

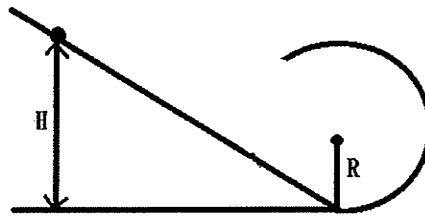
國立臺灣海洋大學 103 學年度研究所碩士班招生考試試題

考試科目：普通物理

系所名稱：光電科學研究所碩士班不分組

1. 答案以橫式由左至右書寫。2. 請依題號順序作答。

1. Consider a particle of mass m that is released at height H and then slides on a frictionless surface that becomes a vertical circle of radius R . (a) What is the minimum value of H for the particle not to lose contact at the highest point of the circle? (b) If it is released at twice this minimum height, what is the force exerted by the track on the particle at the highest point? (20%)



2. Find the moment of inertia of a long uniform rod of mass m and length L , if the axis is through its center and is perpendicular to it. (20%)
3. Write down the Maxwell's equations. (20%)
4. An infinite straight wire of radius R carries a current I . Find the magnetic field at a distance r from the center of the wire for (a) $r > R$ and (b) $r < R$. Assume that the current is uniformly distributed across the cross section of the wire. (20%)
5. Find the electric field of a nonconducting sphere of radius R with charge Q uniformly distributed throughout its volume. (20%)