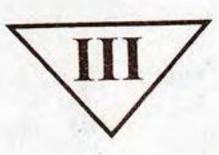
119



Total No. of Questions – 21 Total No. of Printed Pages – 2

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Part – III PHYSICS, Paper-I

(English Version)

Time: 3 Hours | [Max. Marks: 60

SECTION - A

Note: (i) Answer all questions.

 $10\times 2=20$

- (ii) Each question carries two marks.
- (iii) All are very short answer type questions.
- 1. What is the discovery of C.V. Raman?
- 2. The error in measurement of radius of a sphere is 1%. What is the error in the measurement of volume?
- 3. The vertical component of a vector is equal to its horizontal component. What is the angle made by vector with X-axis?
- 4. What is inertia? What gives the measure of inertia?
- 5. What is the principle behind the carburettor of an automobile?
- 6. Give the expression for the excess pressure in an air bubble inside the liquid?
- 7. What are the lower and upper fixing points in Celsius and Fahrenheit scales?
- 8. Why gaps are left between rails on a railway track?
- Define mean free path.
- 10. When does a real gas behave like an ideal gas?

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SECTION D

Note: (i) Answer any six questions.

- (ii) Each question carries four marks.
- (iii) All are short answer type questions.
- 11. A man walks on a straight road from his home to a market 2.5 km away with a speed of 5 kmh⁻¹. Finding the market closed, he instantly turns and walks back home with a speed of 7.5 kmh⁻¹. What is the (a) magnitude of average velocity and (b) average speed of the man over the time interval 0 to 50 minutes?
- 12. Explain the terms the average velocity and instantaneous velocity. When they are equal?
- 13. State Newton's second law of motion. Hence derive the equation of motion F = ma from it.
- 14. Define angular velocity (ω). Derive $v = r\omega$.
- 15. Define angular acceleration and torque. Establish the relation between angular acceleration and torque.
- 16. What is escape velocity? Obtain an expression for it.
- 17. Define stress and explain the types of stress.
- 18. Explain conduction, convection and radiation with examples.

SECTION - C

Note: (i) Answer any two questions.

 $2\times8=16$

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- (ii) Each question carrier Eight marks.
- (iii) All are long answer type questions.
- 19. What are collisions? Explain the possible types of collisions, develop the theory of one dimensional elastic collision.
- 20. Define simple harmonic motion. Show that the motion of (point) projection of a particle performing uniform circular motion, on any diameter, is simple harmonic. On an average a human heart is found to beat 75 times in a minute. Calculate its frequency and period.
- 21. State Second law of thermodynamics. How is heat engine different from a refrigerator?

119 (Day-9)