Physics - FSC Part 1 Physics Chapter 5 Short Questions Preparation

Q1. State the right hand rule to find the direction of angular displacement.

Ans 1: It states that
"Grasp the axis of rotation in right hand with the fingers curling in the direction of rotation , then the erect thumb will give the direction of angular velocity and angular momentum"

Q2. An object orbiting around the earth in said to be a freely falling body. Why?

Ans 1: An object in orbits is said to be freely falling , because the trajectory of its fall has the same curvature as Earth's surface. In fact, the object is falling towards the center of earth but because of spherical shape of earth, it never reaches the surface of earth.

Q3. Why is the axis of rotation of Earth remains fixed in one direction with respect to the universe around it?

Ans 1: The major force acting on Earth is the pull of the Sun and no other sizeable toque is experienced by it. The Earth's axis of rotation, therefore remains fixed in one direction with reference to the universe around us.

Q4. What are Artificial Satellites and how they move around the earth?

Ans 1: Satellites are the objects that orbit around the earth.They are put into orbit by rockets and are held in orbits by the gravitational pull of the earth.

Q5. What is Geo-stationay satellite? How many minimum number of geo-stationary satellites are required fro global coverage coverage of T.V transmission ?

Ans 1: S satellite whose orbital motion is stationary along the earth is called geostationary satellite. The time period of satellite is equal to the time period of spin motion of the earth.
A geostationary satellite covers 120° of longitude. So the whole earth can be covered by three correctly positioned geo-stationary satellites.

Q6. Explain why earth's satellite despite of being freely falling object does not reach the earth.

Ans 1: To orbit the planet and not come crashing down, a spacecraft has to travel forward (tangential to Earth) fast enough that it compensates for the fall downwards. The trajectory of its fall has the same curvature as earth's surface. So it will never reach the earth.

Q7. On what factors moment of inertia depends?

Ans 1: The moment of inertia is $I = mr^2$
So it depends upon the mass of the body and its distance from the axis of rotation.

Q8. Write down application of communication satellites.

Ans 1: A satellite communication system consist of three geo-stationary satellites.There are over 200 Earth stations which can transmit and receive signals.INTELSAT-VI operates at microwave frequencies 4, 4, 11 and 14 Ghz and has a capacity of 30,000 two way telephone circuits plus three TV channels.
Geo-stationary satellite are very useful for worldwide communication,weather observation, navigation, and other military uses.

Q9. Define angular velocity, How its direction is determined?

Ans 1: The rate of change of angular displacement is called angular velocity. The direction of angular velocity is along the axis of rotation and can be determined by right hand rule:
"Grasp the axis of rotation in right hand with the figures curling in the direction of rotation then the erect thumb will give the direction of angular velocity."

Q10. Why the microwaves are used in satellite communication?

Ans 1: Micro waves are used in satellite communication because they travel in a narrow beam, in a straight line and pass easily through the atmosphere of the earth.