Gravitation

Multiple Choice Questions

Question 1.
The unit of G in the S.I. system is:
(a) Newton m^2/kg^2
(b) Newton m^2 kg^2
(c) Newton m kg
(d) Newton m^2/kg

▼ Answer

Answer: (a) Newton m^2/kg^2

Question 2.
The gravitational constant is denoted by which symbol?

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

▼ Answer

Answer: (c) G

Question 3.
The unit of weight in the S.I. system is:
(a) kg m^2
(b) Newton
(c) ms^{-2}
(d) ms

▼ Answer

Answer: (b) Newton

Question 4.
When an object is released from a height, its initial velocity is:
(a) u = 100 ms^{-1}
(b) u = 9.8 ms^{-1}
(c) u = 0
(d) u = $\frac{1}{2}$

▼ Answer

Answer: (c) u = 0

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) $g = \frac{GM}{R^2}$

Question 6.
The mass of the earth is:
(a) 6.4×10^{24}
(b) 6×10^{10} kg
(c) 6×10^{24} kg
(d) 6×10^{19} kg

▼ Answer

Answer: (c) 6×10^{24} kg

Question 7.
The radius of the earth is:
(a) 6.4×10^{-6} m
(b) 6.4×10^{6} m
(c) 4.6×10^{6} m
(d) 6.4×10^{4} m

▼ Answer

Answer: (b) 6.4×10^{6} m

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) $W_m = G\frac{M_m \times m}{R_m^2}$

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

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

---

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

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

Fill in the Blanks.

Question 1.
Force of gravitation due to the earth is called _____

▼ Answer

Answer: gravity

Question 2.
The force of gravity _____ with altitude.

▼ Answer

Answer: decreases

Question 3.
The force of gravity _____ from poles to the equator.

▼ Answer

Answer: decreases

Question 4.
The _____ of a body is the force with which the earth attracts it.

▼ Answer

Answer: weight

Question 5.
The accepted value of G is _____

▼ Answer

Answer: 6.673×10^{-11} Nm^2 kg^{-2}

Question 6.
Relative density has _____ unit.

▼ Answer

Answer: no

Question 7.
The value of g is taken as _____

▼ Answer

Answer: 9.8 ms^{-2}

True/False.

Question 1.
The value of acceleration due to gravity is 9.8 ms^{-2}

▼ Answer

Answer: True

Question 2.
The value of acceleration due to gravity on the moon is g/6.

▼ Answer

Answer: True

Question 3.
The value of G was found out by Henry Cavendish by using a sensitive balance.

▼ Answer

Answer: True

Question 4.
The mass of an object is constant and does not change from place to place.

▼ Answer

Answer: True

Question 5.
The relative density of a substance is the product of its density and that of water.

▼ Answer

Answer: False

Question 6.
Gravitation is a weak force unless bodies of large masses are involved.

▼ Answer

Answer: True

Question 7.
The weight of an object is equal to the ratio of its mass and acceleration due to gravity.

▼ Answer

Answer: False

Question 8.
The weight may vary from place to place but the mass stays constant.

▼ Answer

Answer: True

Question 9.
All objects experience a force of buoyancy when they are immersed in a fluid.

▼ Answer

Answer: True

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

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) 6.673×10^{-1} Nm^2 kg^{-2}
4. The value of g at the earth's poles	(iv) 9.8 ms^{-2}
5. The value of g on the moon	(v) zero

▼ Answer

Answer:

A	B

1. The value of g	(iv) 9.8 ms^{-2}
2. The value of G	(iii) 6.673 × 10^{-1} Nm^2 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

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

Question 2.
What will be the change in the value of g while going in-depth?

▼ Answer

Answer: The value of g decreases

Question 3.
What is the value of g on earth's center?

▼ Answer

Answer: Zero

Question 4.
What will be the weight of a person, sitting in a spacecraft which is revolving around the earth?

▼ Answer

Answer: Zero

Question 5.
Write S.I. unit of G.

▼ Answer

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

Question 6.
How many newtons are there in 1 kg weight?

▼ Answer

Answer: 9.8 N

Question 7.
What is the value of acceleration due to gravity at the moon?

▼ Answer

Answer: 1.63 ms^{-2}

Question 8.
Write the S.I. unit of pressure.

▼ Answer

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

Question 9.
Which symbol is used to show the S.I. unit of pressure?

▼ Answer

Answer: Pa (Pascal)

Question 10.
What is the thrust on a unit area called?

▼ Answer

Answer: Pressure
