



**C14–A/AA/AEI/BM/CH/CHST/C/CM/EC/EE/CHPP/  
CHPC/CHOT/PET/M/RAC/MET/  
MNG/IT/PCT–103**

**4003**

**BOARD DIPLOMA EXAMINATION, (C–14)**

**OCT/NOV—2017**

**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 dimensional formulae for work, power and pressure.
2. State and explain triangular law of vectors.
3. Derive the expression for maximum height reached by a body in the case of vertical projection.
4. Write the conditions for simple harmonic motion.
5. State three gas laws.
6. Define echo and write two applications of echo.

- \* 7. Define the terms (a) stress, (b) strain and (c) elasticity.
- 8. Define surface tension and write two examples.
- 9. Define magnetic field and magnetic line of force.
- 10. State three properties of superconductors.

**PART—B**

10×5=50

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

- 11. (a) Define vector product of two vectors and write any five properties of vector product. 2+5
- (b) Two equal vectors have their resultant is equal to either of them. Then find the angle between two vectors. 3
- 12. (a) Derive an expression for the time of flight and horizontal range of a projectile in oblique projection. 3+3
- (b) An aeroplane flying horizontally with a speed of 270 kmph releases a body at a height of 490 m from the ground. Find when and where the body strikes the ground. 4
- 13. (a) Define three types of friction and show that  $\tan \theta = \mu$  where  $\mu$  is coefficient of friction and  $\theta$  is the angle of friction. 3+3
- (b) Write four methods for reducing friction. 4
- \* 14. (a) Define work, power and energy. 3
- (b) Derive the expression for the kinetic energy of a body. 4
- (c) A stone of mass 1 kg is freely falling from a height of 10 m. Find its potential energy and kinetic energy after it has travelled a distance of 2 m from the top. 3

- \* 15. (a) Derive the expression for velocity and acceleration of a particle executing simple harmonic motion. 6
- (b) Define seconds pendulum and find the length of seconds pendulum when value of  $g = 9.8 \text{ m/s}^2$ . 4
16. (a) Prove that  $C_P - C_V = R$ . 6
- (b) Distinguish between isothermal change and adiabatic change. 4
17. (a) Write four methods for controlling noise pollution. 4
- (b) Write applications of Doppler's effect. 4
- (c) Define beats. Write two applications of beats. 2
18. (a) Derive the balancing condition for Wheatstone's bridge with neat diagram. 7
- (b) The force between two short magnets is  $F$ . When the pole strength is doubled and distance between the magnets is halved, what is the force between them? 3

\*\*\*