GRAVITATION

MULTIPLE CHOICE QUESTIONS (1 MARK)

1. If we move from equator to pole , value of 'g' is
   a) Increases
   b) Decreases
   c) Remains same
   d) First increase and then decrease
2. The weight of an object at the centre of the Earth of radius R is (NCERT Exemplar)
   a) zero
   b) infinite
   c) R times the weight at the surface of the Earth
   d) $1/R^2$ times the weight at surface of the Earth
3. The ball is thrown up, the value of 'g' will be
   a) Zero
   b) positive
   c) negative
   d) negligible
4. The gravitational force between two objects is F. If masses of both the objects are halved without altering the distance between them, then the gravitational force would become
   a) F/4
   b) F/2
   c) F
   d) 2F
5. In the relation $F = GM\ m/r^2$, the quantity G
   (a) depends on the value of g at the place of observation
   (b) is used only when the Earth is one of the two masses
   (c) is greatest at the surface of the Earth
   (d) is universal constant of nature
6. What holds the atmosphere to earth?

   c) Winds.
   d) None of the above.
7. The SI unit of G

   a) $Nm^2\ kg^{-2}$
   b) Nm
   c) Nkg
   d) kgm/s
8. The mass of the body on moon is 40kg, what is the weight on the earth.
   a) 240kg
   b) 392N
   c) 240N
   e) 400kg

VERY SHORT ASWER QUESTIONS (1 MARK)

9. Who formulated the universal law of gravitation ?
10. What is freefall?
11. If the mass of a body is 9.8 kg on the earth, what would be its mass on the moon?
12. What keeps the moon in uniform circular motion around the earth?
13. When a body is dropped from a height, what is its initial velocity?
14. Suppose that the radius of the earth becomes twice of its original radius without any change in its mass. Then what will happen to your weight?
15. Amit buys few grams of gold at the poles as per the instruction of one of his friends. He hands over the same when he meets him at the equator. Will the friend agree with the weight of gold bought? If not, why?
16. State any two natural phenomena explained by universal law of Gravitation.

SHORT ANSWER QUESTIONS (2 MARK)

17. A stone is dropped from the top of a 40 m high tower. Calculate its speed after 2 s. Also find the speed with which the stone strikes the ground.

18. The earth attracts an apple. Does the apple also attract the earth? If it does, why does the earth not move towards the apple?
19. Give three differences between acceleration due to gravity (g) and universal gravitational constant (G).
20. The Weight of the body at a certain place is 30 N. The acceleration due to gravity at that point is 10 m/s^2. Find out the mass and weight of the object at the place .where acceleration due to gravity is zero?