

SECOND MID TERM TEST

PHYSICS

2451A21

Std : 11

Marks: 35

Time : 1.30 Hrs

- I. Choose the Correct Answers :** **10x1=10**
1. If a wire is stretched to double of its original length, then the strain in the wire is
 a) 1 b) 2 c) 3 d) 4
 2. For a given material, the rigidity modulus is $\left[\frac{1}{3}\right]^{rd}$ of Young's modulus. Its Poisson's ratio is
 a) 0 b) 0.25 c) 0.3 d) 0.5
 3. A small sphere of radius 2cm falls from rest in a viscous liquid. Heat is produced due to viscous force. The rate of production of heat when the sphere attains its terminal velocity is proportional to
 a) 2^2 b) 2^3 c) 2^4 d) 2^5
 4. With an increase in temperature, the viscosity of liquid and gas, respectively will
 a) increase and increase b) increase and decrease
 c) decrease and increase d) decrease and decrease
 5. If the temperature of the wire is increased, then the Young's modulus will
 a) remain the same b) decrease
 c) increase rapidly d) increase by very a small amount
 6. Copper of fixed volume V is drawn into a wire of length l . When this wire is subjected to a constant force F , the extension produced in the wire is Δl . If Y represents the Young's modulus, then which of the following graphs is a straight line?
 a) Δl versus V b) Δl versus Y c) Δl versus F d) Δl versus $\frac{1}{l}$
 7. In a horizontal pipe of non-uniform cross section, water flows with a velocity of 1ms^{-1} at a point where the diameter of the pipe is 20cm. The diameter of the pipe where the velocity of water at the point is 1.5ms^{-1}
 a) 8 cm b) 16 cm c) 24 cm d) 32 cm
 8. In hot summer after a bath, the body's
 a) internal energy decreases b) internal energy increases
 c) heat decreases d) no change in internal energy and heat
 9. The graph between volume and temperature in Charles' law is
 a) an ellipse b) a circle c) a straight line d) a parabola

10. Triple point of water is
 a) 273.1K b) 278.1K c) 273.1°C d) 278.1°C

II. Answer any 3 Questions. (Q.No. 15 is compulsory) 3x2=6

11. Which one of these is more elastic, steel or rubber? Why?
 12. State the laws of floatation.
 13. Define specific heat capacity and give its unit.
 14. Define latent heat capacity. Give its unit.
 15. The surface Tension of a soap solution is 0.03 Nm^{-1} . How much work is done in producing soap bubble of radius 0.05m.

III. Answer any 3 Questions. (Q.No.20 is compulsory) 3x3=9

16. Distinguish between streamlined flow and turbulent flow.
 17. State and Prove Archimedes Principle.
 18. Give the applications of surface Tension.
 19. Discuss the ideal gas laws.
 20. Jogging everyday is good for health Assume that when you jog a work of 500kJ is done and 230kJ of heat is given off. What is the change in internal energy of your body?

IV. Answer all the questions : 2x5=10

21. ✓ a) State Hooke's law and verify it with the help of an experiment.
 ✓ b) State and prove Bernoulli's theorem for a flow of incompressible, non-viscous, and streamlined flow of fluid.
 22. a) Explain in detail Newton's law of cooling.
 b) Derive mayer's relation for an ideal gas

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