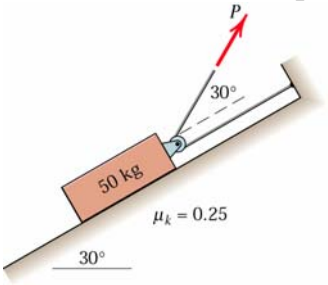
國立彰化師範大學 100 學年度碩士班招生考試試題

系所：車輛科技研究所　　科目：動力學

☆☆請在答案紙上作答☆☆　　共 1 頁，第 1 頁

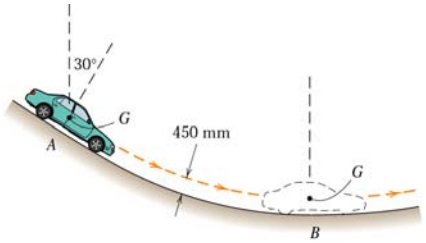
每題各 25 分

1. Determine the tension P in the cable which will give the 50-kg block a steady acceleration of 2 m/s^2 up the incline.



2. The car of mass m accelerates on a level road under the action of the driving force F from a speed v_1 to a higher speed v_2 in a distance s. If the engine develops a constant power output P, determine v_2. Treat the car as a particle under the action of the single horizontal force F.

3. The mass center G of the car has a velocity of 60 km/h at position A and 1.52 s later at B has a velocity of 80 km/h. The radius of curvature of the road at B is 60 m. Calculate the angular velocity ω of the car at B and the average angular velocity ω_{av} of the car between A and B.



4. The uniform 3.6-m pole is hinged to the truck bed and released from the vertical position as the truck starts from rest with an acceleration of 0.9 m/s^2. If the acceleration remains constant during the motion of the pole, calculate the angular velocity ω of the pole as it reaches the horizontal position.