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C16-COMMON-103**6003****BOARD DIPLOMA EXAMINATION, (C-16)****OCTOBER/NOVEMBER—2023****FIRST YEAR (COMMON) EXAMINATION****ENGINEERING PHYSICS***Time : 3 hours]**[Total Marks : 80***PART—A**

3×10=30

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Write any three advantages of SI units.
2. State triangle law of vectors with a neat diagram.
3. Define projectile and give two examples.
4. Write any three conditions of SHM.
- * 5. Define Boyle's law and write its equation.
6. State any three acoustic conditions of good auditorium.
7. Define capillarity and angle of contact.
8. What is the effect of temperature on viscosity of liquids and gases.
9. Write any three properties of magnetic lines of force.
10. Write any three applications of optical fibers.

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PART—B

10×5=50

- Instructions :** (1) Answer *any* **five** questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

- 11.** (a) Define dot product and write any four properties of dot product. 7
(b) State polygon law of vectors. 3
- 12.** (a) Show that the path of a projectile is parabola in horizontal projection. 7
(b) Derive expression for horizontal range for a projectile in oblique projection. 3
- 13.** (a) Derive the expression for acceleration of a body moving up on a smooth inclined plane. 6
(b) Write any four minimising methods of friction. 4
- 14.** (a) State and prove work energy theorem. 7
(b) Calculate the kinetic energy of a body of mass 5 kg moving with a velocity of 5 m/s. 3
- 15.** (a) Derive an expressin for velocity and acceleration of particle executing SHM. 7
(b) Find the length of seconds pendulum at a place where $g = 9.8 \text{ m/g}^2$. 3
- 16.** (a) State first and second laws of thermodynamics. 4
(b) Write any three differences between isothermal and adiabatic processes. 6
- 17.** (a) Write any five causes of noise pollution. 5
(b) Write any five effects of noise pollution. 5
- 18.** (a) Derive the balancing condition of Wheatsone's bridge with neat circuit diagram. 7
(b) State Kirchhoff's laws of electricity. 3

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