Note:-
1. All Questions are compulsory.
2. Numbers on the right indicate full marks.

Q.1 The mass of a body is measured to be 12 kg on the earth. If it is taken to the moon, its mass will be **(1)**

A) 2 kg   B) 6 kg
C) 12 kg   D) 72 kg

Ans : C

Q.2 Newton's law of gravitation is valid **(1)**

A) on the earth only   B) on the moon only
C) in the laboratory only   D) everywhere

Ans : D

Q.3 The equation $F = \frac{Gm_1m_2}{r^2}$ is valid for **(1)**

A) rectangular bodies   B) circular bodies
C) elliptical bodies   D) spherical bodies

Ans : D

Q.4 A coin and a feather are dropped together in a vacuum. **(1)**

A) The coin will reach the ground first   B) The feather will reach the ground first
C) Both will reach the ground together   D) The feather will not fall down

Ans : C

Q.5 The force which keeps the body to move in circular motion when accelerated is **(1)**

A) Centripetal force   B) Magnetic force
C) Electrostatic force D) Force of gravitation

Ans : A

Q.6 For an object, which is projected vertically upwards, the time of ascent when measured from the point of projection, will be **(1)**

A) less the Time of descent   B) greater the Time of descent
C) equal to the Time of descent   D) none of the above

Ans : C

Q.7 A boy is whirling a stone tied with a string in an horizontal circular path. If the string breaks, the stone **(1)**

A) will continue to move in the circular path | B) will move along a straight line towards the centre of the circular path
C) will move along a straight line tangential to the circular path | D) will move along a straight line perpendicular to the circular path away from the boy

Ans : C

Q.8 As we go farther away from Earth, gravitational force becomes **(1)**

A) stronger B) weaker

C) positive D) constant

Ans : B

Q.9 Value of 'g' is inversely proportional to square of Earth's **(1)**

A) diameter B) radius

C) weight D) area

Ans : B

Q.10 Gravitational constant is denoted universaly by **(1)**

A) g B) r

C) G D) R

Ans : C

Q.11 Gravitational field is directed **(1)**

A) towards the earth B) away from earth

C) has no direction D) in a specific direction making angle with earth

Ans : A

Q.12 Gravitation is inversely related to **(1)**

A) distance between masses B) product of magnitude of masses

C) direction of masses D) square of distance between masses

Ans : D

Q.13 In case of free fall the gravitational acceleration on a spherical object depends on **(1)**

A) the mass of the object B) the radius of the object

C) the density of the object D) none of the above

Ans : D

Q.14 Weight of free fall object is **(1)**

A) greater than rest object B) less than rest object

C) mass of object × acceleration D) zero

Ans : D

Q.15 Who said that in the universe every body exerts a gravitational force on every other body? **(1)**

A) Einstein B) Irene Curie

C) Sir Issac Newton D) Galileo Galilei

Ans : C

Q.16 If speed of rotation of earth increases then what would be the value of weight of a body? **(1)**

A) Weight of a body will increases B) Weight of a body will decreases

C) Weight of a body remain constant D) Cannot be answered

Ans : B

Q.17 The value of universal gravitational constant G is **(1)**

A) $9.8 \ m/s^2$ B) $6.673 \times 10^{-11} \ N \ m^2/kg^2$

C) $6.371 \times 10^6 \ m$ D) $1.738 \times 10^6 \ m$

Ans : B

Q.18 The period of artificial geostationary satellite is **(1)**

A) 8 hours B) 12 hours
C) 24 hours D) 48 hours

Ans : C

Q.19 What is the gravitational force between two objects? **(1)**

A) attractive at large distances only
B) attractive at small distances only

C) attractive at all distances
D) attractive at large distances but repulsive at small distances

Ans : C

Q.20 The gravitational force causes **(1)**

A) tides B) motion of moon
C) both (a) and (b) D) none of these

Ans : D

Q.21 Newton's law of gravitation applies to **(1)**

A) Small bodies only B) Plants only
C) For solar system D) All bodies irrespective of their size

Ans : D

Q.22 The ball is thrown up, the value of 'g' will be **(1)**

A) positive B) negative
C) zero D) negligible

Ans : B

Q.23 What will be the weight of a person on earth, who weighs 9 N on the moon? **(1)**

A) 3 N B) 15 N
C) 45 N D) 54 N

Ans : D

Q.24 An earth's satellite is revolving in a circular orbit with a uniform speed. If the gravitational force suddenly disappears, the satellite will _____. **(1)**

A) return to the earth along a curved path.
B) continue to move with the same speed along a tangent to the orbit.

C) continue to move with the same speed along the original orbit.
D) move along the original orbit with decreasing speed before coming to rest somewhere in the orbit.

Ans : B

Q.25 How much will a person with 72 N weight on earth, weight on the Moon? **(1)**

A) 12 N B) 36 N
C) 21 N D) 63 N

Ans : A

Q.26 A planet revolves around the sun in an elliptical orbit with the sun at one focus as shown in the figure. **(1)**
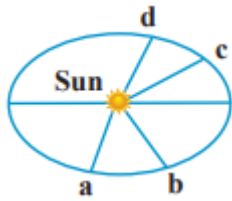
The shaded areas are equal. If t_1 and t_2 are the times taken by the planet to move from a to b and from c to d, respectively, then _____.

A) $t_1 > t_2$ B) $t_1 = t_2$

C) $t_1 < t_2$ D) $t_1 = 2t_2$

Ans : B

Q.27 A man inside an artificial satellite feels weightlessness; because the force of attraction due to earth is _____ . **(1)**

A) zero at that place   B) is balanced by the force of attraction due to moon

C) equal to the centripetal force   D) non-effective due to particular design of the satellite

Ans : C

Q.28 If a body is taken from the equator to the pole, its mass _____ . **(1)**

A) goes on increasing   B) goes on decreasing

C) remains unchanged   D) increases if it taken to the north pole and decreases if it is taken to the south pole

Ans : C

Q.29 Which of the following interaction is the weakest? **(1)**

A) Gravitational   B) Electromagnetic

C) Electrostatic   D) Nuclear

Ans : A

Q.30 The atmosphere is held to earth by _____ **(1)**

A) winds   B) gravity

C) Earth's rotation   D) clouds

Ans : C