



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

**4003**

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**MARCH/APRIL—2016**  
**FIRST YEAR (COMMON) EXAMINATION**  
**ENGINEERING PHYSICS**

Time : 3 hours ]

[ Total Marks : 80

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**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 and draw diagram for it.
3. Define the terms 'time of flight' and 'range of a projectile' in case of a body projected obliquely.
4. Define simple harmonic motion and give two examples.
5. State first and second laws of thermodynamics.
6. Write any three musical sounds and noises.

- \* 7. State Hooke's law. Define stress and strain.
8. Write Newton's formula for viscous force and name the symbols.
9. Define specific resistance. Write its SI unit.
10. Write any three applications of optical fibers.

**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) Derive the expression for magnitude of resultant vector using parallelogram law. 6  
 (b) Two forces 20 N and 40 N inclined at 45° to each other are acting simultaneously on a particle. Find the magnitude of the resultant. 4
12. (a) Show that path of a projectile is a parabola in case of oblique projection. 6  
 (b) A football is hit at an angle of 60° to horizontal with a velocity of 25 m/s. Find the maximum height reached by it. 4
13. (a) Define normal reaction and angle of repose. 4  
 (b) Derive an expression for acceleration of a body sliding down a rough inclined plane. 6
- \* 14. (a) Define kinetic energy and derive an equation for the kinetic energy. 6  
 (b) A machine gun fires 240 bullets per minute. Each bullet moves with a velocity of 600 m/s. If the mass of each bullet is 2 gm, then find the power of the gun. 4

- \* 15. (a) State the laws of simple pendulum. 3  
 (b) Derive an expression for velocity of a particle executing simple harmonic motion. 5  
 (c) An SHM is given by the equation  $y = 5 \sin(2t + \pi/6)$ . Find its (i) initial displacement and (ii) initial phase. 2
16. (a) State the gas laws. 3  
 (b) Derive the gas equation,  $PV = RT$ . 6  
 (c) Write the gas equation in terms of density. 1
17. (a) What is Doppler effect? Write any four applications of Doppler effect. 2+4=6  
 (b) Write any four methods for control of noise pollution. 4
18. (a) Derive an expression for magnetic induction field strength at a point on the axial line of bar magnet. 6  
 (b) Define magnetic field and magnetic lines of force. 4

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