

### 1.3 Satellites & Projectiles Homework Questions

Q1. The purpose of the curved reflector on a satellite television aerial is to

- A Make the transmitted signal stronger
- B Make the received signal stronger
- C Reflect light on to the receiver
- D Absorb transmitted signals
- E Absorb received signals

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Q2. How long does a geostationary satellite take to orbit the Earth?

- A 1 hour
- B 1 day
- C 1 week
- D 1 month
- E 1 year

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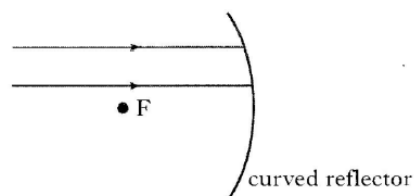
Q3. The weather information satellite NOAA-15 has a period of 99 minutes and an orbital height of 833 km.

The geostationary weather information satellite Meteosat has a period of 1 440 minutes and an orbital height of 35, 000 km. Which of the following gives the period of a satellite with an orbital height of 20 000 km?

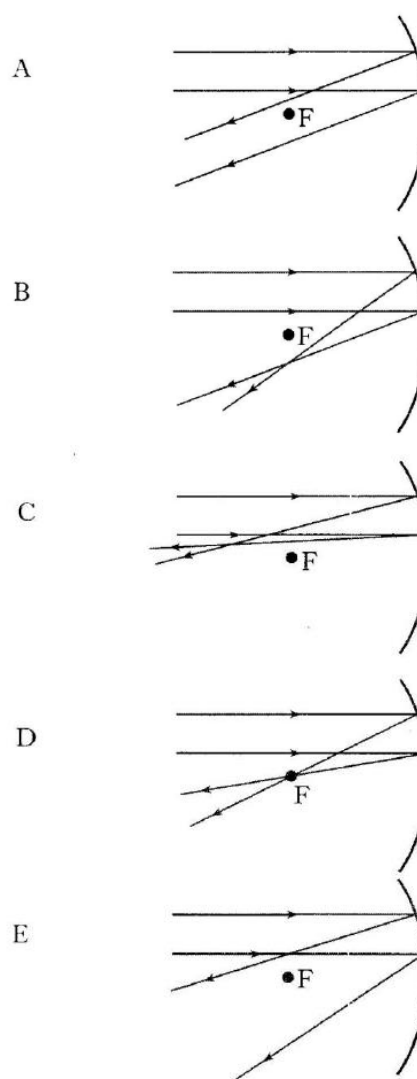
- A 83 minutes
- B 99 minutes
- C 720 minutes
- D 1440 minutes
- E 1750 minutes

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Q4 The diagram shows two rays of light incident on a curved reflector. The focal point, F, of the reflector is shown.



Which of the following diagrams shows the paths of the rays of light after reflection?



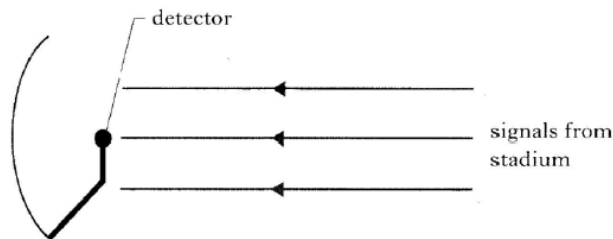
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Turn over

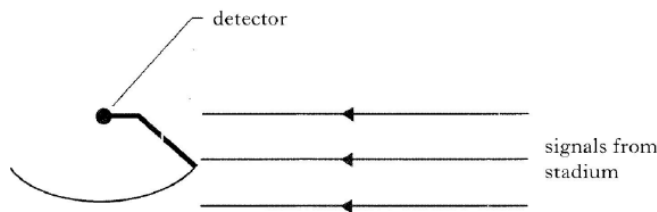
**Q5** A football match is being broadcast live from Dundee. Signals from the football stadium are transmitted to a television studio in Glasgow via a relay station on top of a nearby hill.

At the relay station a curved reflector is placed behind a detector of the television signals.

- a) State the purpose of the curved reflector. (1)
- b) Copy and complete the diagram below to show the effect of the curved reflector on the signal at the relay station. (2)



- c) During the match strong winds cause the reflector to move to a new position as shown.



State the effect this has on the signal received at the detector. (1)

**Q6** A mountain climber carries a device which receives radio signals from satellites to determine the climber's position.

The device can also be used to send the climber's position to the emergency services in the event of an accident.

One satellite sends a radio signal that is received by the device 0.068s after transmission.

- a) State the speed of the radio signal. (1)
- b) Calculate the distance between this satellite and the climber. (3)

**Q7. Name three things that satellites can be used for and explain each one briefly. (3)**

**Q8. Describe what is meant by the 'period' of a satellite. (1)**

**Total Marks 16**