O. P. JINDAL SCHOOL, RAIGARH (CG) 496 001, INDIA

Phone: 07762-227042, 227293, (Extn. 227001 - 49801, 02, 04, 06, 09); Fax: 07762-262613; website: www.opjsrgh.in; e-mail: opjsraigarh@jspl.com

CLASS: IX (PHYSICS)

GRAVITATION

1. Two lead spheres of 20 cm and 2 cm diameters are placed with their centers 100 cm apart. Calculate the force of attraction between them. Given that density of lead 11.5 gm/cc and G = 6.67 X 10^{-8} $cm^3gm^{-1}s^{-2}$.

2. At what altitude above the earth's surface would the numerical value of g be half of that of the surface? [Given, radius of earth = 6400 km]

3. Find the value of g in a mine four kilometer deep if g at the surface is 9.8 m/s^2 and earth's radius is 6400 km.

4. If the earth were a solid sphere of iron of radius 6.37 X 10^6 m and density 7860 kg/m^3, what would be the acceleration due to gravity on the surface?

5. A small satellite is revolving round a planet of density 10000 kg/m^3. The radius of the orbit of satellite is slightly greater than the radius of the planet. Find the time period of revolution of the satellite.

6. If the radius of earth shrinks by 1%, its mass remaining the same, by what percentage would the acceleration due to gravity on the earth's surface increase or decrease?

7. Calculate the average rate at which the line joining the sun to the earth is sweeping out area, in km2/s. the average linear speed of the earth in the orbit is 30 km/s, and the average radius of the orbit is 16 X 10^7 km.

8. The planet Pluto is, on an average, 40 times as far from the sun as the earth is. What is Pluto's orbital period, in year?

9. An artificial satellite is revolving in a circular orbit round the earth being at a distance of 300 km above the earth's surface. Calculate the velocity of the satellite. [Radius of earth = 6400 km]

10. A geostationary satellite is orbiting the earth at a height of 6R above the surface of the earth, where R is the radius of the earth. Calculate the time period of another satellite at a height of 2.5R from the surface of the earth.