STD: IX
Unit : Gravitation
Level - I

Q.1. A body weighs 63 N on the surface of the earth. What is the gravitational force on it due to the earth at a height equal to half the radius of the earth?

Q.2. Find the force of earth's gravitation on a stone of mass 2 kg held near the surface of the earth. Also calculate the accelerations this force would produce in the stone and the earth.

Q.3. A stone is dropped from the edge of the roof: (a) how long does it take to fall 4.9m? (b) how fast does it move at the end of that fall? (c) how fast does it move at the end of 7.9 m? (d) what is the acceleration after 1 s and after 2 s?

Q.4. A stone drops from the edge of the roof. It passes a window 2 m high in 0.1 second. How far is the roof above the top of the window?

Q.5. A ball is dropped from a height of 20 m. At the same time another ball is thrown up from the ground with a speed of 20 m/s. When and where will the balls meet?

Q.6. A boy on a cliff 49 m high drops a stone. One second later he throws a second stone after the first. They both hit the ground at the same time. With what speed did he throw the second stone?

Q.7. If you weigh 60 kg-wt on earth, how far must you go from the center of the earth so that you weigh 30 kg-wt?

Q.8. Consider a body in space which has a mass twice that of the earth and a radius thrice that of the earth. What will be the weight of a book on this body in space, if its weight on the earth is 900N?

Q.9. A body weighs 90 kg on the surface of the earth. How much will it weigh on the surface of Mars whose mass is $1/9^{th}$ and radius ½ that of the earth?