1.

A 900 kg satellite which is travelling at 8 600 m/s around a planet of mass 8.1×10^{25} kg has an orbital radius of 7.3×10^{7} m. What is the total orbital energy of this satellite relative to infinity?

(7 marks)

2.

A satellite travels in a circular orbit at a height of one Earth radius above the surface of the Earth. What is the satellite's orbital period?
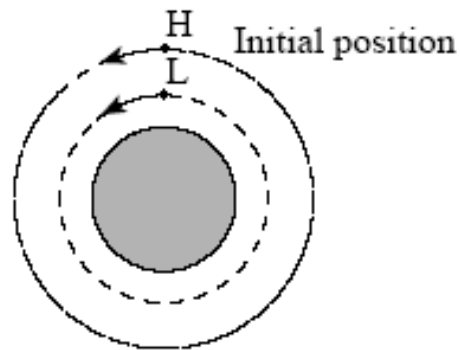
(7 marks)

3.

A satellite is placed in circular orbit at an altitude of 4.8×10^5 m above Earth's surface. What is the satellite's orbital period? **(5 marks)**

4.

As shown in the diagram below, two satellites pass over the same point on Earth's surface. Satellite H is in a higher orbit than satellite L.

Which satellite, H or L, completes one orbit first? (Circle one) **(1 mark)**

A. satellite H

B. satellite L

Using principles of physics, explain your answer. **(3 marks)**