

大葉大學九十學年度研究所碩士班招生考試試題紙

| 系 所 組 別 | 考 試 科 目 (中 文 名 稱) | 考 試 日 期 | 備 註 |
|---------|----------------------|----------------|------------------|
| 機研所甲組 | 應用力學 | 4 月 22 日 第 3 節 | 一般工程用計算機 p2-1 |

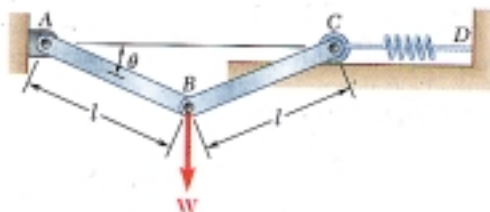
註：考生可否攜帶計算機或其他資料作答，請在備註欄註明（如未註明，一律不准攜帶）

計算題請詳列計算步驟否則一概不予計分。

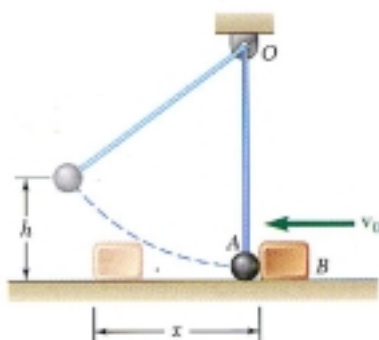
1. 解釋名辭(每題五分，共四十分)

- a. conservative system
- b. self-locking screws
- c. parallel-axis theorem
- d. principle of virtual work
- e. principle of impulse and momentum
- f. coriolis acceleration
- g. space cone
- h. simple harmonic motion

2. A load \mathbf{W} of magnitude 600 N is applied to the linkage at B . The constant of spring is $k = 2.5 \text{ kN/m}$, and the spring is unstretched when AB and BC are horizontal. Neglecting the weight of the linkage and knowing that $l = 300 \text{ mm}$, determine the value θ corresponding to equilibrium. (二十分)



3. A 1 kg block B is moving with a velocity \mathbf{v}_0 of magnitude $v_0 = 2 \text{ m/s}$ as it hits the 0.5 kg sphere A , which is at rest and hanging from a cord attached at O . Knowing that $\mu_k = 0.6$ between the block and the horizontal surface and $e = 0.8$ between the block and the sphere, determine after impact (a) the maximum height h reached by the sphere, (b) the distance x traveled by the block. (二十分)



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4. A cylinder of weight W and radius r is suspended from a looped cord as shown. One end of the cord is attached directly to a rigid support, while the other end is attached to a spring of constant k . Determine the period and natural frequency of the vibrations of the cylinder. (二十分)

