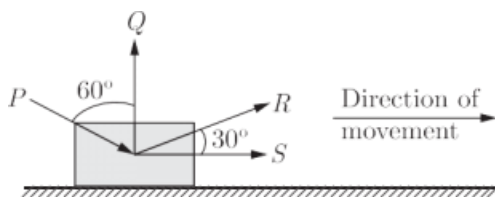1.A body falling from a height of 10m rebounds from a hard floor. It loses 20% of energy in the impact. What is the height to which it would rise after the impact?
  (a) 7m   (b) 5m   (c) 8m   (d) 6m

2. Four forces of equal magnitude are acting on an object as shown in figure. Which of the following forces does the least work?

(a)P   (b) Q   (c) R   (d) S

3. A man carries a suitcase in his hand climbs up the stairs. The work done by the man is

(a) positive   (b) negative   (c) zero   (d) none of the above

4. One kilowatt is approximately equal to

(a) 1.34 hp   (b) 1.56 hp   (c) 2.50 hp (d) 1.83 hp

5. In which of the following cases is the potential energy of a spring minimum?

(a)When it is compressed   (b)When it is extended
(c)When it is at its natural length
(d)When it is at its natural length but is kept at a height h above the ground.

6. A body rolls down on inclined plane, it has

(a) only kinetic energy

(b)only potential energy
(c)both kinetic energy and potential energy
(d)neither kinetic energy nor potential energy

7. A ball is thrown upward from a point P, reaches the highest point Q.

(a)kinetic energy at P is equal to kinetic energy at Q
(b)potential energy at P is equal to kinetic energy at Q
(c)kinetic energy at P is equal to potential energy at Q
(d)potential energy at P is equal to potential energy at Q

8. A boy has four options to move a body through 3m as indicated below

(a) push over an inclined plane (b) lift vertically upwards
(c) push over smooth rollers   (d)Push on a plane horizontal surface.
   In which case is maximum work done?

9. Which one of the following is not the measure of energy?

   (a)kWh   (b) erg   (c) Ws   (d) Js

10. A rocket rises up vertically. What happens to its potential energy?

   (a)It increases   (b)It initially increases then decreases.
   (c)It initially decreases then increases.
   (d)It increases, till it becomes maximum.

11. When the speed of a particle is doubled, the ratio of its kinetic energy to its momentum

   (a) remains the same   (b) gets doubled
   (c) becomes half   (d) becomes four times

12. If a body is raised through height h on the surface of earth and the energy spent is E, then for the same amount of energy the body on the surface of moon will rise through the height of

   (a) 2h   (b) 6h   (c) 4h   (d) 12h

13. An astronaut in the orbit in a spacecraft feels weightlessness

(a) due to the absence of gravity inside

(b) due to the fact that spacecraft has no energy

(c) because acceleration in the orbit is equal to acceleration of gravity outside

(d) there is no gravity outside

14. What happens to the acceleration due to gravity with the increase in altitude from the surface of the earth?

(a) increases   (b) decreases

(c) first decreases and then increases

(d) remains same

15. 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

(a) 12 kg   (b) 6 kg   (c) 2 kg   (d) 72 kg

16. The type of force that exists between two charged bodies is

(a) only gravitational   (c) only electrostatic

(b) neither (a) nor (b)   (d) both (a) and (b)

17. A coin and a feather are dropped together in a vacuum. Then

(a) the coin will reach the ground first

(b) the feather will reach the ground first

(c) both will reach the ground at the same time

(d) the feather will not fall down

18. The universal constant of gravitation G has the unit

(a) N   (b) m/s^2 (c) $(N\,m^2)/kg^2$ (d) J

19. Where will it be profitable to purchase one kilogram sugar?

(a) At poles   (b) At equator   (c) At 45c latitude

(d) at 40c latitude

20. In a long distance race, the athletes were expected to take four rounds of the track such that the line of finish was same as the line of start. Suppose the length of the track was 200 m. The what is the displacement of the athletes when they touch the finish line?

(a) zero   (b) 3 m   (c) 5 m   (d) 7 m

21. A body thrown vertically upwards reaches a maximum height h. It then returns to ground. The distance and the displacement travelled by the body respectively are

(a) $2h$, zero (b) h, zero (c) zero, 2h (d) Zero, h

22. Which of the following options is correct for the object having a straight line motion represented by the following graph?
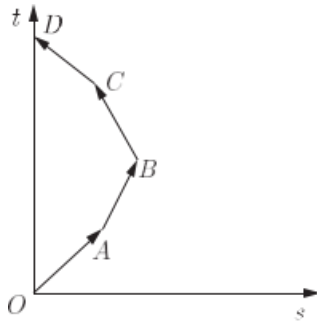

(a) The object moves with constantly increasing velocity from O to A and then it moves with constant velocity.
(b) Velocity of the object increases uniformly.
(c) Average velocity is zero.
(d) The graph shown is impossible.

23. The distance-time graph of an object moving in a fixed direction is shown in graph. The object
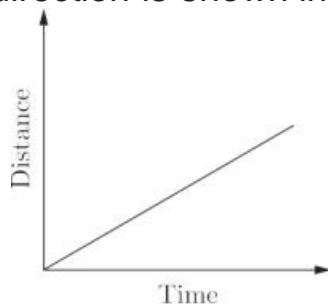
(a) is at rest
(b) moves with a constant velocity
(c) moves with a variable velocity
(d) moves with a constant acceleration

24. An object is sliding down an inclined plane. The velocity changes at a constant rate from 10 cm/s to 15 cm/s in two seconds. What is its acceleration?
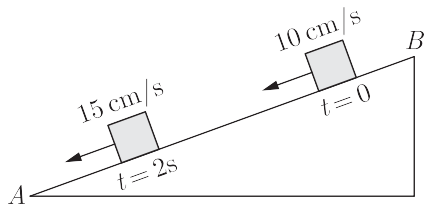
(a) 10 cm/s²   (b) 2.9 cm/s²   (c) 2.5 cm/s²   (d) 40 cm/s²

25.The graph shows the variation of velocity of a rocket with time. Then, the maximum height attained by the rocket is
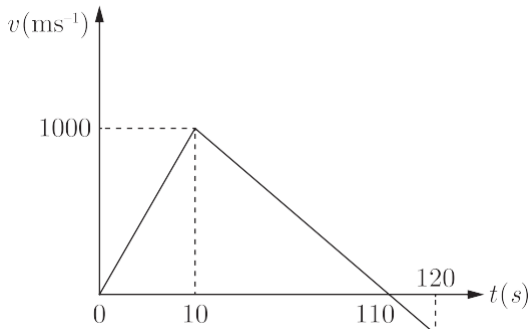
(a) 1.1 km   (b) 5 km   (c) 55 km   (d) none of these

26. If a body moves with uniform velocity, then the acceleration is equal to
(a) zero   (b) constant   (c) finite   (d) infinite

27. A number of forces acting on a body changes velocity of the body. The forces cannot be
(a) paralleled   (b) unbalanced   (c) balanced   (d) inclined

28. If *A* and *B* are two objects with masses 6 kg and 34 kg respectively, then
(a) A has more inertia than B   (b) B has more inertia than A
(c) A and B have same inertia   (d) none of the two has inertia.

29. A man getting down a running bus, falls forward because
(a) due to inertia of rest, road is left behind and man reaches forward
(b) due to inertia of motion upper part of body continues to be in motion in forward direction while feet come to rest as soon as they touch the road
(c) he leans forward as a matter of habit.
(d) of the combined effect of all the three factors stated in (a), (b)

and (c)

30. The momentum of an object at a given instant is independent of its
(a) inertia   (b) mass   (c) velocity   (d) acceleration

31. When a body is stationary
    (a) There is no force acting on it
    (b) The force acting on it not in contact with it
    (c) The combination of forces acting on it balances each other
    (d) The body is in vacuum

32. How much force acts on a body whose momentum (P) is constant with time (t)?
(a) Zero   (b) p/2t   (c) 2p/t   (d) none of these

33. A football has lesser inertia than a stone of the same size because
    (a) football has more air inside than the stone
    (b) football has less air inside than the stone
    (c) football has less mass than the stone
    (d) football has more mass than the stone

34. Newton's second law of motion gives us a measure of
(a) force   (b) inertia   (c) mass   (d) acceleration

35. A men is at rest in the middle of a pond on perfectly smooth ice. He can get himself to the shore by making use of Newton's
(a) first law   (b) second law   (c) third law   (d) all the laws
 36. Non-mechanical wave can travel
    (a) in vacuum as well as in a medium
    (b) in vacuum but not in a medium
    (c) in medium but not in vacuum
    (d) neither in a medium nor in vacuum

37. In the region of compression or rarefaction, in a longitudinal wave the physical quantity which does not change is
    (a) pressure   (b) mass   (c) density (d) volume

38. A marine survey ship emits a sound wave straight to the sea bed. It detects an echo 4.0 s later. Which is a possible depth of the sea?

   (a) 600 m   (b) 1500 m   (c) 3000 m   (d) 10000 m

39. If the density of air at a point through which a sound wave is passing is maximum at an instant, the pressure at that point will be
   a. minimum
   b. same as the density of air
   c. equal to the atmospheric pressure
   d. maximum

40.   A man sings in a circular room. At which position will he hear himself the loudest?

      (a) A   (b) B   (c) C   (d) D

41. An object moving at a speed greater than that of sound is said to be moving at
      (a) ultrasonic speed   (b) sonic speed
      (c) infrasonic speed   (d) supersonic speed

42. The membrane of a drum vibrates to produce sound. Similarly, the string of a sitar vibrates to produce sound. Which part of a whistle vibrates to produce sound?
   (a) body of whistle   (b) air column   (c) Mouth of the person
   (d) All of these

43. Ultrasonic, infrasonic and audible waves travel through a medium with speeds V_u, V_i and V_a respectively, then

(a) $V_i = V_a = V_u$ (b) $V_u = 2 V_a = 2 V_i$
(c) $V_u = 1 V_a = 1 V_i$ (d) $V_a \# V_i = V_u$

44. Two waves of sinusoidal waveforms are same wavelengths and different amplitude. They will be having
    (a) same pitch and different intensity
    (b) same quality and different intensity
    (c) different quality and different intensity
    (d) same quality and different pitch

45. Each of the properties of sound listed in column
A. primarily depends on one of the quantities in column
B. Choose the matching pairs from two columns.

Column A	Column B
Pitch	Waveform
Quality	Frequency
Loudness	Intensity

    (a) Pitch-waveform, Quality-frequency, Loudness-intensity
    (b) Pitch-frequency, Quality-waveform, Loudness-intensity
    (c) Pitch-intensity, Quality-waveform, Loudness-frequency
    (d) Pitch-waveform, Quality-intensity, Loudness-frequency

46. During night, distant sounds such as that of traffic and loudspeakers become louder. This is due to
    (a) reflection of sound waves
    (b) refraction of sound waves
    (c) absence of other sounds
    (d) clear perception of hearing

Assertion and Reason:

DIRECTION: In the following questions, a statement of assertion is followed by a statement of reason. Mark the correct choice as:

    (a) Both assertion and reason are true and reason is the correct explanation of assertion.
    (b) Both assertion and reason are true but reason is not the correct explanation of assertion.
    (c) Assertion is true but reason is false.
    (d) Assertion is false but reason is true.

47.Assertion: A crane P lifts a car up to a certain height in 1 min. Another crane Q lifts the same car up to the same height in 2 min. Then crane P consumes two times more fuel than crane Q.
Reason: Crane P supplies two times more power than crane Q.

48.Assertion : The kinetic energy, with any reference, must be positive.
Reason: In the expression for kinetic energy, the velocity appears with power 2 and mass is a scalar quantity.

49.Assertion: The change in kinetic energy of a particle is equal to the work done on it by the net force.
Reason: Change in kinetic energy of particle is equal to the work done only in case of a system of one particle.

50.Assertion : A winded toy car, when placed on floor, starts moving.
Reason: Toy car has kinetic energy stored in it which facilitates its motion.

51.**Assertion:** Work done by the gravitational force through a certain distance is constant irrespective of the fact that the body has a uniform or accelerated motion.
Reason: Gravitational force is a conservative force.

52. **Assertion:** Graph between potential energy of spring versus the extension or compression of the spring is a straight line.
Reason: Potential energy of a stretched or compressed spring, is directly proportional to square of extension or compression.

53. **Assertion:** Watt hour has units of energy.
Reason: Kilowatt hour (kW h) is the unit of electric power.

54. **Assertion:** The work done during a round trip is always zero.
Reason: No force is required to move a body in its round trip.

55. **Assertion:** A spring has potential energy, both when it is compressed or stretched.
Reason: In compressing or stretching, work is done on the spring against the restoring force.