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C14–C/CM–**103**

4016

BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2015

DCE—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. State the dimensional formula for the following physical quantities :

(a) Force

(b) Pressure

(c) Frequency

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

3. Write the equations of motion of a freely falling body.

4. A body is executing SHM with an acceleration of 0·4 ms ^{2} at displacement of 0·6m. Find its acceleration at a displacement of 0·4 m.

5. Distinguish between specific gas constant and universal gas constant.

6. Write any three applications of Doppler's effect.

7. Define stress and strain. What is the relation between them?

8. Define surface tension. Give one example.

9. Define magnetic lines of force and magnetic field.

10. Write any three applications of photoelectric effect.

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 vector. Derive an expression for the magnitude and direction of their resultant vector. 2+5

(b) Find the angle between two forces 1N and 24N which produces a resultant of 25N. 3

12. *(a)* Show that the path of a projectile is a parabola in case of horizontal projection. 1+5

(b) A football is projected with a velocity of 29·4 m/s at an angle of 30° to the horizontal. Find the maximum height reached by it. 4

13. *(a)* Obtain an expression for th displacement and time taken of a body to come to rest on a rough horizontal surface. 6

(b) Find the force of friction on a body of mass 1000kg when it just start sliding on horizontal surface if 0 41. 4

14. *(a)* State the law of conservation energy. Verify the law of conservation energy in case of a freely falling body. 1+6

(b) A body of mass 10 kg is lifted to a height 20 m from the ground. Find the work done. 3

15. *(a)* Derive an expression for the time period of oscillations of a simple pendulum. 7

(b) Find the acceleration due to gravity *(g)* at a place when the length of the seconds pendulum is 1m. 3

16. *(a)* Define absolute zero temperature. Derive the relation $C_p - C_v = R$. 1+6

(b) The density of air at STP is 1·293 gm/litre. Find its density at 45 °C and at a pressure of 70 cm of Hg. 3

17. *(a)* Define musical sound and noise. 2

(b) Write any four causes and four effects of noise pollution. 8

18. *(a)* State Ohm's law. 2

(b) Derive an expression for the magnetic induction field strength B at a point on the equilateral line of a short bar magnetic. 8

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