* 6036 *

C16–EE/CHPP–103

6036

BOARD DIPLOMA EXAMINATION, (C–16)

SEPTEMBER/OCTOBER - 2020

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. Define dimensionless quantities. Write two examples.

2. Write any three properties of dot product.

3. Write the equations of motion in the case of freely falling body.

4. Define simple harmonic motion and write two examples.

5. The volume of a gas at 27 °C is 50 c.c. If the pressure remains constant, find the temperature at which its volume becomes 80 c.c.

6. Write the differences between noise and musical sound.

7. State and explain Hooke's law.

8. Explain surface tension on the basis of molecular theory.

9. State and explain Coulomb's square law of magnetism.

10. State the laws 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 vectors. Derive the expression for the magnitude and direction of resultant vector using parallelogram law of vectors. 7

(b) The magnitude of cross product is equal to 3 times the dot product. Find the angle between the two vectors. 3

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

(b) A body projected vertically upwards from the ground reaches a maximum height of 44·1 m. Find the time taken by the body to reach ground and velocity on reaching the ground. 4

13. *(a)* Define friction and derive the expression for the acceleration of a body sliding down a smooth inclined plane. 6

(b) Write different methods of reducing friction. 4

14. *(a)* Define kinetic energy and derive the expression of kinetic energy. 6

(b) A machine gun fires 360 bullets per minute and each bullet travels with a velocity of 600 m/s. If the mass of each bullet is 5 grams, find the power of the machine gun. 4

15. *(a)* Define simple pendulum and derive the expression for the velocity of a body executing simple harmonic motion. 6

(b) In SHM, the maximum acceleration and maximum velocity are 62 8 m/s^2 and 10 m/s. Find the frequency and time period. 4

16. *(a)* Derive ideal gas equation *PV RT*. 6

(b) State the first and second laws of thermodynamics. 4

17. *(a)* Define Doppler effect and write four applications of Doppler effect. 6

(b) Write any four effects of noise pollution. 4

18. *(a)* State and explain Kirchhoff's laws. 5

(b) Derive the equation for moment of couple acting on a bar magnet placed in a uniform magnetic field. 5

★ ★ ★