Chapter 19 - Virtual LAB (Pg. 704)

Exploring Space

How does an artificial satellite stay in orbit?

Question 1 :Use your data to describe the relationship between the satellite's speed and orbiting altitude. How does the speed change with altitude of orbit?

Question 2 :Use your data to describe the relationship between the satellite's period and altitude. How does the period change with altitude?

Question 3 :What might happen to a satellite in Low Earth Orbit? Why?

Question 4 :Why is a satellite in Geostationary orbit convenient for antenna tracking and ground-space-ground relay procedures?

Question 5 :Does a satellite at a low tilt angle, low altitude orbit see more or less of Earth's surface than a satellite at a high tilt angle, low altitude orbit as it revolves around Earth? Why?

Question 6 :If you wanted to launch a satellite to an orbit where it could see all parts of the globe within each 24-hour period, what would its orbit be? Why?

Question 7 :A satellite in a 24-hour circular orbit with non-zero tilt angle (slight tilt away from the equatorial plane of Earth) will appear from the ground as if it is making a nodding motion in the sky; that is, it will travel north and south each day along the same line of longitude, crossing the equator. At what intervals will it cross the equator?

Question 8 :If you were ▒shopping▒ for an economical launch vehicle to launch 66 satellites within a year into Low Earth Orbit, to form a constellation of communications satellites, what would be some of the parameters (variables) you would need to know?

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Satellite	Mission	Payload (kg)	Orbit	Altitude (km)	Speed (km/sec)	Period (hr and min)
1						
2						
3						
4						
5						
6						