PHYSICS

BOOKS - PEARSON IIT JEE FOUNDATION

OUR UNIVERSE

Example

1. The escape velocity of the earth is 11.2 km/s.

For a planet whose mass and radius are twice

those of the earth, the escape velocity will be

Watch Video Solution

Test Your Concepts Very Short Type Question

1. Substances whose density is _____the density of water, sink in water.

Watch Video Solution

2. Name the force responsible for the motion of a planet around the Sun.

 Watch Video Solution

3. For a freely falling body, its acceleration _____as it falls.

 Watch Video Solution

4. The distance travelled by a freely falling body is proportional to

Watch Video Solution

5. Developent of cyclone depends on the wind _____and _____

Watch Video Solution

6. At higher altitudes the height of mercury column in a barometer will be _____

Watch Video Solution

7. The escape velocity on the surface of the moon is small because_____

A. the moon's gravitational pull is small

B. the moon has no atmosphere

C. the moon is not a planet

D. the moon is revolving around the earth.

Answer: A

Watch Video Solution

8. The value of escape speed from the surface of earth is

A. $11.27ms^{-1}$

B. $11.27 \text{ miles } s^{-1}$

C. $7ms^{-1}$

D. $7 \text{ mile } s^{-1}$

Answer: D

Watch Video Solution

9. The time interval between two successive primary and secondary tides at a place is more than 12 hours because _____

A. Of the rotation of earth about its axis

B. the moon also moves round the earth in the same direction of the earth's rotation

C. the moon also moves round the earth in the opposite direction of the earth's rotation

D. the earth revolves round the sun

Answer: B

 Watch Video Solution

10. Spring tides occur during

A. a full-moon day

B. a new-moon day

C. the first and last quarter phases of the moon

D. Both (a) and (b)

Answer: D

 Watch Video Solution

11. Two bodies of masses 'm' and 2m are separated by a distance d'. The body of mass 'm' attracts another body of mass 2m with a force F, then the body of mass 2m attracts m with the force of_____

A. F

B. 2F

C. $\frac{F}{2}$

D. 3F

Answer: A

Watch Video Solution

12. The gravitational constant depends upon

A. mass of the bodies.

B. distance between the bodies.

C. Both (a) and (b)

D. None of the above

Answer: D

Watch Video Solution

13. Two identical solid spheres each of radius 7 are in contact with each other. If the gravitational attraction between them is F, then which of the following relations is correct?

A. $F \propto \frac{1}{r}$

B. $F \propto \frac{1}{r^2}$

C. $F \propto \frac{1}{r^3}$

D. $F \propto \frac{1}{r^4}$

Answer: B

Watch Video Solution

14. The gravitational effect of which of the following causes tides in the sea?

A. Jupiter

B. Sun

C. Moon

D. Both (a) and (c)

Answer: D

Watch Video Solution

Watch Video Solution

15. The mass of a planet is double the mass of the earth and its radius is half of that of the earth. If F is the force of attraction on an object on the surface of earth, then the force of attraction on the same object on the surface of that planet is _____

A. $2F$

B. $4F$

C. $\frac{F}{2}$

D. $8F$

Answer: D

Watch Video Solution

16. A ball is dropped from a height of 10 m, as it falls,

A. its velocity increases and acceleration decreases.

B. its velocity decreases and acceleration increases.

C. its velocity increases and acceleration remains constant.

D. its velocity and acceleration remains constant.

Answer: C

Watch Video Solution

17. A barometer can be used to determine the _____ of a place.

A. temperature

B. humidity

C. altitude

D. None of these

Answer: C

Watch Video Solution

18. If the mass of a body on the surface of moon is denoted by M_m and that on the earth by M_e then

A. $M_m = \frac{M_e}{6}$

B. $M_m = 6M_e$

C. $M_m = \frac{M_e}{2}$

D. $M_m = M_e$

Answer: D

Watch Video Solution

19. The acceleration due to gravity on the surface of earth depends upon the

A. mass of the earth.

B. mass of the body

C. Both (a) and (b)

D. None of these

Answer: A

 Watch Video Solution

20. Which of the following statement (s) is/are wrong?

A. The mass of moving object in the earth's atmosphere is zero

B. The weight of an object at rest on the earth's surface can be zero

C. The weight of moving object in the earth's atmosphere can be 2 times its

weight , when it is at rest on the earth's surface.

D. All of the above

Answer: D

 Watch Video Solution

21. Two identical spheres of radius 2 cm and mass 1 kg are placed 1 cm apart on the surface of the earth. Then,

A. the two spheres move towards each other.

B. the two spheres move away from each other.

C. there is no force of attraction between the two spheres.

D. None of these

Answer: D

Watch Video Solution

22. The gravitational force of the earth on a freely falling ball of mass one kilogram is 9.8 N. The acceleration of the earth towards the ball is

A. $9.8ms^{-2}$

B. negligible.

C. Slightly less than $9.8ms^{-2}$

D. more than $9.8ms^{-2}$

Answer: B

Watch Video Solution

23. The gravitational constant depends upon

A. the size of the bodies

B. the mass of the bodies

C. distance between the bodies

D. None of these

Answer: D

Watch Video Solution

24. Arrange the following steps in a sequence involved in the working of a rocket.

(A) Gases are produced when the fuel in the com bustion chamber is burnt.

(B) The gases come out with great force which is an action.

(C) The hot gases are allowed to escape through a nozzle.

(D) Due to this, the rocket moves with great speed in the other direction.

(E) As a reaction, the gases exert an opposite force on rocket.

A. ACBED

B. AECBD

C. BEACD

D. CABED

Answer: A

Watch Video Solution

25. Write the following steps of an experiment in a sequence to conclude that atmospheric air exerts pressure.

(A) Stop heating the container and cool it to very low temperatures.

(B) Take a metallic container that is half filled with water.

(C) The container gets compressed because of the pressure exerted by the air from outside the container.

(D) Heat the container for some time and place a cap on the container firmly.

A. DBCA

B. BDAC

C. DABC

D. BADC

Answer: B

Watch Video Solution

26. Match the following

Column A		Column B
A. Full moon day	( )	a. Newton's third law
B. New moon day	( )	b. Less stronger spring tide
C. Rocket	( )	c. Strong spring tide
D. Outward direction	( )	d. Generation of electricity
E. Tidal energy	( )	e. Centrifugal force

Watch Video Solution

27. Match the following

Column A			Column B
A. Guinea experiment	( )	a.	Galileo
B. Rotational motion of the earth	( )	b.	First and last quarter phases of moon
C. Laws of freely falling bodies	( )	c.	Centrifugal force
D. Escape velocity on moon	( )	d.	Newton
E. Neap tides	( )	e.	Smaller than that on earth

Watch Video Solution

28. Match the following

Column A		Column B
A. Gravitational force	( ) a.	6.67×10^{-11} N m^2 kg^{-2}
B. Universal gravitational constant (G)	( ) b.	Attractive in nature
C. Acceleration due to gravity at the poles	( ) c.	Anemometer
D. Acceleration due to gravity at the equator	( ) d.	Wind
E. Wind speed	( ) e.	Atmospheric pressure
F. Change in air pressure	( ) f.	9.831 m s^{-2}
G. Barometer	( ) g.	9.781 m s^{-2}

Watch Video Solution

29. What happens to the pressure when area on which it is applied increases?

Watch Video Solution

30. What is a tornado?

Watch Video Solution

31. What is anemometer?

Watch Video Solution

32. Why are wind currents generated?

Watch Video Solution

33. Explain the term gravitational force. What is gravitation?

Watch Video Solution

34. What is the weight of a body of mass 1 kg on the surface pf earth?

Watch Video Solution

35. What is a freely falling body ?

Watch Video Solution

36. What is acceleration due to gravity? What is its average value?

Watch Video Solution

37. What are different types of tides?

Watch Video Solution

38. What is the time interval between two successive tides at a given place on the earth?

Watch Video Solution

39. Escape velocity on the earth

Watch Video Solution

40. (a) What is the condition required so that a solid body sinks in a liquid ?

(b) When does it just in the liquid ?

Watch Video Solution

41. Name any two constellations.

Watch Video Solution

42. Find the difference between humid air and dry air

Watch Video Solution

43. The value of G changes from place to place.

Watch Video Solution

44. Define escape velocity.

Watch Video Solution

45. R and r are the radii of the earth and moon respectively. ρ_e and ρ_m are the densities of earth and moon respectively. The ratio of the accelerations due to gravity on the surfaces of earth and moon is

Watch Video Solution

46. Constellations

Watch Video Solution

47. Name any two devices used in everyday life which work on the existance of atmospheric pressure .

Watch Video Solution

48. What is vaccum? Explain why, sound cannot travel through vaccum?

Watch Video Solution

49. A ball of mass m falls vertically to the ground from a height h_1 and rebound to a height h_2. The change in momentum of the ball on striking the ground is.

Watch Video Solution

50. What is the weight of a body on the moon whose weight is 12 kgwt on the earth?

Watch Video Solution

51. When a solid body is placed over the surface of a liquid A, half of its volume gets immersed in it. When the same body is made to float on liquid B, one fourth of its volume is seen above the surface of the liquid. Explain.

Watch Video Solution

52. What are monsoon winds?

Watch Video Solution

Test Your Concepts Short Answer Type Question

1. Mention the effects of sedatives

Watch Video Solution

2. What happens to a ship that moves from a high density region to a low density region of the sea? Explain.

Watch Video Solution

3. Write short notes on India's space program.

Watch Video Solution

4. What are the destructions caused by cyclones?

Watch Video Solution

5. What happens when high speed windows blow over the roofs of the buildings that are weak?

Watch Video Solution

6. A body is placed over the surfaces of two liquids of densities d_1 and $d_2(d_1 > d_2)$ separately. If the density of the object is less than both the liquids in which liquids the body immerses more?

Watch Video Solution

7. What are the weather conditions that lead to the formation of a cyclone?

Watch Video Solution

8. Write a few uses of a barometer.

Watch Video Solution

9. Write the differences between mass and weight of an object.

Watch Video Solution

10. Explain why do we feel that our weight is decreased in a lift descending with uniform acceleration.

Watch Video Solution

11. State three uses of artificial satellites.

Watch Video Solution

12. What are the bad effects of tides?

Watch Video Solution

13. What are spring tides? Why are they formed? Explain

Watch Video Solution

14. What is the principle of working of a rocket ?

Watch Video Solution

15. A body dropped from a height of 5m. Reaches the ground in 1 s. if it takes 2 s to reach the ground , find the height from which it is dropped.

Watch Video Solution

16. A body is dropped from a certain height and it reaches the ground in 2s. Another body which has twice the mass as that of the first

body, when dropped reaches the ground in 4s. Find the ratio of velocities acquired by them when they reach the ground.

Watch Video Solution

17. Explain the construction of barometer.

Watch Video Solution

18. State and explain the law of gravitation.

Watch Video Solution

19. What are tides? Discuss the causes of the occurrence of tides.

Watch Video Solution

Concept Application Level 1

1. Gravitational force between two bodies exist

Watch Video Solution

2. The distance covered by a moving body is directly proportional to the square to the time. The acceleration of the body is

Watch Video Solution

3. State true or false . If false , write the correct sentence .

The gravitational force acting on two will be affected when they are dipped in water.

Watch Video Solution

4. A body on the surface of the earth attracts the earth with a force equal to its weight.

Watch Video Solution

5. Name the constellation which appears to have the shape of :

a big bear

Watch Video Solution

6. What is an artificial satellite ?

Watch Video Solution

7. Fill in the following blanks with suitable words :

The storm associated with funnel-shaped cloud that reaches from the sky to the ground is called _____

Watch Video Solution

8. A very high pressure system, with very high speed wind surrounding it forms a cyclone.

Watch Video Solution

9. Actual water vapour content of atmosphere is

Watch Video Solution

10. Fill the missing word in the blank spaces in the following statements:

Winds are generated due to _____ heating on the earth.

Watch Video Solution

11. Can two similarly charged bodies attract each other?

Watch Video Solution

12. The gravitational force of attraction between any two objects does not depend upon

Watch Video Solution

13. Newton's law of gravitation

Watch Video Solution

14. The gravitational force exerted by the earth on a body is called

Watch Video Solution

15. In solar system, the value of g is maximum on_____

Watch Video Solution

16. SI unit of acceleration due to gravity is

Watch Video Solution

17. Why the moon has no atmosphere ?

A. acceleration due to gravity on the surface of the moon is greater than that on the surface of the earth.

B. it is far away from the earth.

C. it is not a planet.

D. the escape velocity on its surface is very small.

Answer: D

Watch Video Solution

18. Which of the following statements about the gravitational constant is true

A. It has no units.

B. It has the same value in all systems of units.

C. Its value depends upon the mass of the body.

D. Its value does not depend upon the nature of the medium in which the object is placed.

Answer: D

 Watch Video Solution

19. The gravitational force of earth on a ball is 10 N then the gravitational force of attraction of the ball on the earth is

A. 10 N

B. zero

C. slightly less than 10 N

D. more than 10 N

Answer: A

Watch Video Solution

20. If the distance between two given bodies is halved, then the force of attraction between them

A. is halved

B. is quadrupled.

C. becomes twice.

D. remains constant.

Answer: B

Watch Video Solution

21. A man is carrying a load equal to half of his weight (W) on his head. If he jumps from roof of a building, during his fall the weight experienced by the man will be_____

A. `

B.

C.

D.

Answer:

Watch Video Solution

22. The acceleration due to gravity near the surface of moon is-

A. 274.1

B. 0.610

C. 9.81

D. 1.625

Answer: D

Watch Video Solution

23. A piece of paper and a coin both having the same mass are dropped from the 10^{th} floor of building. The piece of paper would take more time to reach the ground because

A. weight of the ball is more than the weight of the paper.

B. acceleration due to gravity is more on the ball compare to that on the paper.

C. air resistance is more on the paper and is not negligible as compared to its weight.

D. Both (b) and (c)

Answer: C

Watch Video Solution

24. A body is dropped from a height equal to radius of the earth. The velocity acquired by it before touching the ground is

A. directly proportional to the time of fall.

B. directly proportional to the square of the time o fall.

C. directly proportional to mass of the body.

D. Both (a) and (c)

Answer: A

Watch Video Solution

25. Which of the following factors contribute (s) to the development of cyclones?

A. Humidity

B. Wind direction

C. Temperature

D. All of the above

Answer: D

Watch Video Solution

26. The height of mercury column of a barometer at the sea level is

A. 76 m

B. 76 cm

C. 1 m

D. 0.76 mm

Answer: B

Watch Video Solution

27. Sudden fall in the height of mercury column in a barometer forecast the occurrence of

A. rain

B. stroms

C. normal weather

D. sea breeze

Answer: B

Watch Video Solution

28. The change in the density of sea water is due to

A. change in temperature

B. addition of fresh water

C. density is independent of external factors.

D. Both (a) and (b)

Answer: D

 Watch Video Solution

29. Write the following steps in a sequence in the con struction of a barometer.

(A) Fill the glass tube with pure and dry mercury carefully so that no air bubbles are trapped inside.

(B) Place the tube inverted in a trough containing mercury and remove the thumb.

(C) Take a glass tube closed at one end and a narrow uniform bore of diameter 1 cm and of length of 1 m.

(D) Cover the open end with the thumb.

A. ABCD

B. ADCB

C. CADB

D. CDAB

Answer: C

View Text Solution

30. Arrange the following steps in a sequence involved in the formation of a cyclone.

(A) The water vapour in the atmosphere

condenses to rain drops releasing heat into the atmosphere and warming the air around.

(B) Then more and more cool air rushes in towards the centre of the storm.

(C) The warm air tends to move up and causes a drop in the pressure.

(D) This ends with the formation of a very low pressure system with very high speed winds revolving around it.

A. BDAC

B. CABD

C. ABCD

D. ACBD

Answer: D

Watch Video Solution

31. Match the following

Column A		Column B
A. Weight of atmosphere	( )	a. Rotation of the earth
B. Monsoon	( )	b. Eye
C. Movement of the winds	( )	c. Exerts pressure
D. Thunderstorms	( )	d. Seasonal wind
E. Centre of a cyclone	( )	e. Humid tropical regions

Watch Video Solution

32. Match the following

Column A		Column B
A. Height of mercury column	( )	a. Wind speed
B. Formation of storms	( )	b. Low tides
C. Freely falling body	( )	c. High tides
D. Spring tides	( )	d. Atmospheric pressure
E. Neap tides	( )	e. Weightless

Watch Video Solution

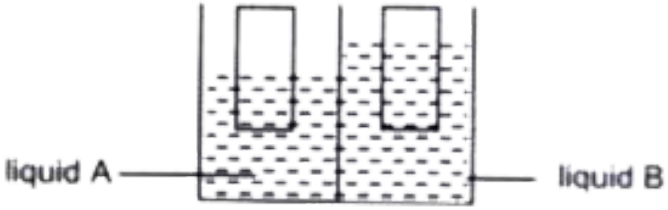
33. Match the following

Column A		Column B
A. Artificial satellites	( ) a.	Aries
B. Space probes	( ) b.	300 km h^{-1}
C. The Ram	( ) c.	Doing research on other planets
D. Exhaust fans	( ) d..	Revolve around the earth
E. Violent tornado	( ) e	Convectional air currents

View Text Solution

Concept Application Level 2

1. Two objects similar in all respects are floating in two liquids 'A' and 'B' as shown in the figure. If $d_A$is the density of liquid A, dg is the density of liquid B, and d_B is the density of the object, which among the following is the correct relation between the densities of the objects and the liquid?



A. $d_A > d_B > d_O$

B. $d_O > d_B > d_A$

C. $d_B > d_A > d_O$

D. $d_A > d_O > d_B$

Answer: A

Watch Video Solution

2. Spring tides on a new moon day are much stronger than those formed on a full moon day. Which of the following is the correct explanation for the phenomenon?

A. On a new moon day, the sun and the moon position themselves on either side of the earth along a straight line.

B. On a new moon day, the sun and the moon lie on the same side of the earth and along the same straight line.

C. On a full moon day the sun and the moon lie on the same side of the earth and along the same straight line.

D. On a new moon day the gravitational pull of the moon on the earth is at right angles to that of the sun on the earth.

Answer: B

View Text Solution

3. A body of mass 1 kg is placed between two bodies of masses 10 kg and 90 kg and they are arranged in a straight line. If the forces of attraction due to the two masses on the body

of mass 1 kg are equal, then the ratio of the distance between the masses 10 kg and 1distance between the masses of 1 kg and 90 kg is_____

A. $1:1$

B. $2:3$

C. $1:3$

D. $1:9$

Answer: C

Watch Video Solution

4. What will happen is two objects A and B of masses 30 kg and 120 kg are dropped from a height of 20m simultaneously.

A. both A and B experience same gravitational force.

B. the accelerations of both A and B are same.

C. both A and B reach the ground simultaneously.

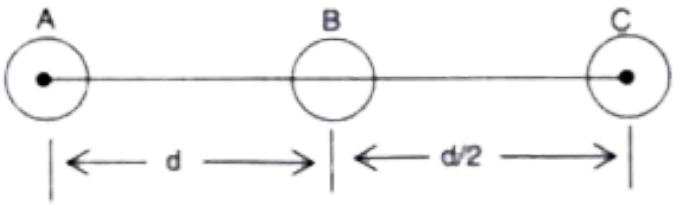
D. Both (b) and (c)

Answer: D

Watch Video Solution

5. Three masses A, B and C are arranged as shown in the figure, the mass of 'A' is 2 times the mass of 'B' and the mass of B is 10 kg. If the force of attraction between A and B is equal to the force of attraction between B and

C, then the mass of C is _____ kg.



A. 10

B. 5

C. 2.5

D. 2

Answer: B

Watch Video Solution

6. The gravitational force between two bodies is affected by

A. the electric field

B. the magnetic field

C. heat

D. None of these

Answer: D

 Watch Video Solution

7. The weight of a body A on the surface of the earth is equal to the weight of the body B on the surface of moon, the ratio of the mass of A to that of B is_____ [The acceleration due to gravity on the surface of earth is six times the acceleration due to gravity on the surface of moon].

A. $1:1$

B. $1:6$

C. $6:1$

D. $1:2$

Answer: B

Watch Video Solution

8. The acceleration due to gravity of a body on the surface of planets depends upon the _____

A. position of the body.

B. size of the planets.

C. mass of the planets.

D. All of the above

Answer: D

Watch Video Solution

9. The weight of a body is_____

A. the same every where on the earth.

B. the gravitational force experienced by the body.

C. the mass of the body.

D. independent of mass of the body.

Answer: B

Watch Video Solution

10. If two metalic balls are placed in space, where the weight of the balls is zero, then_____

A. they move towards each other.

B. they repel each other.

C. they remain in their position.

D. We cannot say anything about their status.

Answer: A

Watch Video Solution

11. The weight of a body on the surface of earth is W_e. When the density of the body is doubled by keeping its radius constant, its weight on the surface of the moon is found to be W_m, then $\frac{W_m}{W_e}$ _____ $(g_e = 6g_m)$

A. $1:1$

B. $1:3$

C. $3:1$

D. $6:1$

Answer: B

Watch Video Solution

12. Newton's gravitational law is not applicable in the case of_____

A. two bodies at different temperatures separated by a distance of 1 km.

B. a body of a smaller mass and another body of a larger mass separated by a large distance.

C. two small masses separated by a large distance.

D. None of these

Answer: D

 Watch Video Solution

13. Two masses A and B are separated by a distance of 1m. To increase the force of attraction by 2 times, the distance between them should be _____m.

A. 0.5

B. $\frac{2}{3}$

C. 2

D. $\frac{1}{\sqrt{2}}$

Answer: D

Watch Video Solution

14. An iron ball and a cork ball of the same radius are released from the same height in vacuum. Both of them reach the ground simultaneously. Which of the following statement is the correct explanation for this?

A. Acceleration due to gravity is independent of the mass of the falling bodies.

B. Acceleration due to gravity in vacuum is independent of the size of the bodies.

C. In vacuum, the acceleration due to gravity is zero.

D. In vacuum, there is resistance to the motion of the bodies.

Answer: A

Watch Video Solution

15. Two bodies of masses 5 kg and 20 kg are separated by a distance of 300 m. A body of mass 1 kg is placed between the two masses in a straight line. If the forces of attraction due to the two masses on the body of 1 kg mass are the same, the distance between the 1 kg body and the 5 kg body is _____

A. 100

B. 200

C. 300

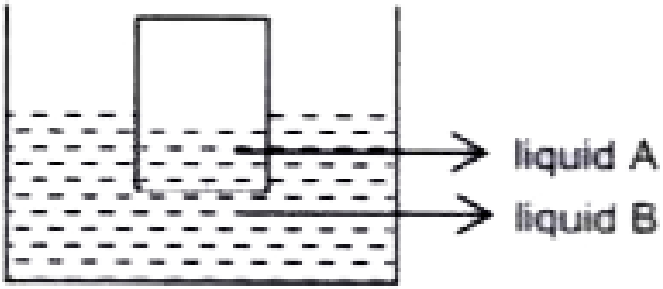
D. 400

Answer: B

Watch Video Solution

16. A container filled with a liquid A is floating on the surface of another liquid 'B' as shown in the figure, then volume of the liquid

displaced by the container



A. is equal to the volume of the liquid A.

B. is greater than the volume of the liquid

A.

C. is less than the volume of the liquid A.

D. Cannot be determined

Answer:

Watch Video Solution

17. The height of the mercury column on a barometer at sea level is 76 cm and that at a particular height is 63.3 cm. Calculate the height from the sea level (For every 272.7 m of height from the sea level 2.54 centimetres of pressure decreases)

Watch Video Solution

18. Tides are formed mainly due to the gravitational force of attraction between water, the sun and the moon. Why are tides not created by the effect of other planets?

Watch Video Solution

19. In a barometer the height of the mercury column suddenly changes from 76 cm to 60 cm at a particular place. What does it indicate?

Watch Video Solution

20. Is energy required to be supplied for an artificial satellite to revolve in a given orbit?

Watch Video Solution

21. The atmosphere exerts pressure on us. Why do we not feel it?

Watch Video Solution

22. Akhilesh took sea water and river water in two containers. He made a body float in the river water and then in the sea water. What happens to the immersed part of the body when it is immersed in the rive water and in the sea water?

Watch Video Solution

23. Find the gravitational force between the sun and the Jupiter. Given that the mass of the

sun = 2×10^{30} kg, the mass of the Jupiter = 1.89×10^{27} kg, the radius of the Jupiter's orbit = 7.73×10^{11} m and the value of universal gravitational constant $G = 6.67 \times 10^{11} Nm^2 kg^2$.

Watch Video Solution

24. W_p and W_e be the weight of a body at the pole and at the equator, respectively. If the earth stops rotating, then what happens to

the value of W_p and W_e? Are the values of W_e. and W_P equal?

Watch Video Solution

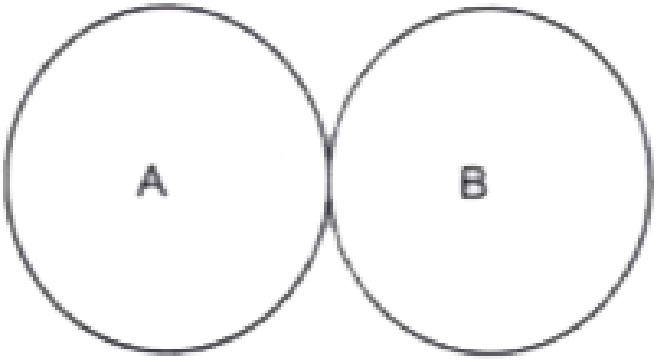
25. An object of mass 2 kg is placed on the surface of the arth and another object of mass 6 kg is placed on the surface of the moon. Determine the ratio of their weights.

Watch Video Solution

26. Aparna drops a body of mass 'm' from the top of a tower and she found that it reaches the ground in 4 s. Another body of mass 10 m is dropped from the top of another tower and it reaches the ground in 8 s. Using this information she found the ratio of the height of the towers. What is the ratio of their heights?

Watch Video Solution

27. A student placed two identical spheres A and B as shown in the figure. Then if another ball C identical to A and B is placed in between the balls A and B, determine the ratio of force of attraction between A and B in the two cases.



Watch Video Solution

28. If the density of the earth is doubled keeping its radius constant, then the new value of force of attraction on an object on the surface of the earth is how many times that in the previous case?

Watch Video Solution

29. The radius and mass of three planets are given below. Arrange them in the decreasing order of acceleration due to gravity.

$\left[g = \frac{GM}{R^2}\right]$, g is acceleration due to gravity on a planet, M is mass of the planet and Ris the radius of the planet.

Planet	Mass	Radius
P_1	m	R
P_2	2m	$R/2$
P_3	m/4	$R/4$

Watch Video Solution

30. Sindhu wanted to know the variation in the gravitational force of attraction with height. So, she took a body of mass 'm' from the

surface of the earth to a height equal to the radius of the earth. She then determined the change in gravitational force of attraction. What is her answer?

Watch Video Solution

31. If mass and radius of earth are doubled, then what of an object on the surface of the earth whose mass 10kg on the surface of the moon?

Watch Video Solution

32. We know that gravitational force is present between any two bodies in the universe. But when we stand near a rock, we are not pulled by the rock. Why?

Watch Video Solution

33. Why do we use a common balance to measure the mass of an object instead of a spring balance? Can we determine the mass of an object by using a spring balance?

Watch Video Solution

34. When does a person experience more weight in a lift?

Watch Video Solution

35. Why do planets revolve around the sun?

Watch Video Solution

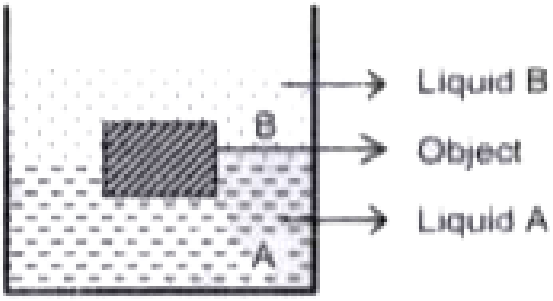
36. Explain why the number of meteorites striking the surface is quite large whereas very few reach the surface of the earth even though the gravitational force of attraction of moon is less than that of the earth.

Watch Video Solution

37. How does a perfume sprayer work?

View Text Solution

38. An object is made to float in two immiscible liquids as shown in figure. Compare the densities of two liquids A and B and the object.



View Text Solution

39. The gravitational attraction of the earth on any object is proportional to its mass. Then, why do heavy objects not fall faster than light objects?

Watch Video Solution

40. A lighted candle is placed inside a rectangular box having two holes at its top, and a wheel made up of paper is placed inside it as shown in figure. In which direction will

the wheel rotate? Why?

Watch Video Solution

Assessment Test Test 1

1. Assertion (A): Vice is used to hold metal plates or rods.

Reason (R): It is difficult to hold metal rods which have to be cut in one's hand.

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. A is correct and R is incorrect.

D. Both A and R are incorrect.

Answer: A

 Watch Video Solution

2. Write the following steps in a sequential order in the formation of wind currents.

(A) Cooler air moves in from the regions 0^{o} to 30^{o} latitude belt present on either side of the equator.

(B) The equator receives maximum heat from the sun and the air present at the equator gets heated and moves upwards.

(C) The warm air at these latitudes moves upwards and the cold air from the poles moves in, and the process continues.

A. BAC

B. BCA

C. ACB

D. CAB

Answer: A

Watch Video Solution

3. The motion of the hand of a perosn while cutting a water pipe by means of a hack-saw is_____

A. to and fro

B. Rectilinear

C. rotatory

D. Curvilinear

Answer: A

Watch Video Solution

4. Which of the following agricultural tools is used to sow the seeds in a field?

A. A harrow.

B. A leveller.

C. A plough.

D. A wooden plank.

Answer: A

Watch Video Solution

5. Match the following

Column A			Column B
(A) Low tides	( )	(a)	Spring tides
(B) High tides	( )	(b)	Artificial satellite
(C) Zodiac	( )	(c)	Neap tides
(D) Bhaskara	( )	(d)	Group of 12 constellations

A. $A \rightarrow c, B \rightarrow d, C \rightarrow a, D \rightarrow b$

B. $A \rightarrow b, B \rightarrow c, C \rightarrow a, D \rightarrow d$

C. $A \rightarrow c, B \rightarrow a, C \rightarrow d, D \rightarrow b$

D. $A \rightarrow b, B \rightarrow a, C \rightarrow d, D \rightarrow c$

Answer: C

View Text Solution

View Text Solution

6. Assertion (A): If the masses of two bodies is doubled, the force reduces to 1/4th of the initial force.

Reason (R): The force of attraction between two bodies is directly proportional to the product of their masses.

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. A is incorrect and R is correct.

D. Both A and R are incorrect.

Answer: C

Watch Video Solution

7. An iron ball and a wooden ball of the same radius are released from the same height in

vacuum. They take the same time to reach the ground. The reason for this is

A. Acceleration due to gravity is independent of the mass of the falling bodies

B. Acceleration due to gravity in vacuum depends on the size of the bodies

C. In vacuum, the acceleration due to gravity is zero

D. In vacuum, there is resistance to the motion of the bodies

Answer: A

 Watch Video Solution

8. A capillary tube is taken from the Earth to the surface of the moon. The rise of the liquid column on the Moon (acceleration due to gravity on the Earth is 6 times that of the Moon) is

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

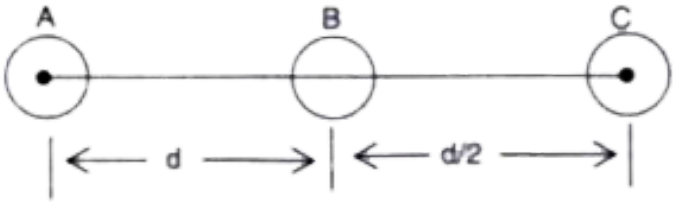
C. A is correct and R is incorrect.

D. Both A and R are incorrect.

Answer: A

 Watch Video Solution

9. Three masses A, B and C are arranged as shown in the figure, the mass of 'A' is 2 times the mass of 'B' and the mass of B is 10 kg. If the force of attraction between A and B is equal to the force of attraction between B and C, then the mass of C is _____ kg.



A. 10

B. 5

C. 2.5

D. 2

Answer: B

 Watch Video Solution

10. A body of mass 1 kg is placed between two bodies of masses 10 kg and 90 kg and they are arranged in a straight line. If the forces of attraction due to the two masses on the body of mass 1 kg are equal, then the ratio of the

distance between the masses 10 kg and 1 kg to the distance between the masses of 1 kg and 90 kg is _____

A. $1:1$

B. $2:3$

C. $1:3$

D. $1:9$

Answer: B

Watch Video Solution

11. A leveller with one metre long metal strip is used to level the surface of the soil. If the farmer takes the leveller from one end to another end of the field of length 265m hen calculate the area of the field which is levelled.

A. 1

B. 25

C. 50

D. None

Answer: C

Watch Video Solution

12. The weight of a body on the surface of earth is W When the density of the body is doubled by keeping its radius constant, its weight on the surface of the moon is found to beW_m then $\frac{W_m}{W_e} =$ _ _ _ _ $-g_e = 6g_m$

A. $1:1$

B. $1:3$

C. $3:1$

D. $6:1$

Answer: B

Watch Video Solution

13. The gravitational force of earth on a ball is 10 N then the gravitational force of attraction of the ball on the earth is

A. 10 N

B. zero

C. slightly less than 10 N

D. more than 10 N

Answer: B

Watch Video Solution

14. The movable jaw of a vice moves through a distance of 7mm for one complete rotation of the handle. Through how many rotation shold the handle be rotated so that it holds a metal plate of thickness 3.5 cm firmly.

A. 3

B. 5

C. $3\frac{1}{2}$

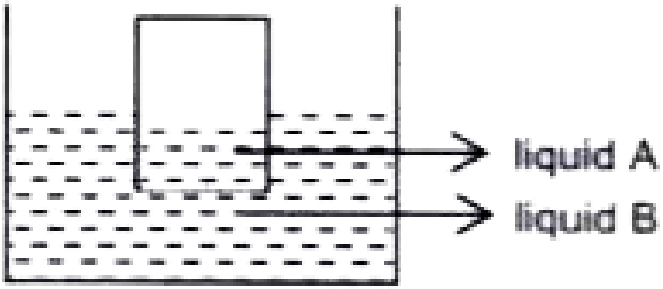
D. $2\frac{1}{2}$

Answer: A

Watch Video Solution

15. A container filled with a liquid A is floating on the surface of another liquid 'B' as shown in the figure, then volume of the liquid

displaced by the container



A. is equal to the weight of the liquid A.

B. is greater than the weight of the liquid

A.

C. is less than the weight of the liquid A

D. Cannot be determined

Answer: B

Watch Video Solution

16. Assertion (A): Sodium metal is softer than potassium metal.

Reason (R): Metallic bond in potassium is weaker than in sodium.

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. A is correct and R is incorrect.

D. Both A and R are incorrect.

Answer: D

Watch Video Solution

Assessment Test Test 2

1. Arrange the following statements in correct sequence:

1. These vapours condense to form tiny

droplets of water.

2. The water droplets come together to form large water droplets.

3. The heat of the sun causes evaporation of water from the surface of the earth, oceans, lakes, rivers and other water bodies.

4. The large water droplets become heavy and the air cannot hold them, therefore, they fall as rains.

5. Water vapour is also continuously added to the atmosphere through transpiration from the surface of the leaves of trees.

6. Warm air carrying clouds rises up.

7. Higher up in the atmosphere, the air is cool.

8. These droplets floating in the air along with the dust particles form clouds.

A. BAC

B. BCA

C. CAB

D. CBA

Answer: C

Watch Video Solution

2. The motion of the pulley while drawing water from a well is _____ about is fixed axis

A. translatory

B. rotatory

C. oscillatory

D. to and fro

Answer: B

Watch Video Solution

3. Which of the following agricultural tools is used to sow the seeds in a field?

A. Seed-drill

B. Plough

C. Harrow

D. Both (b) and (c)

Answer: A

Watch Video Solution

4. Match the following

Column A			Column B	
(A)	Spring tides	( )	(a)	Occur when the gravitational pull of the moon and sun on the earth are perpendicular to each other
(B)	Constellation	( )	(b)	Chandrayan – 1
(C)	Artificial Satellites	( )	(c)	Hydra
(D)	Neap tides	( )	(d)	Occur during full moon day

A. $A \rightarrow b, B \rightarrow c, C \rightarrow b, D \rightarrow a$

B. $A \rightarrow c, B \rightarrow d, C \rightarrow b, D \rightarrow a$

C. $A \rightarrow a, B \rightarrow b, C \rightarrow c, D \rightarrow d$

D. $A \rightarrow b, B \rightarrow d, C \rightarrow a, D \rightarrow c$

Answer: A

View Text Solution

5. Assertion (A): If the distance between two given bodies is halved, the force between them is quadrupled.

Reason (R): In the universe, any two material bodies attract each other with a force which is inversely proportional to the square of the distance between them.

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. A is correct and R is incorrect.

D. Both A and R are incorrect.

Answer: A

Watch Video Solution

6. Two objects A and B of masses 2 kg and 20 kg are dropped from a height of 10 m simultaneously. Then

A. both A and B experience same gravitational force.

B. the accelerations of both A and B are same.

C. both A and B reach the ground simultaneously.

D. both (b) and (c).

Answer: D

Watch Video Solution

7. Assertion (A): Weight of a body on the Jupiter will be more than that on the Earth.

Reason (R): Weight of a body on the Earth is the force with which a body is attracted towards the Earth.

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. A is correct and R is incorrect.

D. Both A and R are incorrect.

Answer: B

 Watch Video Solution

8. Two identical spheres each of mass M and radius R are separated by a distance 3R. The force of attraction between them is proportional to

A. 0.5

B. $\frac{2}{3}$

C. 2

D. $\frac{1}{\sqrt{2}}$

Answer: D

Watch Video Solution

9. Two bodies of masses 5 kg and 20 kg are separated by a distance of 300 m. A body of mass 1 kg is placed between the two masses in a straight line. If the forces of attraction due

to the two masses on the body of 1 kg mass are the same, the distance between the 1 kg body and the 5 kg body is _____

A. 100

B. 200

C. 300

D. 400

Answer: A

Watch Video Solution

10. A leveller with a 1.5 meters long metallic strip is used to level an area of 45 square metres Then calculate the length of the field which is levelled

A. 45

B. 30

C. 15

D. Data insufficient.

Answer: B

Watch Video Solution

11. The weight of a body on the surface of moon is 1/6th of that on the Earth's surface. It is because acceleration due to gravit on the surface of moon is six times that on the surface of the Earth.

A. $1:1$

B. $1:6$

C. $6:1$

D. $1:2$

Answer: B

Watch Video Solution

12. The gravitational force of the earth on a freely falling ball of mass one kilogram is 9.8 N. The acceleration of the earth towards the ball is

A. $9.8ms^{-2}$

B. negligible.

C. slightly less than $9.8ms^{-2}$.

D. more than $9.8ms^{-2}$

Answer: B

Watch Video Solution

13. A thick metallic cylindrical rod which is to be cut when placed between th jasws of a 'vice' the handle to roated though $4 \times 360^{\circ}$, if the distance moved by the movable jaws is 0.5 cm per rotation then calculate the radius of the

rod. (Assume that initially th jaws are in contact with each other)

A. 2 cm

B. 0.2 cm

C. 1 cm

D. 0.01 cm

Answer: C

Watch Video Solution

14. An object of mass m is floating in a liquid of density σ. If the object is made up of density ρ, then appare weight of the object in the liquid is

A. $d_A > d_B > d_O$

B. $d_O > d_B > d_A$

C. $d_B > d_A > d_O$

D. $d_A > d_O > d_B$

Answer: A

Watch Video Solution

Watch video solution