

PHYSICS (2014)

51. Select the true statement:

- (1) Velocity of any object is zero then acceleration is not necessarily zero.
- (2) Velocity of any object is zero then acceleration must be zero.
- (3) An object moves with uniform speed then its acceleration is also uniform.
- (4) An object moves with non-uniform speed then its acceleration is zero.

Ans. 1

When body is at highest point in vertical motion.

52. A passenger in a moving train tosses a coin which falls behind him, this shows that the motion of train is:

- (1) Accelerated
- (2) Uniform
- (3) Retarded
- (4) Along circular track

Ans. 1

Coin has constant velocity in horizontal direction while train is accelerated.

53. The numerical ratio of displacement to distance for a moving object is:

- (1) always less than 1
- (2) equal to or more than 1
- (3) always more than 1
- (4) equal to or less than 1

Ans. 4

Magnitude of displacement is always less than or equal to distance.

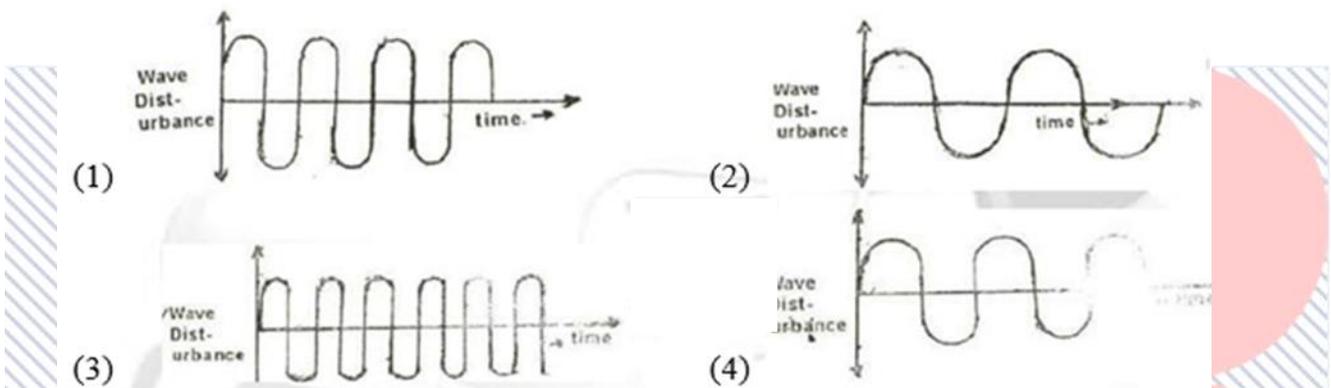
54. The correct expression for the force acting on an object moving in a circular path is given by:

- (1) $F = mvr$
- (2) $F = \frac{mv}{r}$
- (3) $F = \frac{mv^2}{r}$
- (4) $F = mv^2r$

Ans. 3

$$F = \frac{mv^2}{r}$$

60. In which of the following the final image is erect:
- (1) Simple Microscope (2) Compound Microscope
(3) Astronomical telescope (4) Retina of the eye
61. Which of the following does a Dentist use to view the teeth for treatment:
- (1) Concave Mirror (2) Convex lens
(3) Concave lens (4) Convex Mirror
62. Which of the following graph represents sound of Maximum Pitch:



Ans. 3

Pitch depends on frequency and frequency is number of oscillation per second.

63. Which sound waves are emitted by a bat to catch its prey:
- (1) Infrasonics (2) Ultrasonics
(3) Sound of frequency 15 kHz (4) Sound of frequency 19 kHz

Ans. 2

Sound wave emitted by a bat to catch its prey is ultrasonics

64. When we change a feeble sound to a loud sound, we increases its:

- (1) frequency (2) amplitude
(3) velocity (4) wavelength

Ans. 2

Loudness depends upon intensity (and intensity depends on square of amplitude)

$$I \propto A^2$$

65. We can distinguish between the sounds produced by different singers on the basis of the characteristics of sound called:

- (1) Frequency (2) Timbre
(3) Pitch (4) Loudness

Ans. 2

Sound is distinguished by quality or timbre.

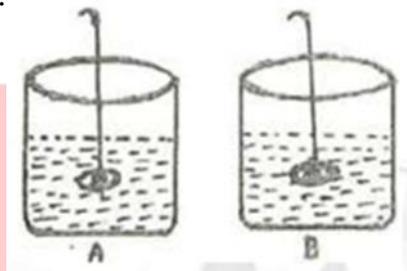
74. An object of mass 'm' is moving with a constant velocity V. How much work should be done on it to stop it?

- (1) mv (2) mv^2
(3) $\frac{m^2v}{2}$ (4) $\frac{1}{2}mv^2$

Ans. 4

$$= \Delta K.E = \frac{1}{2}mv^2 - 0 \equiv \frac{1}{2}mv^2$$

75. A stone is tied to a thread and is immersed in two different beakers completely. Both the beakers were filled with the same level of liquid. On measuring with the help of a spring balance, it was found that the weight of the stone in beaker A was more than that in beaker B. The reason is:



- (1) Density of liquid A is more than B.
(2) Density of liquid B is more than A.
(3) Both the liquids have the same density.
(4) None of the above

Ans. 2

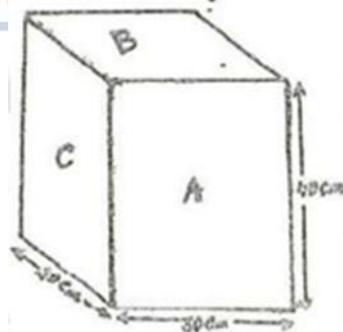
$$W_A = mg - B_A \text{ and } W_B = mg - B_B$$

$$\text{If } W_A > W_B \text{ then } B_A < B_B$$

$$\Rightarrow V\rho_A g < V\rho_B g$$

$$\Rightarrow \rho_A < \rho_B$$

76. The pressure exerted by the shown wooden block on a surface will be highest when:



- (1) B Surface is downward (2) A Surface is downward
(3) C Surface is downward (4) None of the above

Ans. 1

$$P = F/A$$

Surface B has minimum area it means maximum pressure.

77. The perpendicular force acting on a surface is called:

- (1) Frictional force
- (2) Centripetal force
- (3) Thrust
- (4) Magnetic force

78. Unit of Relative Density is:

- (1) kg/m^3
- (2) kg m^3
- (3) kg/cm^3
- (4) No unit

79. 50 gm of a substance has a volume of 20 cm^3 . The density of water is 1 gm/cm^3 , then it will

- (1) Float on water:
- (2) Sink in water
- (3) Will move up and down in water
- (4) Half of it will be immersed and half of it will be above the surface of water

Ans. 2

$$\rho_{\text{substance}} = \frac{50}{20} = 2.5 \text{ gm / cc}$$

Density of substance is greater than density of water. Hence, substance will sink.

80. A car is moving with a velocity of 10 m/sec . Its mass is 1000 kg . If the velocity-time graph for this car is a horizontal line parallel to the time axis, then the velocity of car at the end of 25 sec . will be:

- (1) 25 m/sec
- (2) 40 m/sec
- (3) 10 m/sec
- (4) 250 m/sec

Ans. 3

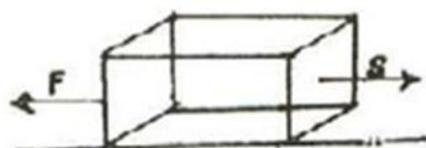
Since V - t graph is parallel to time axis hence car has constant velocity.

81. In the diagram shown, the work done by the force will be:

- (1) Positive
- (2) Negative
- (3) Zero
- (4) None of the above

Ans. 2

Force and displacement are in opposite direction hence work done will be negative. 



82. According to 3rd Law of Motion which one of the following statement is not true?
- (1) When one object applies force on the other, the other also applies force on the first object simultaneously
 - (2) Magnitude of both the force is same.
 - (3) Direction of both the forces is opposite
 - (4) Both the forces act on one object but in opposite direction

According to Newton's 3rd law action and reaction acts on different objects.

83. A ball is thrown up with a speed of 15 m/sec. How high will it go before it begins to fall? ($g = 9.8 \text{ m/sec}^2$)
- (1) 22.8 m
 - (2) 13.9 m
 - (3) 17.2 m
 - (4) 11.4 m

Ans. 4

$$h = \frac{v^2}{2g} = \frac{15 \times 15}{2 \times 9.8} = 11.4 \text{ m}$$

84. The unit of measuring momentum per unit time of a moving body is:
- (1) m sec^{-1}
 - (2) kg m sec^{-1}
 - (3) Newton
 - (4) $\text{Nm}^2 \text{kg}^{-2}$
85. When sound waves travel from air to water then the quantity which does not changes is
- (1) Velocity
 - (2) Frequency
 - (3) Wavelength
 - (4) Loudness

Ans. 2

Frequency of sound wave is independent of medium.

86. Which one is true statement?
- (1) Light and sound waves both are transverse in nature.
 - (2) Light and Sound waves are longitudinal in nature
 - (3) Light and Sound waves can propagate in space (vaccum)
 - (4) Light wave is transverse and sound wave is longitudinal in nature

Ans. 4

87. If a thunder is heard by a man 4 seconds after the lightning is seen, how far is lightning from the man: (speed of sound in air = 330 m/sec)
- (1) 660 m
 - (2) 1320 m
 - (3) 1450 m
 - (4) 1920 m

Ans. 2

$$d = v \times t = 330 \times 4 = 1320 \text{ m}$$

