

C14-EC/CHPC/PET-103

4035

BOARD DIPLOMA EXAMINATION, (C-14)

OCT/NOV-2015

DECE—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.

1. Write the dimensional formulae of (a) impulse, (b) density and (c) power.
2. Find the magnitude of the vector  $\vec{A} = 3\vec{i} - 4\vec{j} + 5\vec{k}$ .
3. Write any three characteristics of acceleration due to gravity.
4. Define SHM. Give two examples of it.
5. State first law and second law of thermodynamics.
6. Define beat. Write any two applications of it.
7. Define capillarity. Write any two examples of it.
8. State Hooke's law. Define stress.
9. Define magnetic induction field strength. State its SI unit.
10. State any three applications of superconductivity.

**PART—B**

**Instructions :** (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

11. (a) Derive an expression for magnitude and direction of resultant vector in parallelogram law of vectors.
- (b) A force of  $7\vec{i} + 13\vec{j} + 9\vec{k}$  produces a displacement of  $2\vec{i} + 3\vec{j} + 5\vec{k}$ . Find the work done.
12. (a) Show that path of a projectile is parabola in oblique projection.
- (b) A stone is thrown vertically upwards from the ground with a velocity of 14 m/sec. Find the (i) maximum height it reaches and (ii) time of flight.
13. (a) Write any five advantages of friction.
- (b) A body is sliding down on a rough inclined plane which makes an angle  $30^\circ$  with horizontal. Calculate its acceleration. Take :  $\mu = 0.1414$ .
14. (a) State the principle of law of conservation of energy.
- (b) Derive the relationship between kinetic energy and momentum.
- (c) If the mass of the body is reduced to half and velocity is doubled, then how does the kinetic energy change?
15. (a) Define ideal simple pendulum. Derive an expression for its time period.
- (b) State the laws of simple pendulum.

16. (a) Derive ideal gas equation. 6  
(b) Calculate universal gas constant for one gram mole of a gas. 4
17. (a) Define longitudinal and transverse wave motion. State whether the sound waves in air are transverse or longitudinal. 5  
(b) State any five effects of noise pollution. 5
18. (a) State Kirchhoff's laws. 4  
(b) Derive the balancing condition of Wheatstone's Bridge with a neat circuit diagram. 6

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