

Inter Part 1 Lahore Board 2008

Physics

Time: 20 Minutes

Paper: I (Objective Type)

Marks : 17

Note: Use this paper to write the answers to the objective questions. No mark will be awarded for cutting, over-writing or using a pencil. The paper must be tagged with the answers-book.

Q 1. Some possible answers to each statement are given below. Tick (✓) mark the correct answer : 17

- 1) The dimension of force is:
(a) MLT (b) MLT^{-1} (c) $ML^{-1}T^{-1}$ (d) MLT^{-2}
- 2) The resultant of two forces 30 N and 40 N acting at an angle of 90° with each other is
(a) 30 N (b) 40 N (c) 50 N (d) 70 N
- 3) The scalar product of two vectors is maximum when they are:
(a) Parallel (b) Perpendicular (c) Anti-parallel (d) Null
- 4) The horizontal range of a projectile at 30° with horizontal is same at an angle:
(a) 40° (b) 45° (c) 60° (d) 90°
- 5) The horizontal component of velocity of projectile:
(a) Remains constant
(b) Increases
(c) Decreases
(d) None
- 6) The original source of tidal energy is:
(a) Moon (b) Earth (c) Sun (d) Sea
- 7) The dimensional units of ratio of work and power is:
(a) J (b) T (c) L (d) KWH
- 8) The ratio of moment of inertia of disc and hoop is:
(a) $1/4$ (b) $2/4$ (c) $3/4$ (d) $4/4$
- 9) The time rate of change of angular displacement is called:
(a) Linear velocity
(b) Linear speed
(c) Angular velocity
(d) Angular speed
- 10) Stoke's law holds for:
(a) Motion through free space
(b) Motion through viscous medium
(c) Bodies of all shapes
(d) All mediums

- 11) In equation of continuity the units of Av is given as:
(a) Cubic meter
(b) Cubic meter per second
(c) Squaremeter per second
(d) Square meter
- 12) The product of time period and frequency is:
(a) Zero (b) 1 (c) (d) None of these
- 13) The oscillations in which amplitude decreased steadily with time are called:
(a) Natural oscillations
(b) Free Oscillations
(c) Damped Oscillation
(d) Forced Oscillations
- 14) Sound waves cannot travel through:
(a) Air (b) Water (c) Material medium (d) Vacuum
- 15) Phase angle of 180° is equivalent to a path different of:
(a) $\lambda/4$ (b) $\lambda/2$ (c) $\lambda/4$ (d) 2λ
- 16) The value of critical angle for glass-air boundary is:
(a) 41.8° (b) 41.5° (c) 42.8° (d) 42°
- 17) Carnot cycle is:
(a) Reversible (b) Irreversible (c) Both (d) None of these

Inter Part I Lahore Board 2008

Physics

Time: 2.40 Hours

Paper: I (Essay Type)

Marks : 68

Note: All questions are to be attempted on the answer book.

Section-I

Q 2. Write any TWENTY TWO short answers of the following questions: (44)

1. Derive Charle's law from kinetic theory of gas molecules.
2. What is triple point of water?
3. Does the entropy of a system increase or decrease due to friction?
4. Define refractive index.

5. What is Snell's law?
6. Why objective of short focal length is preferred in microscope?
7. What do you mean by Polaroid?
8. What are two differences between interference and diffraction?
9. Under what conditions two or more sources of light behave as coherent sources?
10. Write characteristics of stationary waves.
11. What are progressive waves? Give example.
12. Write the formula for speed of sound at 0°C .
13. What happens to the period of simple pendulum if its length is doubled?
14. Show that in S.H.M. the acceleration is zero when the velocity is greatest and the velocity is zero when the acceleration is greatest.
15. Can we realize an ideal simple pendulum?
16. Explain the differences between laminar flow and turbulent flow.
17. A person is standing near a fast moving train. Is there any danger that he will fall towards it?
18. Explain what do you understand by the term viscosity.
19. Describe the uses of Geo-Stationary Satellite.
20. Is any work done by centripetal force?
21. Can a body move along circle without centripetal force?
22. Prove that $1 \text{ Radian} = 57.3^{\circ}$.
23. Define escape velocity and write its formula.
24. When an arrow is shot from its bow, it has kinetic energy. From where does it get the kinetic energy.
25. What is horizontal range? Write its formula.
26. Describe two uses of Ballistic Missiles.
27. Find the dimensional formulas for: (i) Impulse (ii) Momentum
28. Is it possible for a body to have acceleration when moving with a constant velocity?
29. Can the magnitude of vector have negative value?
30. Can you add zero to null vector?
31. What do you understand by positive and negative torques?
32. Distinguish between base units and derived units.
33. Define the radians and steradian.

Section-II

Note: Attempt any THREE questions.

Q 3 (a) Define linear momentum. Give its S.I. unit. State and prove the law of conservation of linear momentum. (5)

(b) A block of mass 2.0kg and 0.5 kg are attached at the end of compressed spring. The elastic potential energy stored in the spring is 10 joules . Find the velocities of blocks, if the spring delivers- its energy to the blocks, when released. (3)

- Q 4** (a) Define gravitational field. Show that work done in gravitational field is independent of the path followed. Hence show that work done in closed path is zero. (5)
- (b) A 1000 kg automobile at the top of an incline 10.0 metre high and 100 m long is released and rolls down the hill. What is its speed at the bottom of the incline if the average retarding force due to friction is 480 N? (3)
- Q 5** (a) Derive an expression for the K.E. and P.E. of the mass-spring system executing S.H.M. Also prove that its total energy remains conserved. (5)
- (b) A 100 gm body hung on a spring elongates the spring by 4 cm. When a certain object is hung on the spring and set vibrating, its period is 0.568 sec? What is the mass of the object pulling the spring? (3)
- Q 6** (a) Write down about the Young's double slit experiment completely. (5)
- (b) Calculate the wavelength of light, which illuminates two slits 0.5 mm apart and produces an interference pattern on a screen placed 200 cm away from the slits. The first bright fringe is observed at a distance of 2.4 mm from the central bright fringe. (3)
- Q 7** (a) Explain the working of a petrol engine and compare its efficiency with diesel engine. (5)
- (b) 336 J of energy is required to melt 1 gm of ice at 0°C . What is the change in entropy of 30 gm of water 0°C as it is changed to ice at 0°C by a refrigerator? (3)