



C14-EE/CHPP-103

4042

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH/APRIL—2017

DEEE-FIRST YEAR 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 the dimensional formulae of (a) work done, (b) momentum and (c) specific heat.
2. Find the dot product of two vectors  $\vec{A} = 2\vec{i} + 3\vec{j} + 4\vec{k}$  and  $\vec{B} = \vec{i} + 2\vec{j} + \vec{k}$ .
3. If a body is thrown up with a velocity of 100 m/sec, find the time of ascent and time of descent ( $g = 10 \text{ m/s}^2$ ).
4. Calculate the length of a seconds pendulum at the equator where the value of  $g$  is  $9.78 \text{ ms}^{-2}$ .
5. Why  $C_p > C_v$ ? Answer briefly.
6. Write three applications of beats.

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7. Define elasticity. Name any two elastic substance.
8. Write the Newton's formula for a viscous force and name the symbols in the equation.
9. Define specific resistance and write its SI unit.
10. Write any three applications of optical fiber.

**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 and write any four properties of vector product. 6
- (b) A force of 200 N is acting on a body at an angle of  $60^\circ$  to the horizontal. Find the horizontal and vertical components of force. 4
12. (a) Define projectile, give three examples. 5
- (b) A stone is projected vertically upwards from the top of a tower with a velocity of  $4.9 \text{ ms}^{-1}$ . If it reaches the ground after 5 seconds, find the height of the tower. 5
13. (a) Write the advantages of friction. 5
- (b) Define and derive the angle of friction,  $\tan \theta$ . 5

14. (a) Define <sup>\*</sup> potential energy. Give two examples. 4
- (b) If  $F$  is the force and  $S$  is the displacement then find the work done when  $0$ ,  $90$  and  $180$ . 6
15. (a) Show that the motion of the projection of a point in circular motion is simple harmonic in nature.
- (b) The displacement of a particle in SHM is given by  $y = 6 \sin(2t + \pi/3)$  m. Find—
- (i) amplitude;
- (ii) initial phase;
- (iii) angular velocity;
- (iv) initial displacement.
16. (a) Define absolute zero temperature. 2
- (b) Calculate the value of universal gas constant and write its units and dimensional formulae. 4
- (c) State the first and second laws of thermodynamics. 4
17. Define noise pollution. Write the (a) 3 causes of noise pollution, (b) 3 effects of noise pollution and (c) 4 methods to reduce noise pollution. 10
18. (a) Derive an expression for balancing of Wheatstone Bridge by using Kirchhoff's laws and show  $P/Q = R/S$ . 6
- (b) Derive the equation for moment of couple on a bar magnet placed in a uniform magnetic field. 4

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