淡江大學八十九學年度日間部轉學生招生考試試題 34

系別：物理系三年級　　科目：理論力學

本試題共 壹 頁

1. A uniform thin rigid rod of weight W is supported horizontally by two vertical props at its ends as shown in Fig.1. At t = 0 one of these supports is kicked out. Find the force on the other support immediately thereafter. 25%

2. Let M and m be the masses of the sun and moon, and R and r be their respective distances from the earth. What is the ratio of the tides induced by these two bodies at the equator? 25%

3. A thin circular metal disk is rotated about its center of mass as shown in Fig.2. Find the moment of inertia about this axis if the disk has four circular holes of radius a cut out of its body. 25%

4. A particle of mass m attached to a massless rod pivoted at O as shown in Fig.3. Assume that the springs have been so adjusted that the rod is in static equilibrium for $\theta = 0$. Find the vibration frequency for small angular motion of the system by Lagrange's method. 25%

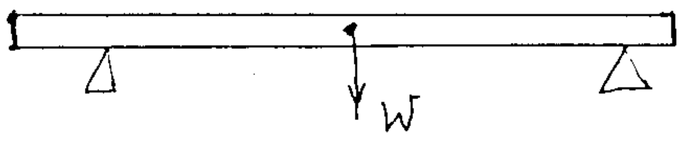

Fig. 1

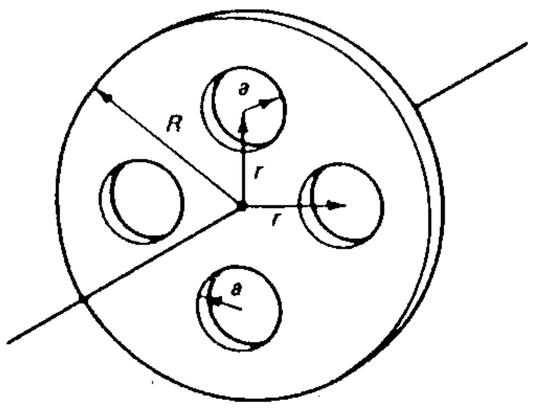

Fig. 2

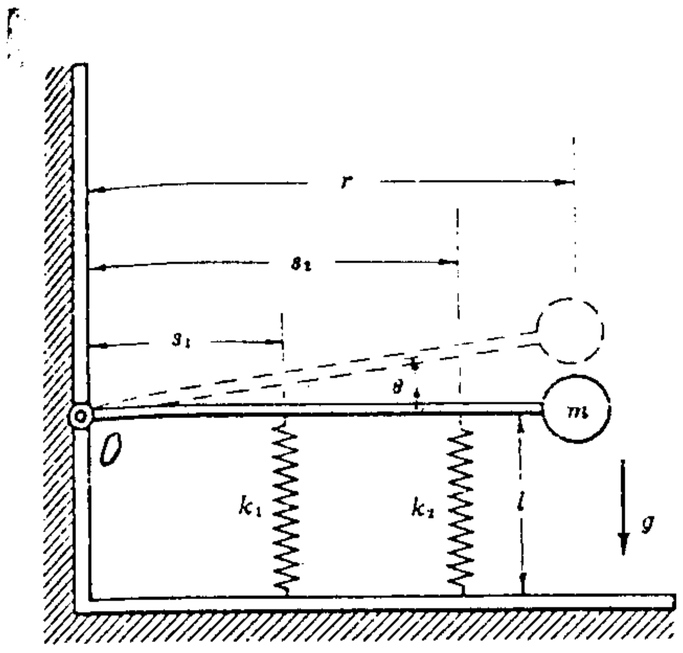

Fig. 3