

Section A

1. What is the name of the force that keeps a satellite in orbit around a planet?
2. Name two uses of man-made satellites. (2)

Section B

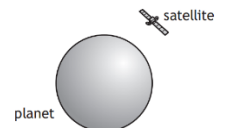
1. Give an example of a natural satellite.
2. A satellite is an example of a projectile.
Explain what a projectile is.

Section C

1. The period of a satellite orbit depends on
 - A. The mass of the satellite
 - B. The height of the satellite above the Earth
 - C. The average length of the Earth day
 - D. Whether the satellite orbits above the equator or is in a polar orbit
 - E. The rate at which the Earth is spinning
2. How long would it take for a geostationary satellite to orbit the earth?
 - A. Roughly 60 minutes
 - B. Roughly 60 seconds
 - C. Roughly 24 hours
 - D. Roughly 30 days
 - E. Roughly 365 days
3. Which of the following is **not** a use of satellites?
 - A. Predicting weather
 - B. Mapping
 - C. Bluetooth connection
 - D. Monitoring global warming
 - E. Sending signals
4. A geostationary satellite orbits the Earth.
Which row in the table shows the altitude above the surface of the Earth and orbital period of the geostationary satellite?

	Altitude above the surface of the Earth (km)	Orbital period (hours)
A.	36 000	12
B.	36 000	24
C.	36 000	48
D.	18 000	12
E.	18 000	24

5. A satellite is in a circular orbit around a planet.



A group of students make the following statements about the satellite.

- I. The greater the altitude of a satellite the shorter its orbital period.
- II. The satellite has a constant vertical acceleration.
- III. As the satellite orbits the planet, its vertical velocity increases.

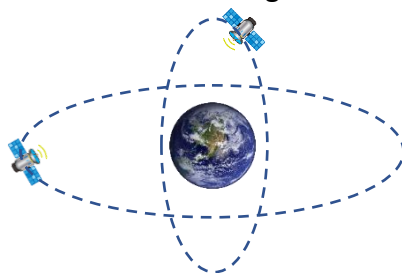
Which of these statements is/are correct?

- A. I only
- B. II only
- C. III only
- D. I and II only
- E. II and III only



Section D

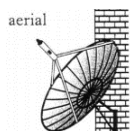
1. The diagram shows two satellites orbiting the Earth.



- a) The spy satellite is in polar orbit, 750km directly above the surface of the Earth. It passes continuously over the Earth's north and south poles as the Earth spins beneath it. The period of the satellite is 100 minutes.
Explain why the satellite can monitor large parts of the earth's surface every day.

- b) The telecommunication satellite is in geostationary orbit, 36 000 km above the surface of the earth.
Suggest **two** reasons why the telecommunication satellite would **not** be of much use as a spy satellite.

- 2.



An aerial shown below is used to receive signals from a satellite.

Explain why aerial of this shape is used. You may use a diagram as part of your answer.

3. In the summer of 2012, the Olympic Games was held in London. Television pictures of the Games will be transmitted from London to Washington via a satellite, which is in a geostationary orbit. Television signals are transmitted using microwaves. The diagram shows the signals being transmitted from London to the satellite. This satellite transmits these signals to a ground station in Washington.



- a) State what is meant by a geostationary satellite.
b) Give one example of what a geostationary satellite could be used for.
4. A satellite is said to be 'accelerating and travelling at a constant speed'.
Explain how the satellite can be accelerating and also travel at a constant speed.