INDIAN SCHOOL NIZWA - WORKSHEET

PHYSICS

CH: 8 GRAVITATION

Name: _____ Date:_____ Class: XI Sec: _A__

1.	Assertion: Gravitational potential is always negative Reason: The gravitational potential energy at infinity is assumed to be zero
2.	Assertion: Earth is flat at the poles Reason: this is due to the rotation of earth about its equatorial axis.
3.	The escape speed from the surface of earth is V_e. The escape speed from the surface of the planet whose mass and radius are three times those of earth will be A. V_e B. $3\ V_e$ C. $9\ V_e$ D. $27\ V_e$
4.	A body of mass m is placed on the surface of earth is taken to a height h = 3R, then change in gravitational potential energy is A. ¼ mgR B. 2/3 mgR C. ¾ mgR D. 1/3 mgR
5.	What is the weight of a body at the centre of the earth? Will the answer change if the earth were a hollow sphere?
6.	If the acceleration due to gravity at a height h and at a depth d below the surface of earth are equal, how are h and d related?
7.	Mass of a body is 20 kg at the surface of earth. At what depth does its mass reduce to 5Kg?
8.	Why gravitational force between two bodies is usually unnoticeable?
9.	Acceleration due to gravity on the surface of earth and another planet whose mass and radius are twice that of earth are g_e and g_p , then show that $g_p = g_e/2$.
10.	Give one example of central force and non central force.

11.	What is the force between two spheres weighing 40kg each and placed 5 cm apart?
12.	What is the value of acceleration due to gravity on the surface of moon? Given mass of moon 7.4 x 10^{22}Kg and its radius 1750Km.
13.	Earth has mass nine times and radius half of that of the planet Mars. Calculate the velocity by a rocket to pull out of the gravitational force of Mars. Escape velocity on the surface of earth is 11.2 Km/s.
14.	Find the percentage decrease in the weight of a body when taken 16Km below the surface of earth. Take radius of earth as 6400 Km.
15.	An artificial satellite orbited around the earth at a distance of 3400 Km. Calculate its orbital velocity and period of revolution. Radius of earth is 6400 Km.
16.	Calculate the period of revolution of Neptune around the sun if the diameter of its orbit is 30 times that of the earth's orbit around the sun.
17.	Suppose there existed a planet that went around the sun twice as fast as the earth. What would be its orbital size as compared to that of the earth?
18.	A body weighs 63N on the surface of the earth. What is the gravitational force on it at a height equal to half the radius of the earth?
19.	The escape speed of a projectile on the earth's surface is 11.2 Km/s. A body is projected out with thrice its speed. What is the speed of the body far away from the earth? Ignore the presence of the sun and other planets.
20.	What will be the kinetic energy needed to project a body of mass m from the earth's surface to infinity?
21.	What is meant by gravitational field strength? Which of the planets of the solar system has the greatest gravitational field strength? What is the gravitational field strength of a planet where the weight of a 60kg astronaut is 300N?
22.	At what height above the earth's surface, the acceleration due to gravity will be 1/9^{th} of its value at the earth's surface? Given radius of earth is 6400km.