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Grade : IX	Subject : Physics	Chapter : 8,9,10,11,12
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Section A

1. Which part of human ear converts sound vibrations into electrical signals
a. Hammer b. Stirrup c. Tympanic membrane d. Cochlea

2. What do dolphins, bats and porpoise use
a. Ultrasound b. Infrasound c. Both a and b d. None of them

3. Children under the age of 5 can hear up to……..
a. 25 Hz b. 25k Hz c. 20 Hz d. 25 kHz

4. Reverberation of sound is used in
a. Stethoscope b. Trumpets c. Megaphone d. All of these

5. To hear a distinct echo each time interval between the original sound and the reflected sound must be:
a. 0.2 s b. 1s c. 2s d. 0.1 s

6. Speed (v) abs wavelength (λ) and the frequency (f) of sound are related as
a. $\lambda = f \times v$ b. $v = \lambda \times f$ c. $f = \lambda \times v$ d. $v = \lambda / f$

7. Speed of sound depends upon
a. Temperature of the medium b. Pressure of the medium
c. Temperature of source producing sound d. Temperature and pressure of medium

8. Which characteristic is this? We can distinguish between sound having same pitch and loudness.
a. Tone b. Note c. Pitch d. Timber

9. Loud sound can travel a larger distance, due to
a. Higher amplitude b. Higher energy c. High frequency d. High speed

10. A wave in slinky travelled two and fro in 5 sec the length of the slinky is 5m. What is the velocity of wave?
a. 10m/s b. 5m/s c. 2m/s d. 25m/s

11. The unit of work is joule. The other physical quantity that has same unit is
(a) power (b) velocity (c) energy (d) force

12. The spring will have maximum potential energy when
(a) it is pulled out (b) it is compressed
(c) both (a) and (b) (d) neither (a) nor (b)

13. The energy possessed by an oscillating pendulum of a clock is
(a) kinetic energy (b) potential energy
(c) restoring energy. (d) mechanical energy

14. The gravitational potential energy of an object is due to
(a) its mass (b) its acceleration due to gravity
(c) its height above the earth's surface (d) all of the above.

15. A ball is dropped from a height of 10 m.
(a) Its potential energy increases and kinetic energy decreases during the falls
(b) Its potential energy is equal to the kinetic energy during the fall.
(c) The potential energy decreases and the kinetic energy increases during the fall.
(d) The potential energy is 0 and kinetic energy is maximum while it is falling.

16. If the velocity of a body is doubled its kinetic energy

(a) gets doubled (b) becomes half
(c) does not change (d) becomes 4 times

17. How much time will be required to perform 520 J of work at the rate of 20 W?
(a) 24s (b) 16s (c) 20 s (d) 26 s

18. A student caries a bag weighing 5 kg from the ground floor to his class on the first floor that is 2 m high. The work done by the boy is
(a) 1 J (b) 10 J (c) 100 J (d) 1000 J

19. The work done is 0 if
(a) The body shows displacement in the opposite direction of the force applied.
(b) The body shows displacement in the same direction as that of the force applied.
(c) The body shows a displacement in perpendicular direction to the force applied.
(d) The body masses obliquely to the direction of the force applied.

20. One unit of electrical energy is equal to
(a) 3.6×10^5J (b) 3.6×10^6J
(c) 36×10^5J (d) both (b) and (c)

21. Two objects of different masses falling freely near the surface of moon would
(a) have same velocities at any instant (b) have different accelerations
(c) experience forces of same magnitude (d) undergo a change in their inertia

22. The value of acceleration due to gravity
(a) is same on equator and poles (b) is least on poles
(c) is least on equator (d) increases from pole to equator

23. The gravitational force between two objects is F. If masses of both objects are halved without changing distance between them, then the gravitational force would become
(a) F/4 (b) F/2 (c) F (d) 2 F

24. In the relation $F = G M m/d^2$, the quantity G
(a) depends on the value of g at the place of observation
(b) is used only when the earth is one of the two masses
(c) is greatest at the surface of the earth
(d) is universal constant of nature

25. Law of gravitation gives the gravitational force between
(a) the earth and a point mass only (b) the earth and Sun only
(c) any two bodies having some mass (d) two charged bodies only

26. The value of quantity G in the law of gravitation
(a) depends on mass of earth only (b) depends on radius of earth only
(c) depends on both mass and radius of earth (d) is independent of mass and radius of the earth

27. Two particles are placed at some distance. If the mass of each of the two particles is doubled, keeping the distance between them unchanged, the value of gravitational force between them will be
(a) 1/4 times (b) 4 times (c)1/2times (d) unchanged

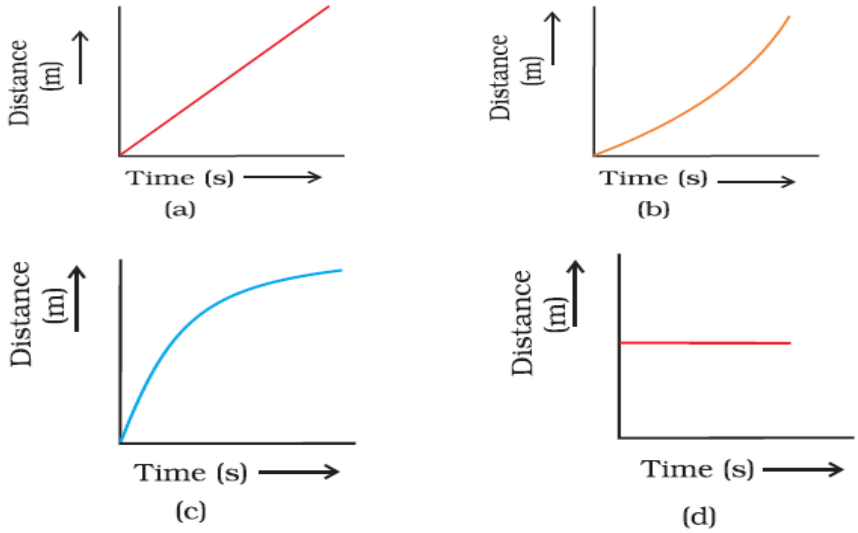
28. A particle is moving in a circular path of radius r. The displacement after half a circle would be:
(a) Zero (b) πr (c) 2r (d) $2\pi r$

29. A body is thrown vertically upward with velocity u, the greatest height h to which it will rise is,
(a) u/g (b) $u^2/2g$ (c) u^2/g (d) u/2g

30. The numerical ratio of displacement to distance for a moving object is
(a) always less than 1 (b) always equal to 1
(c) always more than 1 (d) equal or less than 1

31. If the displacement of an object is proportional to square of time, then the object moves with
(a) uniform velocity (b) uniform acceleration
(c) increasing acceleration (d) decreasing acceleration

32. Which of the following figures represents uniform motion of a moving object correctly?



33. Which of the following statement is **not correct** for an object moving along a straight path in an accelerated motion?
(a) Its speed keeps changing (b) Its velocity always changes
(c) It always goes away from the earth (d) A force is always acting on it

34. According to the third law of motion, action and reaction
(a) always act on the same body (b) always act on different bodies in opposite directions
(c) have same magnitude and directions (d) act on either body at normal to each other

35. A goalkeeper in a game of football pulls his hands backwards after holding the ball shot at the goal. This enables the goal keeper to
(a) exert larger force on the ball (b) reduce the force exerted by the ball on hands
(c) increase the rate of change of momentum (d) decrease the rate of change of momentum

36. The inertia of an object tends to cause the object
(a) to increase its speed (b) to decrease its speed
(c) to resist any change in its state of motion (d) to decelerate due to friction

37. A passenger in a moving train tosses a coin which falls behind him. It means that motion of the train is
(a) accelerated (b) uniform (c) retarded (d) along circular tracks

38. A boy is whirling a stone tied with a string in a horizontal circular path. If the string breaks, the stone
(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

Section B

1. Why do passengers tend to fall sideways when the bus takes a sharp u turn?
2. Why should a passenger hold on to prevent himself from swaying in a turning bus?
3. Why do passengers tend to fall back when it starts suddenly?
4. Why do passengers jumping out of a rapidly moving bus fall forward with his face downwards, if he does not run forward?
5. Why does a passenger jumping out of a rapidly moving bus fall forward with his face downwards?
6. Why can dust be removed by shaking it, or beating it by a carpet?
7. Why does a bullet when fired against a glass window pane make a hole in it, and the glass pane will smash it?
8. Why does an athlete take a longer jump if he comes running from a distance than when he jumps suddenly from the take-off line?
9. What happens when you shake a wet piece of cloth? Explain, why?
10. Why is it advised to tie a rope on the luggage while you travel by the bus?

11. How does a boat move forward into the water when the boatman presses one end of the pole against the ground?
12. What is the commercial unit of energy? Define it.
13. A ball is projected vertically upwards with an initial velocity 'u goes to a maximum height 'h' before touching the ground. What is the value of 'h'?
14. How is the weight of an object related to its mass?
15. The mass of the body on earth is 60kg, what is its weight on the earth and on moon.

Section C

1. A boy runs for 20 min. at a uniform speed of 18km/h. At what speed should he run for the next 40 min. so that the average speed comes 24km/hr.
2. A train accelerated from 10km/hr to 40km/hr in 2 minutes. How much distance does it cover in this period? Assume that the tracks are straight?
3. A train starts from rest and accelerate uniformly at the rate of 5 m/s2 for 5 sec. Calculate the velocity of train in 5 sec.
4. A bullet leaves a rifle with a muzzle velocity of 1042 m/s. While accelerating through the barrel of the rifle, the bullet moves a distance of 1.680 m. Determine the acceleration of the bullet (assume a uniform acceleration)
5. A bike riding at 22.4 m/s skids to come to a halt in 2.55 s. Conclude the skidding distance of the bike.
6. A race scooter is seen accelerating uniformly from 18.5 m/s to 46.1 m/s in 2.47 seconds. Determine the acceleration of the scooter and the distance travelled.
7. A car is travelling with a speed of 36 km/h. The driver applied the brakes and retards the car uniformly. The car is stopped in 5 sec. Find (i) The acceleration of car and (ii) Distance before it stops after Appling breaks?
8. Can displacement be zero? If yes, give two examples of such situations.
9. Why is it difficult for a fireman to hose, which ejects large amount of water at a high velocity?
10. What work is said to be done to increase the velocity of a car from 15 km/h to 30 km/h, if the mass of the car is 1000 kg?
11. A body possess potential energy of 460 J whose mass is 20 kg and is raised to a certain height. What is the height when g = 10 m/s^2.
12. The mass of earth is $6x10^{24}$ kg and that of the moon is $7.4x\ 10^{22}$kg. If the distance between the earth and the moon is $3.84x10^5$km. Calculate the force exerted by the earth and the moon.
[G = $6.67x10^{-11}$ Nm^2/kg^{-2}]
13. Derive the formula for the universal law of gravitation.
14. A ship sends out ultrasound that returns from the seabed and is detected after 3.42 s. If the speed of ultrasound through seawater is 1531 m/s . What is the distance of the seabed from the ship?
15. Give three uses of ultrasound.
16. A child watching Dussehra from a distance sees the effigy of ravana burst into flames and hears the explosion associated with it 2 sec after that. How far was he from the effigy if the speed of sound in air that night was 335m/sec ?
17. A car falls of a ledge and drops to the ground in 0.5 s. Let g= 10 ms^{-2}
a. What is its speed on touching the ground?
b. What is its average speed during 0.5s?
c. How high is the ledge from the ground?

Section D

1. Derive the formula for kinetic energy.
2. With pendulum as an example the law of conservation of energy.
3. Derive the formula for potential energy.
4. Sound cannot travel in vacuum. Describe an experiment to demonstrate this.
5. Explain the functioning of the Human Ear.