1. If g is the acceleration due to gravity on the earth's surface, the gain in the potential energy of an object of mass m raised from the surface of the earth to a height equal to the radius R of the earth is
   (a) 2 mgR (b) (1 /2) mgR (c) (1 /4) mgR (d) mgR

2. Energy required to move a body of mass m from an orbit of radius 2R to 3R is
   (a) GMm /(12R ^{2}) (b) GMm /(3R ^{2}) (c) GMm /(8R) (d) GMm /(6R)

3. A particle of mass 10 g is kept on the surface of a uniform sphere of mass 100 kg and radius 10 cm. Find the work to be done against the gravitational force between them to take the particle far away from the surface. (G = 6.67 × 10 -11 Nm^2/kg^2)
   (a) 3.33 × 10 $^{-10}$ J (b) 13.34 × 10 $^{-10}$ J (c) 6.67 × 10 $^{-10}$ J (d) 6.67 × 10 $^{-9}$ J
4. Average density of the earth
   (a) Is a complex function of g (b) does not depend on g
   (c) is inversely proportional to g (d) is directly proportional to g

5. A body weighs 500 N on the surface of the earth. How much would it weigh half way below the surface of the earth?
   (a) 1000 N (b) 500 N (c) 250 N (d) 125 N

1. Height of a tower is 39.2 m. A body is allowed to fall from the top of the tower. At the same time, another body is projected vertically upwards with velocity 19.6 m / s from its bottom. Where and when will they meet? g = 9.8 m / s 2.
2. A satellite weighing 2000 kg is orbiting the earth at 1600 km height above the surface. Find (i) the binding energy of the satellite and (ii) its escape velocity. Mass of earth = 6 ×10 ^{24} kg and its radius = 6400 km
3. Calculate the rate of change in gravitational acceleration (g) w. r. t. height from the surface of the earth
4. Define Kepler's law of planetary motion. Proof it's third law
5. Derive an expression for the variation for the g due to depth and height from the surface of earth