Appendix-(I)

Achievement Test in Physics

*Please fill up the following information :-*

Name__________________________

Class_________ Gender_________ Date_________

School________________________

*Instructions:-*

In this booklet there are 50 items with four probable answers given to each item, which are shown by (a), (b), (c) and (d). Each item has only one correct answer and rest of the responses are incorrect. You have to find out the correct answer and mark a tick (✓) within the □ cell against the preferred response.
1. Light Year is the unit of
   (a) Time ☐
   (b) length ☐
   (c) distance ☐
   (d) mass ☐

2. The dimensions of Planck’s constant are same as of
   (a) Momentum ☐
   (b) Kinetic energy ☐
   (c) Electrostatic potential ☐
   (d) none of the above ☐

3. Which of the following changes, when a particle is moving with uniform velocity?
   (a) speed ☐
   (b) velocity ☐
   (c) acceleration ☐
   (d) position vector ☐

4. Two bodies are moving in opposite direction with speed ‘v’. What is the magnitude of their relative velocity?
   (a) 0 ☐
   (b) v ☐
   (c) \( \frac{v}{2} \) ☐
   (d) \( 2v \) ☐

5. Which of the following is a scalar quantity?
   (a) electric potential ☐
   (b) electric field ☐
   (c) acceleration ☐
   (d) linear momentum ☐

6. What can be the angle between \( \vec{A} + \vec{B} \) and \( \vec{A} - \vec{B} \)?
   (a) 0° ☐
   (b) 90° ☐
   (c) 180° ☐
   (d) between 0° and 180° ☐

7. A ball is released by a horizontal flying airplane. The trajectory of the ball is a
   (a) straight line ☐
   (b) circle ☐
   (c) parabola ☐
   (d) hyperbola ☐

8. A particle revolves around a circular path. The acceleration of the particle is
   (a) along the circumference of the circle ☐
   (b) along the tangent ☐
   (c) along the radius ☐
9. A rocket works on the principle of conservation of
   (a) mass □
   (b) energy □
   (c) linear momentum □
   (d) angular momentum □

10. A man pushes a wall and fails to displace it. He does
    (a) negative work □
    (b) positive work but not maximum work □
    (c) no work at all □
    (d) maximum positive work □

11. If the momentum of a body is doubled, its kinetic energy increases by
    (a) 400% □
    (b) 100% □
    (c) 300% □
    (d) 50% □

12. Generally the mass of a flywheel is concentrated on its rim. Why?
    (a) to increase the moment of inertia □
    (b) to decrease the moment of inertia □
    (c) to obtain stable equilibrium □
    (d) none of the above □

13. The radius of gyration of a body is independent of
    (a) mass of the body □
    (b) nature of distribution of mass □
    (c) axis of rotation □
    (d) none of the above □

14. A solid sphere, disc and solid cylinder all of the same mass and made of
    same material are allowed to roll down (from rest), on the inclined plane.
    Which of the following is true?
    (a) solid sphere will reach the bottom first □
    (b) solid sphere will reach the bottom last □
    (c) disc will reach the bottom first □
    (d) all will reach the bottom at the same time □

15. The weight of a body at the centre of earth is
    (a) zero □
    (b) infinite □
    (c) same as on the surface of earth □
    (d) none of the above □

16. The atmosphere is held to the earth by
    (a) winds □
    (b) gravity □
    (c) clouds □
    (d) rotation of earth □
17. The unit of gravitational potential is
(a) J □
(b) J Kg$^{-1}$ □
(c) J Kg □
(d) Kg □

18. At what temperature, do the Celsius and Fahrenheit scales give the same reading?
(a) 40°C □
(b) -40°C □
(c) 0°C □
(d) 100°C □

19. In cold countries, water pipes sometimes burst, because
(a) pipe contracts □
(b) water expands on freezing □
(c) when water freezes, pressure increases □
(d) when water freezes, it takes heat from pipes □

20. The work needs to be done to produce 1K Cal of heat is
(a) 4.2 J □
(b) $4.2 \times 10^3$ J □
(c) $4.2 \times 10^7$ J □
(d) none of the above □

21. In a cyclic process, the internal energy of gas
(a) increases □
(b) decreases □
(c) remains constant □
(d) becomes zero □

22. An adiabatic process occurs at constant
(a) temperature □
(b) pressure □
(c) heat □
(d) none of the above □

23. The efficiency of a Carnot engine working between 800 K and 500 K is
(a) 0.625 □
(b) 0.375 □
(c) 0.4 □
(d) 0.5 □

24. A refrigerator with its power on is kept in a closed room, with its door open. The temperature of the room will
(a) rise □
(b) fall □
(c) remains the same □
(d) depends on area of the room □
25. A black body when hot, emits heat radiation of
   (a) large wavelength □  
   (b) small wavelength □  
   (c) all wavelength □  
   (d) one fixed wavelength □  

26. Two bodies of masses m and 4m are moving with equal kinetic energies. The ratio of their linear momentum is
   (a) 1:4 □  
   (b) 4:1 □  
   (c) 1:2 □  
   (d) 1/\sqrt{2} □  

27. The energy which an electron acquires, when accelerated through a potential difference of 1V, is called
   (a) 1 joule □  
   (b) 1 eV □  
   (c) 1 erg □  
   (d) 1 watt □  

28. Horse Power is a practical unit of
   (a) work □  
   (b) energy □  
   (c) gravitational potential □  
   (d) power □  

29. A graph is drawn between force and time. The area under graph represents
   (a) momentum □  
   (b) couple □  
   (c) moment of force □  
   (d) impulse of force □  

30. A force of 5 N acts on a body of weight 9.8N. What is the acceleration produced in S.I. units?
   (a) 49.0 □  
   (b) 5.0 □  
   (c) 1.96 □  
   (d) 0.51 □  

31. A bullet hits and gets embedded in a solid block resting on a horizontal frictionless table. What is conserved?
   (a) momentum and kinetic energy □  
   (b) kinetic energy alone □  
   (c) momentum alone □  
   (d) neither momentum nor kinetic energy □  

(v)
32. A vector, which can represent the position of a point with respect to some fixed point in coordinate system, is called
   (a) null vector  
   (b) free vector  
   (c) position vector  
   (d) zero vector

33. If \( \vec{A} \cdot \vec{B} = |\vec{A} \times \vec{B}| \), then angle between \( \vec{A} \) and \( \vec{B} \) is
   (a) zero  
   (b) \( \pi/2 \)  
   (c) \( \pi \)  
   (d) none of above

34. A person moves 30m North, then 20m East, then \( 30\sqrt{2} \)m South-West. His displacement from the original position is
   (a) 14m South-West  
   (b) 28m South  
   (c) 10m West  
   (d) 15m East

35. When milk is churned, cream separates out because of
   (a) cohesive force  
   (b) gravitational force  
   (c) frictional force  
   (d) centrifugal force

36. If displacement of particle is zero, then distance covered by it
   (a) must be zero  
   (b) cannot be zero  
   (c) is negative  
   (d) may or may not be zero

37. If the displacement-time graph of a particle is parallel to the time axis, the velocity of particle is
   (a) zero  
   (b) infinity  
   (c) variable  
   (d) equal to its acceleration

38. The displacement of a body is given to be proportional to the cube of time elapsed. The magnitude of acceleration of the body will be
   (a) increasing with time  
   (b) decreasing with time  
   (c) constant but not zero  
   (d) zero

39. An object is projected upward with a velocity of 100 m/s. It will strike the ground in nearly
   (a) 10 s  
   (b) 20 s
The significant figure in 0.080 is
(a) 1 □
(b) 2 □
(c) 3 □
(d) 4 □

In the gas equation, \((P+ a/V^2) (V-b) = R \times \text{absolute temp. of gas}\), the dimensions of constant ‘a’ are
(a) \(ML^2T^{-3}\) □
(b) \(ML^5T^{-2}\) □
(c) \(M^0L^{-3}T^0\) □
(d) \(ML^{-1}T^2\) □

The dimensions of which of the quantities of the following pairs are the same?
(a) light year and wavelength □
(b) torque and work □
(c) energy and power □
(d) angular momentum and work □

Which one of the following is not a unit of time?
(a) lunar month □
(b) leap year □
(c) parallactic second □
(d) solar day □

One nanometer is equal to
(a) \(10^9\) mm □
(b) \(10^{-6}\) cm □
(c) \(10^{-7}\) cm □
(d) \(10^{-9}\) cm □

When a steady torque is acting on a body, the body
(a) continues in its state of rest or uniform motion along a straight line □
(b) gets linear acceleration □
(c) gets angular acceleration □
(d) rotates at a constant speed □

Angular momentum of a body is defined as the product of
(a) mass and angular velocity □
(b) centripetal force and radius □
(c) linear velocity and angular velocity □
(d) moment of inertia and angular velocity □

A ring, a solid sphere, and a disc have the same mass and radius. Which of them has largest moment of inertia?
(a) ring □
(b) solid sphere □
Appendices

(c) disc □
(d) all have same moment of inertia □

48. The distance travelled by a freely falling body is proportional to the
    (a) mass of the body □
    (b) time of fall □
    (c) square of the time of fall □
    (d) mass and time of fall □

49. If the radius of earth were to shrink by one percent (mass=constant), then 'g' on surface of earth would
    (a) decrease □
    (b) remains unchanged □
    (c) increase □
    (d) cannot be predicted □

50. Which of the following statement is wrong about satellite of earth?
    (a) it is freely falling □
    (b) it is not accelerated □
    (c) it has constant speed □
    (d) it is weightless □
## SCORING KEY FOR ACHIEVEMENT TEST IN PHYSICS

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