國立臺灣海洋大學一００學年度研究所碩士班暨碩士在職專班入學考試試題

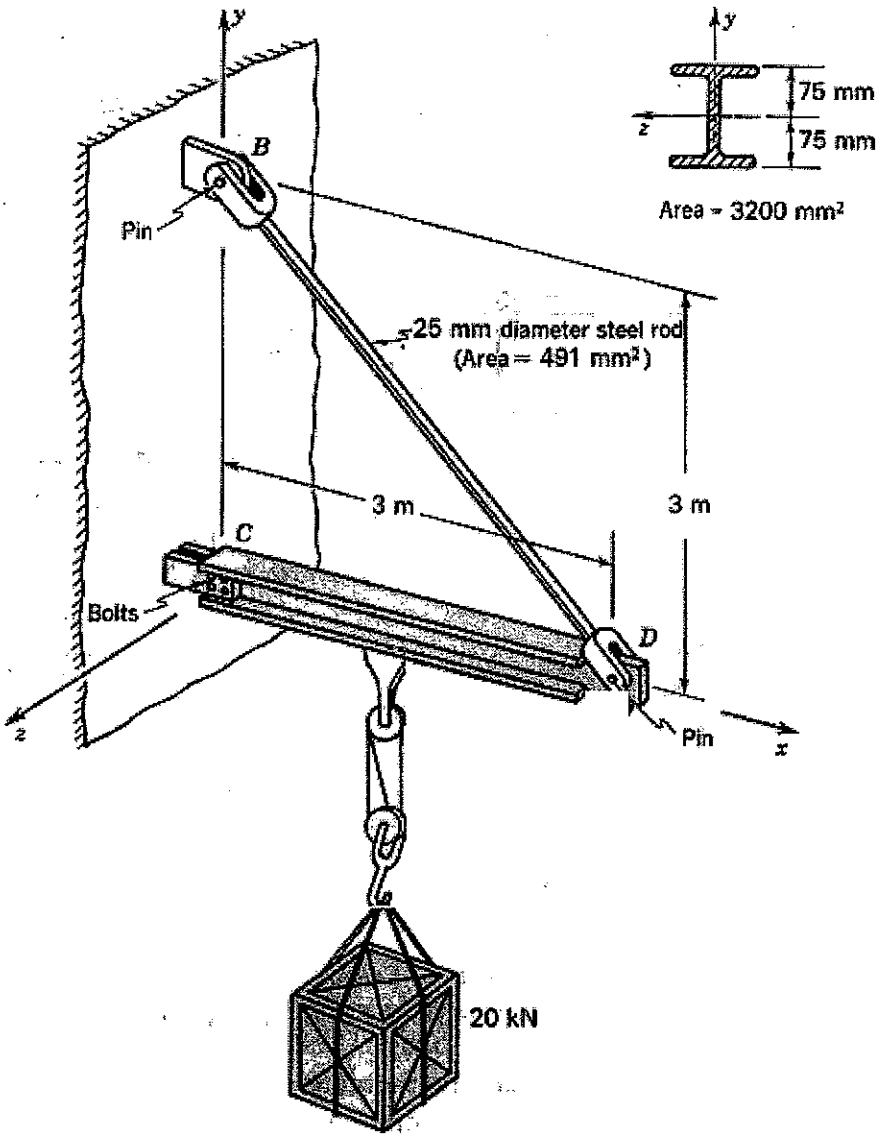
考試科目： 結構學

系所名稱： 河海工程學系碩士班結構工程組

※可使用計算器

1.答案以橫式由左至右書寫。2.請依題號順序作答。

1.



The pulley system in the above figure is located at the midpoint of the beam CD, and Point C can be idealized as a hinge. Answer the following question

Assume E=200 kN/mm^2, $I_{yy}=20\times10^6 mm^4$, $I_{zz}=10\times10^6 mm^4$

(1) 將題目敘述翻譯為中文 (4%)

(2) How much is the strain energy stored in Member CD. (4%)

(3) How much is the strain energy stored in Member BD. (4%)

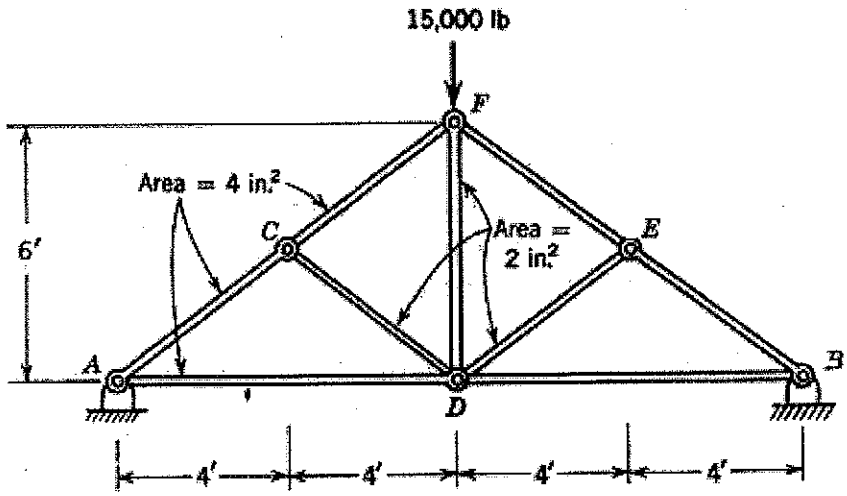
(4) What is vertical displacement at Point D. (4%)

(5) How much is the work done by the external load from the unloaded to the equilibrium state. (4%)

2.

Suppose you are responsible for the safety of the structure shown in Problem 1. Point out each type of probable failure when the structure is overloaded; 翻譯為中文，再以中文回答 (10%)

3.



Refer to the above figure and answer the following question; assume E=29000 ksi.

Attention: Point A is a hinge, and Point B is also a hinge.

(1) Find all the reaction forces at the two supports. (5%)

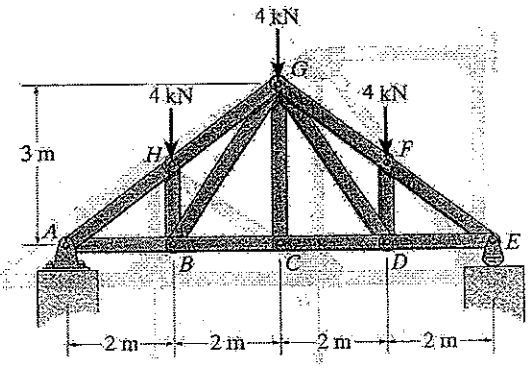
(2) Determine all the member forces. (5%)

(3) How much is the strain energy stored in Member FD. (5%)

(4) What is the vertical displacement at Point F. (5%)

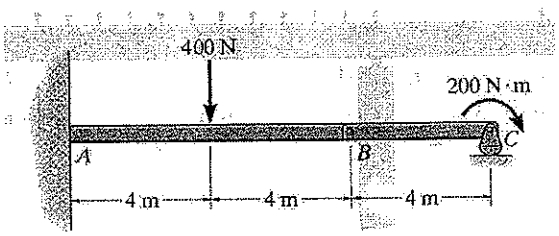
4.

試求如下圖所示桁架中桿件 GF 及 CD 的力。 (20%)



5.

試求如下圖所示梁的彎矩圖及剪力圖。 (20%)



6.

已知左圖梁 A, B 兩端的固定端彎矩，試求右圖 B 端的固定端彎矩。 (10%)