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C16–EC/CHPC/PET–103

6029

BOARD DIPLOMA EXAMINATION, (C–16)

OCTOBER—2020

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 any three advantages of SI units.

2. If the magnitude of scalar product of two vectors is equal to magnitude of vector product of the same vectors. Then find the angle between the two vectors.

3. A body is projected vertically upwards from the ground with a velocity of 29·4 m/s. How long will it be in air?

4. Write any three conditions for simple harmonic motion.

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

6. What is an echo? Write any two methods to minimize echoes.

7. State Hooke's law. Write different types of moduli of elasticity.

8. Define viscosity. What is the effect of temperature on viscosity of liquids?

9. The resistance of 2-metre wire is 5 ohms. Find the specific resistance, if the radius of wire is 1 mm.

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 criteria for valuation are the content but not the length of the answer.

11. *(a)* Define scalar product. Write any two examples of scalar product. 4

(b) Write any six properties of scalar product. 6

12. *(a)* Define acceleration due to gravity. Write the parameters that effect the value of *g*. 5

(b) Derive the expression for height of the tower. 5

13. *(a)* State the laws of static friction. 4

(b) Derive the expression for acceleration of a body moving down on the rough inclined plane. 6

14. *(a)* State and prove work-energy theorem. 6

(b) An engine is used to fill a tank of 3 m × 4 m × 5 m in 30 min from a well of depth 70 m. Calculate the power of motor if its efficiency is 80%. 4

15. *(a)* Show that the foot of projection in the reference circle executes SHM. 6

(b) The time period of simple pendulum is 2 seconds. If its length is increased by four times, what is the time period now? 4

16. *(a)* Define absolute zero and absolute scale of temperature. 4

(b) Derive the relation between C_P and C_V. 6

17. *(a)* Write any six methods of minimising noise pollution. 6

(b) What are beats? Write any three applications of beats. 4

18. *(a)* Derive the principle of Wheatstone's bridge using Kirchhoff's laws. 7

(b) The resistances in the left and right gaps of a meter bridge are 3 ohms and 5 ohms. Find the balancing length. 3

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