PHYSICS MODEL PAPER

Paper-I (First Year)

Time: 3 Hours   **Max. Marks: 60**

SECTION - A

Answer all questions. Each question carries 2 marks. All are very short answer type questions.   *10×2 = 20 Marks.*

1. Why are drops and bubbles are spherical?
2. What is the discovery of C.V. Raman?
3. Distinguish between accuracy and precision.
4. The states of motion and rest are relative. Explain?
5. Define Mean Free Path.
6. Can the coefficient of friction be greater than one?
7. Why are spokes provided in a bicycle wheel?
8. Pendulum clock gives correct time at the equator. Will it gain or lose time if it is taken to the poles? If so, why?
9. Ventilators provided in rooms just below the roof. Why?
10. State the Units and dimensions of Stress.

SECTION - B

Answer any six questions. Each question carries 4 marks. All are short answer type questions.   *6×4 = 24 Marks.*

11. What is escape velocity? Obtain expression for it?
12. State Pascal's law and verify it with the help of an experiment?
13. Show that the maximum height and range of a projectile are $\dfrac{u^2 \sin^2 \theta}{2g}$ and $\dfrac{u^2 \sin 2\theta}{g}$ respectively where the terms have their regular meanings.
14. Show that two equal masses undergo oblique elastic collision will move at right angles after collision, if the second body initially at rest.
15. Explain the principle of conservation of angular momentum with examples?
16. Compare isothermal Process and adiabatic Process.
17. Describe the behavior of a wire under gradually increasing load.
18. A body cools from 60ºC to 40ºC in 7 minutes and what will be its temperature after next 7 minutes, if the temperature of its surroundings is 10ºC?

SECTION - C

Answer any two of the following. Each question carries 8 marks. All are long answer type questions.   *8× 2 = 16 Marks.*

19. State Boyle's law and Charles' law. Hence derive ideal gas equation. Which of the two laws is better for the purpose of thermometry and why?

20. a) State Newton's second law of motion. Hence derive the equation of motion F = ma from it.

    b) A body is moving along a circular path such that its speed always remains constant. Should there be force acting on the body?

21. State Bernoulli's principle. From conservation of energy in a fluid flow through a tube, derive Bernoulli's equation. Give an application of derive Bernoulli's theorem.