ACCELERATION DUE TO GRAVITY

1. The height of the point vertically above the earth's surface at which the acceleration due to gravity becomes 1% of its value at the surface is (R is the radius of the earth):
   (a) 6R **(b)** 9R (c) 12R (d) R
2. The change in the value of g at a height h above the surface of the earth is the same as at a depth d below the surface of earth. When both d and h are much smaller than the radius of earth, then which of the following is correct?
   (a) d = 2h (b) d = 3h (c) d = h/3 (d) d = h
3. At what height h above the earth's surface, the value of g becomes g/4? (where R is the radius of the earth):
   (a) 2R (b) R/2 **(c)** R (d) 4R
4. The radii of two planets are in the ratio 3:2 and their densities are in the ratio 1:3. The ratio of the accelerations due to gravity at their surfaces are in the ratio:
   (a) 9:2 (b) 1:6 (c) 2:3 **(d)** 1:2
5. A body weighs 90 N on the surface of earth. What is the gravitational force on it due to earth at a height equal to half the radius of the earth from the surface?
   (a) 60 N (b) 50 N **(c)** 40 N (d) 32 N
6. The height at which the acceleration due to gravity decreases to 36% of its value on the surface of the earth is (The radius of the earth is R):
   (a) R/2 (b) R/3 **(c)** 2R/3 (d) R
7. The ratio of radii of earth to another planet is 3/4 and the ratio of their mean densities is 3/5. If an astronaut cam jump to a maximum height of 2.0 m on the earth, with the same effort, the maximum height he can jump on the planet is:
   (a) 0.9 m (b) 0.6 m (c) 0.4 m (d) 1.0 m
8. Imagine a new planet having the same density as that of earth but it is 4 times bigger than the earth in size. If the acceleration due to gravity on the surface of earth is g, then on the surface of the new planet the acceleration due to gravity is:
   (a) 2g **(b)** 4g (c) g (d) g/4
9. A satellite of mass 200 kg revolves around the earth in an orbit of radius 3R /2, where R is the radius of the earth. Assuming the gravitational pull on a mass 1 kg on earth's surface to be 10 N, the pull on the satellite will be (Take g = 10 m/s^2):
   (a) 480 N **(b)** 889 N (c) 790 N (d) 692 N
10. Acceleration due to gravity is maximum at (R is the radius of earth):
    (a) a height from the earth's surface (b) the centre of the earth **(c)** the surface of the earth (d) a depth from earth's surface