

# Gravitation

## Multiple Choice Questions

Question 1.

The unit of  $G$  in the S.I. system is:

- (a) Newton  $\text{m}^2/\text{kg}^2$
- (b) Newton  $\text{m}^2 \text{kg}^2$
- (c) Newton  $\text{m kg}$
- (d) Newton  $\text{m}^2/\text{kg}$

▼ [Answer](#)

Answer: (a) Newton  $\text{m}^2/\text{kg}^2$

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Question 2.

The gravitational constant is denoted by which symbol?

- (a)  $g$
- (b)  $M$
- (c)  $G$
- (d)  $k$

▼ [Answer](#)

Answer: (c)  $G$

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Question 3.

The unit of weight in the S.I. system is:

- (a)  $\text{kg m}^2$
- (b) Newton
- (c)  $\text{ms}^{-2}$
- (d) ms

▼ [Answer](#)

Answer: (b) Newton

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Question 4.

When an object is released from a height, its initial velocity is:

- (a)  $u = 100 \text{ ms}^{-1}$
- (b)  $u = 9.8 \text{ ms}^{-1}$
- (c)  $u = 0$
- (d)  $u = \frac{1}{2}$

▼ [Answer](#)

Answer: (c)  $u = 0$

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Question 5.

The relation between  $g$  and  $G$  is:

- (a)  $g = \frac{GM}{R^2}$
- (b)  $g = GMR^2$
- (c)  $g = \frac{MR^2}{G}$
- (d)  $g = \frac{GR^2}{M}$

▼ [Answer](#)

Answer: (a)  $g = \frac{GM}{R^2}$

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Question 6.

The mass of the earth is:

- (a)  $6.4 \times 10^{24}$
- (b)  $6 \times 10^{10}$  kg
- (c)  $6 \times 10^{24}$  kg
- (d)  $6 \times 10^{19}$  kg

▼ [Answer](#)

Answer: (c)  $6 \times 10^{24}$  kg

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Question 7.

The radius of the earth is:

- (a)  $6.4 \times 10^{-6}$  m
- (b)  $6.4 \times 10^6$  m
- (c)  $4.6 \times 10^6$  m
- (d)  $6.4 \times 10^4$  m

▼ [Answer](#)

Answer: (b)  $6.4 \times 10^6$  m

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Question 8.

By applying the universal law of gravitation, the weight of the object on the moon will be:

- (a)  $W_m = \frac{GR_m^2}{M_m \times m}$
- (b)  $W_m = \frac{GM_m \times R_m^2}{m}$
- (c)  $W_m = G \frac{R_m^2 \times m}{M_m}$
- (d)  $W_m = G \frac{M_m \times m}{R_m^2}$

▼ [Answer](#)

Answer: (d)  $W_m = G \frac{M_m \times m}{R_m^2}$

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Question 9.

The value of acceleration due to gravity:

- (a) is the same on the equator and poles
- (b) is least on poles
- (c) is least on the equator
- (d) increases from pole to equator

▼ [Answer](#)

Answer: (c) is least on the equator

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Question 10.

The value of quantity  $G$  in the law of gravitation:

- (a) depends on the mass of earth only
- (b) depends on the radius of the earth only
- (c) depends on both the mass and radius of the earth
- (d) is independent of the mass and radius of the earth

▼ [Answer](#)

Answer: (d) is independent of the mass and radius of the earth

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Question 11.

The atmosphere is held to the earth by:

- (a) gravity
- (b) wind
- (c) clouds
- (d) earth's magnetic field

▼ [Answer](#)

Answer: (a) gravity

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Question 12.

Law of gravitation gives the gravitational force between:

- (a) the earth and a point mass only
- (b) the earth and sun only
- (c) any two bodies having some mass
- (d) two charged bodies only

▼ [Answer](#)

Answer: (c) any two bodies having some mass

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[Fill in the Blanks.](#)

Question 1.

Force of gravitation due to the earth is called \_\_\_\_\_

▼ [Answer](#)

Answer: gravity

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Question 2.

The force of gravity \_\_\_\_\_ with altitude.

▼ [Answer](#)

Answer: decreases

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Question 3.

The force of gravity \_\_\_\_\_ from poles to the equator.

▼ [Answer](#)

Answer: decreases

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Question 4.

The \_\_\_\_\_ of a body is the force with which the earth attracts it.

▼ [Answer](#)

Answer: weight

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Question 5.

The accepted value of G is \_\_\_\_\_

▼ [Answer](#)

Answer:  $6.673 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$

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Question 6.

Relative density has \_\_\_\_\_ unit.

▼ [Answer](#)

Answer: no

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Question 7.

The value of g is taken as \_\_\_\_\_

▼ [Answer](#)

Answer:  $9.8 \text{ ms}^{-2}$

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[True/False.](#)

Question 1.

The value of acceleration due to gravity is  $9.8 \text{ ms}^{-2}$

▼ [Answer](#)

Answer: True

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Question 2.

The value of acceleration due to gravity on the moon is  $g/6$ .

▼ [Answer](#)

Answer: True

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Question 3.

The value of  $G$  was found out by Henry Cavendish by using a sensitive balance.

▼ [Answer](#)

Answer: True

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Question 4.

The mass of an object is constant and does not change from place to place.

▼ [Answer](#)

Answer: True

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Question 5.

The relative density of a substance is the product of its density and that of water.

▼ [Answer](#)

Answer: False

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Question 6.

Gravitation is a weak force unless bodies of large masses are involved.

▼ [Answer](#)

Answer: True

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Question 7.

The weight of an object is equal to the ratio of its mass and acceleration due to gravity.



▼ Answer

Answer: False

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Question 8.

The weight may vary from place to place but the mass stays constant.

▼ Answer

Answer: True

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Question 9.

All objects experience a force of buoyancy when they are immersed in a fluid.

▼ Answer

Answer: True

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Question 10.

Objects having more density than that of the liquid in which they are immersed, float on the surface of the liquid.

▼ Answer

Answer: False

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Match the Column.

Question 1.

- | A  | B  |
|--|--|
| 1. The value of g                            | (i) $g/6$  |
| 2. The value of G                            | (ii) maximum   |
| 3. The value of g at the centre of the earth | (iii) $6.673 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$ |
| 4. The value of g at the earth's poles       | (iv) $9.8 \text{ ms}^{-2}$                                 |
| 5. The value of g on the moon                | (v) zero   |

▼ Answer

Answer:

- | A | B |
|---|---|
|---|---|

1. The value of g (iv)  $9.8 \text{ ms}^{-2}$
  2. The value of G (iii)  $6.673 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$
  3. The value of g at the centre of the earth (v) zero
  4. The value of g at the earth's poles (ii) maximum
  5. The value of g on the moon (i)  $g/6$
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[Answer in one Word/Sentence.](#)

Question 1.

Write down the formula which shows the relation between the mass of the earth M, the radius of the earth R, acceleration due to gravity g, and universal constant of gravitation G.

▼ [Answer](#)

Answer:  $g = \frac{GM}{R^2}$

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Question 2.

What will be the change in the value of g while going in-depth?

▼ [Answer](#)

Answer: The value of g decreases

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Question 3.

What is the value of g on earth's center?

▼ [Answer](#)

Answer: Zero

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Question 4.

What will be the weight of a person, sitting in a spacecraft which is revolving around the earth?

▼ [Answer](#)

Answer: Zero

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Question 5.

Write S.I. unit of G.





▼ [Answer](#)

Answer:  $\text{Nm}^2 \text{kg}^{-2}$  or  $\text{Nm}^2/\text{kg}^2$

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Question 6.

How many newtons are there in 1 kg weight?

▼ [Answer](#)

Answer: 9.8 N

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Question 7.

What is the value of acceleration due to gravity at the moon?

▼ [Answer](#)

Answer:  $1.63 \text{ ms}^{-2}$

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Question 8.

Write the S.I. unit of pressure.

▼ [Answer](#)

Answer:  $\text{N/m}^2$  or  $\text{Nm}^{-2}$

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Question 9.

Which symbol is used to show the S.I. unit of pressure?

▼ [Answer](#)

Answer: Pa (Pascal)

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Question 10.

What is the thrust on a unit area called?

▼ [Answer](#)

Answer: Pressure

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