

淡江大學 95 學年度碩士班招生考試試題

84-1

系別：航空太空工程學系

科目：動力學

准帶項目請打「V」	
✓	簡單型計算機

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本試題雙面印製

1. Differentiate between the following terms. 試定義及比較下列各名詞之差異。(20%)

- (a) Kinematics
- (b) Kinetics
- (c) Particle
- (d) Rigid Body

2. The wheel rolls without slipping such that at the instant shown in *Figure 2*. It has angular velocity ω and angular acceleration α . Determine the velocity and acceleration of point *B* on the rod at this instant. (30%)

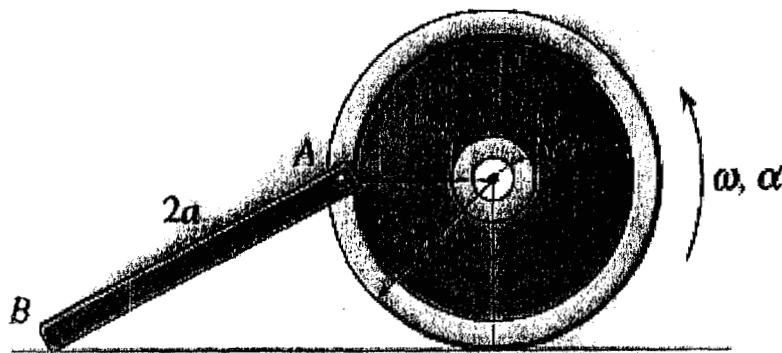


Figure 2.

3. The uniform slender bar of mass m and length L is released from rest in the position shown in *Figure 3*. Find the force exerted by the smooth floor at this instant. (20%)

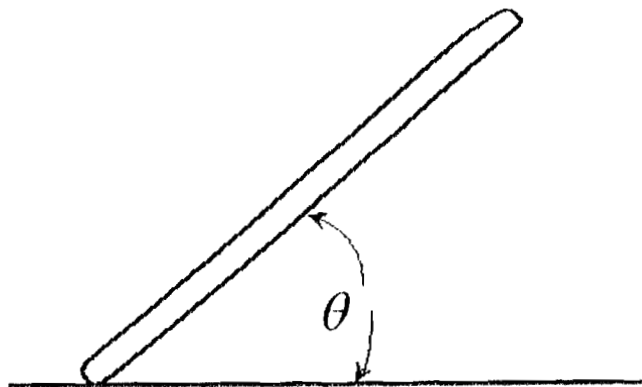


Figure 3.

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4. The rocket has a weight of 20 000 lb, mass center G , and radius of gyration about the mass center of $k_G=21$ ft when it is fired as shown in Figure 4. Each of its two engines provides a thrust $T=50$ 000 lb. At a given instant, engine A suddenly fails to operate. Determine the angular acceleration of the rocket and the acceleration of its nose B . (30%)

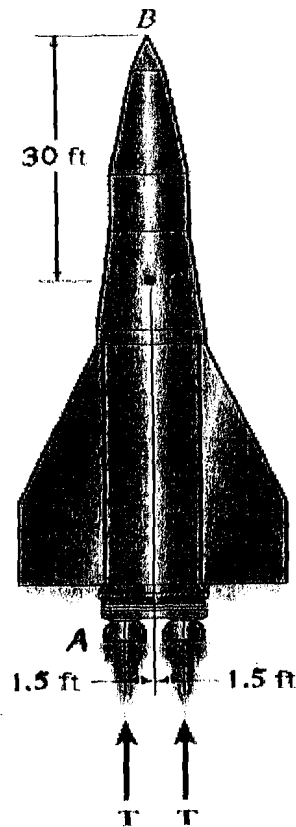


Figure 4.