臺灣綜合大學系統105學年度學士班轉學生聯合招生考試試題

科目名稱	動　力　學	類組代碼	D09
		科目碼	D0994

※本項考試依簡章規定各考科均「不可以」使用計算機　　本科試題共計　2 頁

1. Block C moves downward with a constant velocity of 0.6 m/s. Determine (a) the velocity of block A, (b) the velocity of block D. (20%)
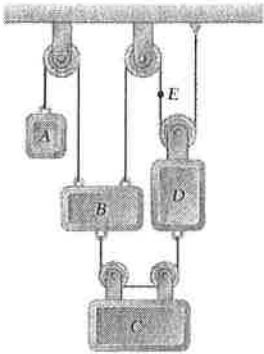
2. A ball is thrown into a 90° corner with an initial velocity $\mathbf{v}$. Denoting the coefficient of restitution by e, show that the final velocity is $-e\mathbf{v}$. (20%)

3. Crank AB rotates counterclockwise with a constant angular velocity ω. Derive an expression for the angular velocity of rod DE in terms of θ and ω. (20%)

4. A half section of a uniform thin pipe of mass m is at rest when a force $\mathbf{P}$ is applied as shown. Assuming that the section rolls without sliding, determine (a) its initial angular acceleration, (b) the minimum value of the coefficient of static friction consistent with the motion. (20%)
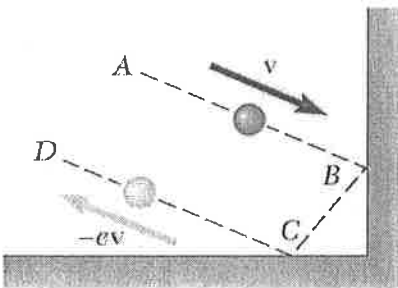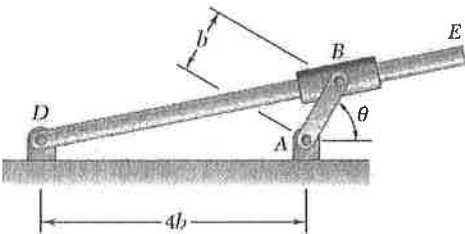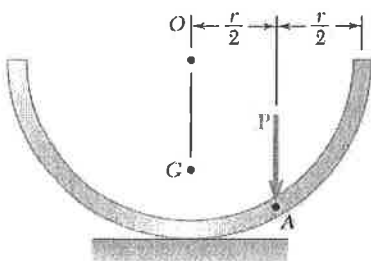

背面有題，請繼續作答。

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5. The slender rod AB of length L forms an angle β with the vertical axis as it strikes the frictionless surface shown with a vertical velocity $\bar{v}_1$ and no angular velocity. Assuming that the impact is perfectly elastic, derive an expression for the angular velocity of the rod immediately after the impact. (20%)