Physics - ICS Part 1 Physics Chapter 5 Short Questions Test

Q1. 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.

Q2. 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.

Q3. Why Einstein views of gravitation are preferred than Newton's views of gravitation? Explain briefly

Ans 1: Newton discovered the inverse square law of gravity. Einstein's theory also says that gravity follows an inverse square law (except in strong gravitational fields), but it gives us a physical picture of how gravity works. The bending of star light caused by the gravity of the Sun was measured during a solar eclipse in 1919, it was found to match Einstein's Prediction rather than Newton's.

Q4. What is meant by INTEL SAT? At what frequencies the INELSAT-VI operates ?

Ans 1: The largest satellite system managed by 126 countries is international. Telecommunication Satellite Organization (INTELSAT).
The INELSAT-VI operates at microwaves frequencies of 4, 6, 11 and 14 Ghz.

Q5. Why banked tracks are needed for turns?

Ans 1: Banked tracks are needed because friction alone cannot provide energy for centripetal force.
If the road is banked, so that the outer edge is above the inner edge, then a portion of the normal force from the road on the tyre points towards the center of the track; this fraction of the normal force can provide enough centripetal force to keep the car moving in a circle.

Q6. Explain conservation of direction of angular momentum.

Ans 1: The direction of angular momentum along the axis of rotation remains fixed. This is due to the fact that the axis of rotation of an object will not change its orientation unless an external torque causes it to do so .

Q7. Explain how many minimum number of Geo-stationary satellites are required for global coverage of T.V transmission.

Ans 1: A geostationary satellite covers 120° of longitude. So the whole earth can be covered by three correctly positioned

geostationary satellites.

Q8. What is mean by angular momentum?

Ans 1:

Q9. State the direction of the following vectors in simple situation:
A) Angular Momentum B) Angular Velocity

Ans 1: The direction of angular momentum and angular velocity 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 and angular momentum."

Q10. How is artificial gravity created?

Ans 1: Artificial gravity is the gravity like effect produced in an orbiting spaceship to overcome weightlessness.To create artificial gravity the spaceship is set into rotation around its own axis. The astronaut then is presses towards the outer rim and exerts a force on the floor of the spaceship in much the same way as on the earth.