1. Which of the following laws describes the relationship between the period and semi-major axis of an orbiting body?

a) Newton’s First Law
b) Kepler’s First Law
c) Kepler’s Second Law
d) Kepler’s Third Law

Answer: d) Kepler’s Third Law

Explanation: Kepler’s Third Law states that the square of the orbital period of a planet is directly proportional to the cube of the semi-major axis of its orbit.

2. What term describes the highest point in an orbit around the Earth?

a) Apogee
b) Perigee
c) Zenith
d) Nadir

Answer: a) Apogee

Explanation: Apogee is the point in an orbit that is farthest from the Earth.

3. Inclined orbits are characterized by:

a) Remaining stationary relative to the Earth’s surface
b) Aligning perfectly with the equator

c) Having an angle relative to the Earth’s equatorial plane
d) Being perfectly circular

Answer: c) Having an angle relative to the Earth’s equatorial plane

Explanation: Inclined orbits have an inclination angle relative to the Earth’s equatorial plane, causing them to orbit at an angle rather than directly over the equator.

4. Which type of orbit ensures that a satellite passes over the same spot on Earth at the same local solar time on each orbit?

a) Geostationary orbit
b) Low Earth Orbit (LEO)
c) Medium Earth Orbit (MEO)
d) Polar orbit

Answer: a) Geostationary orbit

Explanation: Geostationary orbits are positioned directly above the Earth’s equator and have a period equal to the Earth’s rotation period, allowing them to remain stationary relative to a fixed point on the Earth’s surface.

5. Which of the following elements of an orbit describes its shape?

a) Inclination
b) Eccentricity
c) Longitude of ascending node
d) Argument of perigee

Answer: b) Eccentricity

Explanation: Eccentricity describes how much an orbit deviates from a perfect circle. An eccentricity of 0 indicates a circular orbit, while higher values indicate more elliptical orbits.

6. What is the term for the point in an orbit closest to the Earth?

a) Apogee
b) Perigee
c) Zenith
d) Nadir

Answer: b) Perigee

Explanation: Perigee is the point in an orbit that is closest to the Earth.

7. Which orbit is characterized by an inclination of 90 degrees relative to the Earth’s equator?

a) Geostationary orbit
b) Sun-synchronous orbit
c) Polar orbit
d) Molniya orbit

Answer: c) Polar orbit

Explanation: Polar orbits have an inclination angle of 90 degrees, causing them to pass over the Earth’s poles on each orbit.

8. What term describes the point in an orbit where the satellite crosses the equatorial plane from south to north?

a) Ascending node
b) Descending node
c) Perigee
d) Apogee

Answer: a) Ascending node

Explanation: The ascending node is the point in an orbit where the satellite crosses the equatorial plane from south to north.

9. What is the primary factor causing orbit perturbations?

a) Gravitational pull of other celestial bodies
b) Solar wind
c) Magnetic field of the Earth
d) Atmospheric drag

Answer: a) Gravitational pull of other celestial bodies

Explanation: Gravitational pull from other celestial bodies, such as the Moon and the Sun, can cause perturbations in the orbit of a satellite.

10. Which orbit type is often used for communication satellites due to its fixed position relative to the Earth’s surface?

a) Low Earth Orbit (LEO)
b) Medium Earth Orbit (MEO)
c) Geostationary Orbit
d) Molniya Orbit

Answer: c) Geostationary Orbit

Explanation: Geostationary orbits allow satellites to remain stationary relative to a fixed point on the Earth’s surface, making them ideal for communication satellites.