



C14-A/AA/BM/CH/CHST/AEI/  
MET/MNG/IT/TT/PCT-103

**4003**

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**OCT/NOV—2015**  
**FIRST YEAR (COMMON) EXAMINATION**  
**ENGINEERING PHYSICS**

Time : 3 hours ]

[ Total Marks : 80

**PART—A**

10×3=30

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

1. Write the dimensional formula for (a) Pressure, (b) Work done and (c) Momentum.
2. State triangle law of vectors and draw the diagram for it.
3. A body is thrown up vertically with a velocity of 19.6 m/s. Find the maximum height reached by a body.
4. Define simple harmonic motion and give two examples.
5. Write the statements of first and second law of thermodynamics.
6. Write Sabine's formula and name each term in it.
7. Define stress, strain and Hooke's law.
8. Write Poiseuille's equation for coefficient of viscosity and name each term in it.
9. A bar magnet of length 20 cm has a pole strength of 2 A-m. Find its magnetic moment.
10. Write any three applications of superconductors.

**PART—B**

10×5=50

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

- 11.** (a) Define a null vector and a unit vector. 2  
(b) State parallelogram law of vectors and derive the expressions for magnitude and direction of resultant vector. 8
- 12.** (a) Define projectile and give two examples. 4  
(b) Show that the path of a projectile is parabola in horizontal projection. 6
- 13.** (a) Derive the formula for acceleration of a body on a rough inclined plane when the body is projected up the plane. 5  
(b) Write any five minimizing methods of friction. 5
- 14.** (a) Define work, power and energy, and write their SI units. 6  
(b) If the momentum of a body is doubled, how does its kinetic energy change? 4
- 15.** (a) Derive the expression for time period of oscillations of a simple pendulum. 6  
(b) The time period of a simple pendulum is three seconds. If its length is made four times, what is the time period? 4
- 16.** (a) Calculate the value of universal gas constant for one gram mole of a gas. 4  
(b) Prove that  $C_p - C_v = R$ . 6
- 17.** (a) Define phenomenon of beats. 2  
(b) Write any four effects of noise pollution. 5  
(c) A person hears an echo of his own voice from a distant hill after 2 s. If the velocity of sound is 340 m/s, find the distance from the hill. 3
- 18.** (a) State Kirchhoff's current and voltage law. 4  
(b) Derive the balancing condition of Wheatstone bridge with circuit diagram. 6

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