

國立臺北科技大學九十八學年度碩士班招生考試

系所組別：1120 機電整合研究所乙組

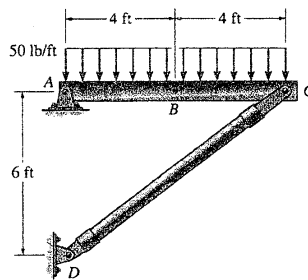
第二節 工程力學 試題

第一頁 共二頁

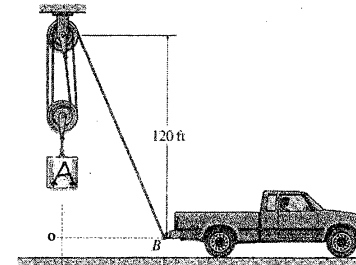
注意事項：

1. 本試題共 4 題，配分共 100 分。
2. 請標明大題、子題編號作答，不必抄題。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

- 一、 Shown in the below figure, determine the internal normal force, shear force, and bending moment acting at point B of the two-member frame. (25 分)



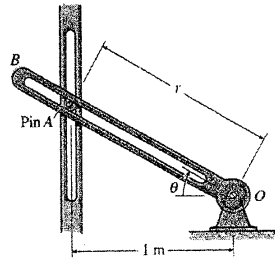
- 二、 Shown in the below figure, a pickup truck initially at rest under the hoist starts moving forward with a constant acceleration 0.4 ft/s^2 , thereby lifting the crate A. Determine the velocity of the crate A when the tail of the pickup truck move from point O to point B at $t = 20 \text{ s}$. (25 分)



注意：背面尚有試題

三、 Shown in the below figure, Pin A of 0.8 kg mass slides along the fixed vertical guide as the arm OB rotates about O. If $\dot{\theta} = 1 \text{ rad/s}$ and $\ddot{\theta} = -0.5 \text{ rad/s}^2$ when $\theta = 30^\circ$, determine the forces exerted on the pin by the vertical guide and arm OB, at this instant. Friction is negligible.

(25 分)



四、 Shown in the below figure, Bar AB rotates with a clockwise angular velocity of 10 rad/s. What is the vertical velocity V_R of the rack of the rack-and-pinion gear where the radius of the gear is 5 in? (25 分)

