

Gravitation**DPP - 1**

- The earth attracts the sun with a gravitational force of 1022 N. Then the sun attracts the earth with a gravitational force of :

(A) 10^{-20} N	(C) 10^{22} N
(B) 10^2 N	(D) 10^{10} N
- When the extra object is placed between two bodies, forces of gravitation between them :

(A) will increase	(C) will change with environment
(B) will decrease	(D) will not change
- Force of attraction between two bodies depends upon :

(A) the gravitational constant	(C) the magnitude of their masses
(B) distance between their centres	(D) all of these
- Law of gravitation is applicable for :

(A) heavy bodies only	(C) small sized bodies only
(B) medium sized bodies only	(D) bodies of any size
- Gravitational force is a:

(A) weak force	(C) medium range force
(B) short range force	(D) independent of distance
- Value of G on the surface of earth is $6.673 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$, then value of G on surface of Jupiter is:

(A) $12 \times 6.673 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$	(C) $6.673 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$
(B) $\text{---} \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$	(D) $\text{---} \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$
- The ratio of SI unit to the CGS unit of G is :

(A) 10^{-3}	(C) 10^{-11}
(B) 10^3	(D) 10^{-2}
- If initially the distance between two bodies is r and their masses be M_1 and M_2 then the force of gravitation be F. If this distance is increased to two times then the force would become :

(A) F/2	(C) 2 F
(B) F/4	(D) 4 F
- If two bodies of mass M_1 and M_2 are placed at a distance r apart they have a force of gravitation F between them. If both of the masses are reduced to half then force of gravitation would be:

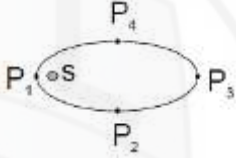
(A) F/2	(C) F/4
(B) 2 F	(D) F
- In vacuum all the freely falling objects have same :

(A) Speed	(C) Acceleration
(B) Velocity	(D) Force
- What are S.I. and CGS units of universal gravitational constant?
- What is the force of gravitation between two masses of 100 kg each separated by a distance of 100 m? ($G = 6.67 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$)
- What happens to the gravitational force between two objects, if:
 - The mass of one object is doubled?
 - The distance between objects is doubled?
 - The masses of both objects are doubled?
- Give five important characteristics of gravitational force.
- Differentiate mass and weight.

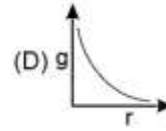
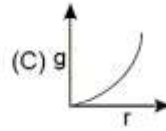
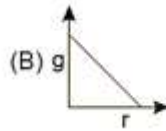
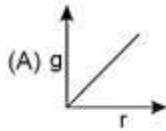
Gravitation**DPP - 3**

- When a body is thrown vertically upwards then :
 - Time of ascent = $\frac{1}{4}$ (time of descent)
 - Time of ascent = $\frac{1}{2}$ (time of descent)
 - Time of ascent = time of descent
 - Time of ascent = 2 (time of descent)
- The acceleration due to gravity 'g' experienced by a ball when it is thrown upward is :
 - Positive
 - Negative
 - Zero
 - None of these
- Force of gravitation between two bodies of mass 1 kg each kept at a distance of 1m is :
 - 6.67 N
 - 6.67×10^{-9} N
 - 6.67×10^{-11} N
 - 6.67×10^{-7} N
- The value of acceleration due to gravity g is:
 - $6.67 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$
 - 8.9 m/s^2
 - 9.8 m/sec^2
 - None of these
- A stone is dropped from top of tower. Its velocity after it has fallen 20 m is [$g = 10 \text{ ms}^{-2}$].
 - 5 ms^{-1}
 - 10 ms^{-1}
 - 40 ms^{-1}
 - 20 ms^{-1}
- The ratio of the value of g on the surface of moon to that on the earth's surface is:
 - 6
 - $\sqrt{6}$
 - $\frac{1}{6}$
 - $\frac{1}{\sqrt{6}}$
- The force acting on a ball due to earth has a magnitude F_b and that acting on the Earth due to the ball has a magnitude F_e , then :
 - $F_b = F_e$
 - $F_b > F_e$
 - $F_b < F_e$
 - $F_e = 0$
- A stone is thrown vertically upwards with an initial velocity of 45 ms^{-1} then the time taken by the stone to rise to its maximum height is :
 - 2.5 s
 - 3.5 s
 - 4.5 s
 - 5.5 s
- A ball is thrown vertically upwards and reaches to a maximum height of 20 m then the velocity with which the ball was thrown upwards is :
 - 20 m/s
 - 30 m/s
 - 40 m/s
 - 50 m/s
- Which Kepler's law led Newton to inverse square rule for gravitational force:
 - Law of orbits
 - Law of areas
 - Law of periods
 - None of these
- What do you mean by acceleration due to gravity?
- The weight of a person on the earth is 80 N. What will be his weight on the moon?
- What will be the value of 'g' on the surface of the moon if its radius was $\frac{1}{4}$ th the radius of earth and its mass is $\frac{1}{80}$ th the mass of earth?
- State Kepler's law.
- Differentiate 'g' and 'G' with two points.

Gravitation**DPP - 4**

- Where will it be profitable to purchase one kilogram sugar?
 - At poles
 - At equator
 - At 45° latitude
 - At 40° latitude
- A particle is taken to a height R above the earth surface, where R is the radius of the earth. The acceleration due to gravity there is:
 - 2.45 m/s^2
 - 4.9 m/s^2
 - 4.8 m/s^2
 - 19.6 m/s^2
- When a body is thrown vertically upwards then:
 - The velocity of object at the highest point of the journey is non-zero
 - The acceleration of object at the highest point of the journey is non-zero
 - The velocity of object at the highest point of the journey is same as initial velocity
 - None of these
- The figure shows a planet in elliptical orbit around the sun. The kinetic energy of the planet will be maximum when the planet is at:
 - P_1
 - P_2
 - P_3
 - P_4
- Which of the following statements is true?
 - g is same at all places on the surface of earth
 - g has its maximum value at the equator
 - g is less at the earth's surface than at a height above it or a depth below it
 - g is greater at the poles than at the equator
- The value of g at a place increases with:
 - Decrease in the latitude of the place
 - Increase in the latitude of the place
 - Increase in the altitude of the place
 - None of these
- The acceleration due to gravity is 9.8 m/s^2 :
 - Much above the earth's surface
 - Near the earth's surface
 - Deep inside the earth
 - At the centre of the earth
- Which of the following statement is correct regarding weight of a body:
 - It decreases with height from the surface of the earth
 - It decreases with depth from the surface of the earth
 - It increases as one moves from equator to poles
 - All of these
- A spring balance is graduated on sea-level. If a body is weighed with this balance at consecutively increasing heights from earth's surface, the weight indicated by the balance:
 - Will go on decreasing continuously
 - Will go on increasing continuously
 - Will remain same
 - Will first increase and then decrease

10. Which of the following graph represent the variation of g as we move from centre of earth to its surface?



11. What are the two reasons for variation of ' g ' with latitude?
12. Explain the term weightlessness.
13. Explain why a person can jump higher on the surface of moon than on the earth.
14. Moon has no atmosphere. Explain why?
15. If weight of a body is W on the earth's surface, then what will be the weight of the same body on the moon's surface?