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C–14–CHPC/EC/PET–**103**

4035

BOARD DIPLOMA EXAMINATION, (C–14)

APRIL/MAY—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.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Write the advantages of SI units.

2. Define vector and scalar and give one example for each.

3. Define acceleration due to gravity and write its SI unit.

4. The displacement of a particle in SHM is given by $y = 6\sin(0 \; 2 \; t \quad / 4)$. Find *(i)* amplitude, *(ii)* time period and *(iii)* initial phase.

5. Define absolute zero and write the relation between absolute temperature and centigrade temperature.

6. Define beat. Write any two applications of beat.

7. Define capillarity. Give an example.

8. Write the Poiseuille's equation for the coefficient of viscosity explaining the terms involved.

9. The force between two short magnets is F, when the pole strengths are doubled and distance between the magnets is halved, what is the force between them?

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)* State parallelogram law of vectors. Derive an expression for the magnitude and direction of their resultant vector. 7

(b) Two forces of magnitude of 30 N and 40 N are acting on a body perpendicular to each other. Find the resultant forces both in magnitude and direction. 3

12. *(a)* Show that the path of the projectile in oblique projection is a parabola. 6

(b) A ball is thrown at an angle 30° to the horizontal with an initial velocity of 20 m/s. Find its *(i)* maximum height reached and *(ii)* horizontal range. 4

13. *(a)* Write any four methods of minimizing friction. 4

(b) Derive the expression for the acceleration of a body moving *(i)* upwards and *(ii)* downwards on a rough inclined plane. 6

14. *(a)* Define Work, Power and Energy and write their SI units and dimensional formula. 6

(b) An engine lifts 2500 litres of water per minute from a well 30 m deep. If 25% of energy is wasted, find its power. 4

15. *(a)* Write the conditions of simple harmonic motion. 4

(b) Derive an expression to find the time period of a simple pendulum. 6

16. *(a)* State gas laws. 3

(b) Derive ideal gas equation. 5

(c) One litre of air is heated from 27 °C to 177 °C at constant pressure. Find its volume. 2

17. *(a)* Define noise pollution. 2

(b) Write any four effects of noise pollution and write any four controlling methods to minimize noise pollution. 8

18. *(a)* Describe how the specific resistance of a given wire can be determined using meterbridge. 7

(b) If 10 and 30 are connected in left and right gaps in meterbridge experiment, find balance length. 3

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