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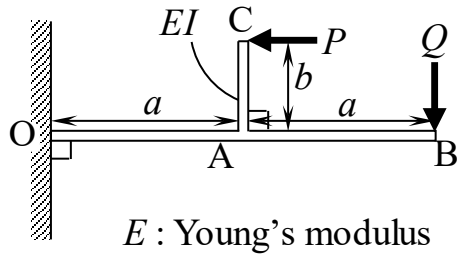
(II) Answer the following two questions for Fig. 2. (25 points)
(1) Draw the BMD (Bending Moment Diagram) for OAB.
(2) Obtain the relationship between P and Q when displacement of Point C in the horizontal direction equals to 0.



E : Young's modulus
I : Moment of inertia

Fig. 2