

Module 03 - Lesson 4

Uniform Circular Motion

Question 1: The Moon completes a nearly circular orbit of 385,000 km radius in 27 days. Calculate the acceleration of the Moon revolving around its orbit.

Question 2: A bacteria pellet is obtained by placing a bacteria colony in a centrifuge and rotating it for 20 minutes with a radial acceleration of $2000g$, where $g = 9.8 \text{ m/s}^2$. Considering the centrifuge has a radius of 20 cm, what is the speed of the bacteria pellet.

Problem: Global Positioning System (GPS) satellites circle the Earth in uniform circular motion. The satellites are placed in orbit at altitudes of approximately 20,000 km, where the gravitational acceleration is roughly $0.06g$. Find the orbital period of the GPS satellites?