MULTIPLE CHOICE QUESTIONS (MCQs)

(1) The time period of Moon around the earth is: [2003]

* 29 days * 30 days * 27.3 days * 28.29 days

(2) If the distance between two masses is doubled the gravitational force between them is:

* One third * One fourth * Two time * Three time

(3) G is called:

* Gravitational constant * Gravitational acceleration
* Force of Gravitation * Gravitational reaction

(4) In S.I unit the value of G is:

* $6.673 \times 10^{-11}\ Nm^2/kg^2$ * $7.67 \times 10^{-11}\ Nm^2/kg^2$
* $8.67 \times 10^{-11}\ Nm^2/kg^2$ * $9.67 \times 10^{-11}\ Nm^2/kg^2$

(5) The weight of a 60kg object at the centre of the Moon will be:

* 588N * 98N * 60N * Zero [2006 F]

(6) The mass of the earth can be calculate by the relation:

* $\frac{Reg}{G}$ * $\frac{Re^2g}{G}$ * $\frac{Reg^2}{G}$ * $\frac{Re^2g^2}{G}$

(7) The average density of the earth is equal to:

* $2500\ kg/m^3$ * $5000\ kg/m^3$ * $5500\ kg/m^3$ * $5600\ kg/m^3$

(8) The force of gravitation between two bodies 1m apart and each of 1000kg is:

* $6.67 \times 10^{-11}N$ * $6.67 \times 10^{5}N$ * $6.67 \times 10^{-5}N$ * $6.67 \times 10^{-6}N$

(9) The mass of the earth comes out to be:

* $6.67 \times 10^{13}kg$ * $6.025 \times 10^{23}kg$ * $1.6 \times 10^{19}kg$ * $6 \times 10^{24}kg$

(10) The magnitude of the force of attraction between two bodies is equal to:

* $G\frac{m_1m_2}{r}$ * $G\frac{m_1m_2}{r^2}$ * $g\frac{m_1m_2}{r}$ * $g\frac{m_1m_2}{r^2}$

(11) The acceleration due to gravity on the surface of earth can be calculated as:

* $G\frac{Me}{Re^2}$ * $G\frac{Me^2}{Re^2}$ * $G\frac{Me^2}{Re}$ * $G\frac{Me}{Re}$

(12) The value of "g" at height "h" from the surface of the earth is equal to:

* $g-\frac{2gh}{Re}$ * $g+\frac{2gh}{Re}$ * $g-\frac{gh}{Re}$ * $g-\frac{gh}{Re^2}$

(13) If a man goes to a height equal to the radius the earth from its surface his weight relative to that of earth would becomes: [2011]

* W/2 * W * 2W * W/4

(14) If the radius of the earth were to shrink and its mass were to remain the same the acceleration due to gravity on the surface of the earth will:

* Decrease * Remain the same * Increase * None of these

(15) Above the surface of earth if we go to a distance equal to double earth radius: [2007 F]

* One-ninth * One-third * One-fourth *One-half

(16) The ocean tides are caused by gravitational force exerted on earth by: [2005]

* Moon only * Sun only
* Both the Sun and the Moon * Jupiter only

(17) If we go up from the surface of the earth to a distance equal to the radius of the earth the value of g will be: [2008 S, 2008, 2007 S, 2005 F, 2009]

* $\frac{1}{2}g$ * $\frac{1}{4}g$ * 2g * 2g

(18) The value of g at the centre of the earth is:

* Zero * $9.80\ m/s^2$ * $9.81\ m/s^2$ * $4.9\ m/s^2$

(19) At what depth below the surface of the earth the value of "g" reduces to one half of its value on the earth surface:

✔ Re/2 * Re/4 * Re * 2Re

(20) If the mass of the earth becomes four times large the value of g will:

* Remain unchanged * Be doubled
✔ Become four times large * Become 5th time large

(21) The acceleration due to gravity on a planet with mass and radius half that of the earth will:

* g/2 * g/4 * g ✔ 2g

(22) As we go below the surface of the earth, the value of g:

* Increases ✔ Decreases * Remains constant * Reduces to zero

(23) The weight of the body at the centre of the earth is: [2007 S]

* Slightly less * Slightly greater ✔ Zero * Infinity

(24) The frequency of rotation of a spaceship about its own axis to create artificial gravity like that on earth is:

* $\upsilon = \frac{1}{2\pi}\sqrt{R/g}$ ✔ $\upsilon = \frac{1}{2\pi}\sqrt{g/R}$ * $\upsilon = \frac{1}{2\pi}\sqrt{g/R^2}$ * $\upsilon = 2\pi\sqrt{g/R}$

(25) A man in an elevator ascending with an acceleration will conclude that his weight has:

✔ Increase * Decrease * Remain constant * None of these

(26) A man in an elevator descending with an acceleration will conclude that his weight has:

* Increase ✔ Decrease * Remain constant * None of these

(27) The value of "g" at a depth "x" below the surface of earth is equal to:

✔ $g - \frac{gx}{2Re}$ * $g - \frac{Rey}{g}$ * $g - \frac{gx}{Re}$ * $g + \frac{gx}{Re}$

(28) The apparent weight of a body in a satellite orbiting around the earth is always: [2007, 2006, 2013 Failure]

✔ Zero * mg * Increasing * None of these

(29) The apparent weight of a person standing in an elevator which is moving down with uniform acceleration will be:

* Same as that on the surface of the earth
* Greater than its weight on the surface of the earth
✔ Less than its weight on the surface of the earth
* None of these

(30) Artificial gravity is produced in a space craft to:

* Increase the weight of the astronaut * Decrease the weight of the astronaut
✔ Overcome the state of weightlessness * Overcome the force of friction

(31) An elevator starts up from rest at the basement with the initial acceleration of $4m/s^2$. A passenger in the elevator will feel that his weight has been:

✔ Increased * Decreased * Reduced to zero * None of these

(32) If a body of mass 10kg is allowed to fall freely its weight becomes.

✔ Zero * 98N * 9.8N * 980N

(33) The acceleration due to gravity on the surface of moon is $\frac{1}{6}$ of it's value on earth. What will be it's mass on moon if it's mass on earth is m [2011 F]

* $\frac{m}{6}$ * $\frac{m}{4}$ * 6m ✔ m

ANSWER KEY

1. 27.3 days	**2.** One-fourth
3. Gravitational constant	**4.** $6.673 \times 10^{-11} Nm^2/kg^2$
5. Zero	**6.** $\frac{Re^2 g}{G}$
7. $5500\ kg/m^3$	**8.** $6.67 \times 10^{-5}\ N$
9. $6 \times 10^{24}\ kg$	**10.** $G\frac{m_1 m_2}{r^2}$
11. $G\frac{Me}{Re^2}$	**12.** $g - \frac{2gh}{Re}$
13. W/4	**14.** Increase
15. One-ninth	**16.** Both Sun and Moon
17. ¼ g	**18.** Zero
19. Re/2	**20.** Become four time large
21. 2g	**22.** Decreases
23. Zero	**24.** $\upsilon = \frac{1}{2\pi}\sqrt{g/R}$
25. Increase	**26.** Decrease
27. $g - \frac{gx}{Re}$	**28.** Zero
29. Less than its weight on the surface of the earth	**30.** Over come the state of weight lessness
31. Increased	**32.** Zero
33. m	