PHYSICS

BOOKS - MBD -HARYANA BOARD

GRAVITATION

Example

1. State the universal law of gravitation.

Watch Video Solution

2. Write the formula to find the magnitude of the gravitational force between the Earth and an object on the surface of the Earth.

Watch Video Solution

3. What do you mean by acceleration due to gravity?

Watch Video Solution

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

Watch Video Solution

5. Explain why weight of an object on moon is only $\frac{1}{6}th$ of the weight of the object on earth.

Watch Video Solution

6. Why is it difficult to hold a school bag having strap made of thin and strong string?

Watch Video Solution

7. What do you mean by buoyancy?

Watch Video Solution

8. WHY OBJECTS FLOAT OR SINK WHEN PLACED ON THE SURFACE OF WATER

Watch Video Solution

9. You find your mass to be 42 kg on a weighing machine. Is your mass more or less than 42 Kg?

Watch Video Solution

10. You have a bag of cotton and an iron bar, each indicating a mass of 100 kg when measured of a weighing machine. In reality,

one is heavier than the other. Can you say which one is heavier and why?

Watch Video Solution

11. How does the force of gravitation between two objects change when the distance between them is reduced to half ?

Watch Video Solution

12. 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?

13. The distance between the moon and earth is $3.8 \times 10^8 m$. Find the gravitional potential at the mid point of the joining them. Given that the mass of the earth is $6 \times 10^{24} kg$, mass

of moon $= 7.4 \times 10^{22} kg$ and $G = 6.67 \times 10^{11} Nm^2 kg^{-2}$.

Watch Video Solution

14. The Earth and the moon are attracted to each other by each other by gravitational force. Does the earth attract the moon with a force that is greater or smaller or the same as the force with which the moon attracts the earth ? Why?

Watch Video Solution

15. If the moon attracts the earth, why does the earth not move towards the moon?

Watch Video Solution

16. What happens to the force between two object, if

(i) the mass of one object is doubled ? (ii) the distance between the object is doubled and tripled?

(iii) the masses of both object are doubled?

Watch Video Solution

17. What happens to the force between two objects, if the distance between the objects is doubled and tripled ?

Watch Video Solution

18. What happens to the force between two objects, if the masses of both objects are doubled ?

Watch Video Solution

19. What is the imprtance of universal law of gravitation?

Watch Video Solution

20. What is the acceleration of free fall?

Watch Video Solution

21. What do you call the gravitational force between the earth and an object? With what acceleration does earth pull us towards it?

 Watch Video Solution

22. Amit buys few grams of gold at the poles as per the instruction of one of his friends. He hands over the same when he meets him at the equator. Will the friend agree with the weight of gold bought ? If not, why ? [Hint. The

value of g is greater at the poles than at the equater.]

Watch Video Solution

23. Does earth pull all objects with equal acceleration? If yes, why will a sheet of paper fall slower than one that is crumpled into a ball?

Watch Video Solution

24. Gravitational force on the surface of moon is $1/6$ as strong as gravitational force on the earth. What is the weight in newton of a 100 kg object on moon and on the earth ?

Watch Video Solution

25. A ball is thrown vertically upwards with a velocity of $49ms^{-1}$. Calculate :The maximum height to which it rises

Watch Video Solution

26. A ball is thrown vertically upwards with a velocity of $49ms^{-1}$. Calculate :The total time it takes to return to the surface of earth.

Watch Video Solution

27. A stone is released from the top of a tower of height 19.6m. Calculate its final velocity just before touching the ground.

Watch Video Solution

28. A stone is thrown verticaly upward with an initial velocity of $40m/s$. Taking $g = 10m/s^2$, find the maximum height reached by the stone. What is the net displacement and the total distance covered by the stone?

Watch Video Solution

29. Calculate the force of gravitation between the earth the sun, given that the mass of the earth $= 6 \times 10^{24}$kg and mass of the sun

$= 2 \times 10^{30}$kg. The average distance between the two is $1.5 \times 10^{11} m$.

Watch Video Solution

30. A stone is allowed to fall from the top of a tower 100m high and at the same time another stone is projected vertically upwards from the ground with a velocity of $25 m / s$. Calculate when and where the two stone will meet.

Watch Video Solution

31. A ball thrown up verically returns to the thrower after 6 s. Find

(a) the velocity with which it was thrown up.

(b) the maximum height it reaches, and (c) its position after 4 s.

Watch Video Solution

32. In what direction does the buoyant force on an object immersed in a liquid act?

Watch Video Solution

33. Why does a block of plastic released under water come up to the surface of water?

Watch Video Solution

34. Why does a block of plastic released under water come up to the surface of water?

Watch Video Solution

35. The volume of 50 g of a substance is 20 cm^3. If the density of water is $1\frac{g}{cm^3}$, will the substance float or sink?

Watch Video Solution

36. The volume of 500 g sealed packet is 350 cm^3. Will the packet float or sink if the density of water is $1\frac{g}{cm^3}$? What will be the mass of the water displaced by this packed?

Watch Video Solution

37. Write Kepler's law in context with the motion of planets.

Watch Video Solution

38. How did Robert proved experimentally that all bodies fall in vacuum with same acceleration?

Watch Video Solution

39. How did Robert Boyle show experimentally that a coin and a piece of paper when dropped simultaneously from same height in vacuum fall with same acceleration ?

Watch Video Solution

40. Prove that acceleration due to gravity is independent of mass.

Watch Video Solution

41. Find the value of 'g'.

Watch Video Solution

42. VARIATION IN ACCELERATION DUE TO GRAVITY

Watch Video Solution

43. Establish the relation between 'g' and 'G' .

Watch Video Solution

44. Deduce an expression for it in terms of mass of the earth 'M' And universal gravitational constant 'G'.

Watch Video Solution

45. Acceleration due to gravity of a body is independent of

Watch Video Solution

46. Explain the verification of Archimedes' principle.

Watch Video Solution

47. Which is greater - the attraction of earth for 1 kg of iron or attraction of 1 kg of iron for the earth ? Give reason.

Watch Video Solution

48. Why is G called the universal gravitational constant ?

Watch Video Solution

49. Why does value of 'g' vary from place to place on earth ?

Watch Video Solution

50. Why does a body lose weight at the centre of the earth?

Watch Video Solution

51. The weight of an object on the surface of earth is 9.8 N. What does this statement mean?

Watch Video Solution

52. What type of motion is exhibited by a freely falling body ?

Watch Video Solution

53. Give points of difference between Acceleration due to gravity (g) and Universal gravitational constant (G).

Watch Video Solution

54. You buy weight of sugar at a place situated on equitorial line and then take it to Antarctica. Will that sugar weigh same there ? If not whether it would be more or less.

Watch Video Solution

55. We cannot move finger without disturbing all stars. Why?

Watch Video Solution

56. Distinguish between gravitational and gravity.

Watch Video Solution

57. If the force of gravity somehow vanishes today, why would we be sent being in space ?

Watch Video Solution

58. What is meant by density and relative density ?

Watch Video Solution

59. What is buoyancy and centre of buoyancy?

Watch Video Solution

60. State Archimedes' principle.

Watch Video Solution

61. How is submarine able to move on water surface as well as go under water ?

Watch Video Solution

62. Explain why, building and dams have wide foundations.

Watch Video Solution

63. Steel sinks in water but a steel boat floats .why ?

Watch Video Solution

64. Why does a sharp knife cut object more effectively than a blunt knife ?

Watch Video Solution

65. Give reasons for the following :A cork piece floats but an iron piece sinks in water.

Watch Video Solution

66. Explain the following : Swimmers are provided with an inflated rubber jacket.

Watch Video Solution

67. Why is it easier to swim in sea water than in the river water ?

Watch Video Solution

68. Why is the pressure on the ground more when a man is walking than when he is standing?

Watch Video Solution

69. Why is a bucket of water lighter when in water than in air?

Watch Video Solution

70. If a fresh egg is put into a beaker filled with water, it sinks On dissolving a lot of salt in the water, the egg begins to rise and then floats. Why ?

Watch Video Solution

71. The radius of the moon is 1.7×10^6 m and its mass is 7.35×10^{22} kg . What is the acceleration due to gravity on the surface of the moon ? Given G = $6.67 \times 10^{-11} Nm^2 kg^{-2}$.

Watch Video Solution

72. Find the change in weight percentage of a body when it is taken from equator to poles. Polar radius is 6357 km and equitorial radius is 6378 km.

Watch Video Solution

73. At what distance from the centre of the earth, the value of acceleration due to gravity g will be half that on the surface (R = radius of earth)

Watch Video Solution

74. A block of wood is kept on a table top The mass of the wooden block is 5 kg and its

dimensions are $40cm \times 20cm \times 10cm$. Find the pressure exerted by the wooden block on the table top if it is made to lie on the table with its sides of dimension (a)$20cm \times 10cm$ (b) $40cm \times 20cm$. Given$g = 9.8\frac{m}{s^2}$.

Watch Video Solution

75. A block of wood is kept on a table top The mass of the wooden block is 5 kg and its dimensions are $40cm \times 20cm \times 10cm$. Find the pressure exerted by the wooden block on

the table top if it is made to lie on the table with its sides of dimension (a)$20cm \times 10cm$ (b) $40cm \times 20cm$. Given$g = 9.8\frac{m}{s^2}$.

Watch Video Solution

76. A solid body floating in water has $1/5th$ of its volume above the surface of water. What fraction of its volume will project upwards if it floats in a liquid of specific gravity 1.3?

Watch Video Solution

77. Explain why Moon exerts a lesser gravitational force on objects as compared to the Earth.

Watch Video Solution

78. The unit of g/G is

Watch Video Solution

79. What is the SI unit of weight ?

Watch Video Solution

80. The earth's gravitaional force causes an acceleration of $5m/s^2$ in 1 kg mass somewhere in space .How much will the acceleration of a 3 kg mass be at the same place ?

Watch Video Solution

81. With a specific initial velocity, we can jump higher on the moon than on the earth.

Watch Video Solution

82. The value of g on the surface of the moon

Watch Video Solution

83. Write the formula to find the magnitude of the gravitational force between the Earth and an object on the surface of the Earth.

Watch Video Solution

84. Can mass of a body ever be zero?

Watch Video Solution

85. You find your mass to be 42 kg on a weighing machine. In your mass more or less than 42kg?

Watch Video Solution

86. How the value of g changes as one moves from equator to pole?

Watch Video Solution

87. Why does an object float or sink when placed on the surface of water?

Watch Video Solution

88. Why do you feel lighter when you swim?

Watch Video Solution

89. Why a truck or a motor but has much wider tyres?

Watch Video Solution

90. A body weighs more at poles than at the equator of earth. Why ?

Watch Video Solution

91. The weight of an object on the moon is equal to of its weight on the earth.

 Watch Video Solution