7036

BOARD DIPLOMA EXAMINATION, (C-20)

MAY—2023

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. Write dimensional formula of *(a)* work, *(b)* refractive index and *(c)* pressure.

2. State 'Triangle law' of addition of vectors and draw the diagram to represent it.

3. Write the equations of motion of a body dropped freely from a certain height above the ground.

4. Mention any three methods of minimizing friction.

5. Find the potential energy of a body of mass 10 kg which is placed at a height of 6 m above the ground (g = 9.8 m/s^2).

6. Define the terms 'displacement' and 'time period' of a particle executing simple harmonic motion.

7. State the first law of thermodynamics and write the equation for it.

8. Write any three applications of 'beats'.

9. Define specific resistance a conductor. Write its SI unit.

10. Define 'magnetic line of force'. Draw the pattern of magnetic lines of force due to *(a)* uniform magnetic field and *(b)* non-uniform magnetic field.

PART—B

8×5=40

Instructions : (1) Answer **all** questions.

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

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* Define 'cross product' of two vectors. Mention any six properties of it. 2+6

(OR)

(b) Derive an expression for the path of a projectile projected into air with an initial velocity u at an angle θ with the horizontal. 8

12. *(a)* Derive an expression for the acceleration of a body moving up on a rough inclined plane. 8

(OR)

(b) Verify the law of conservation of energy in case of a freely falling body. 8

13. *(a)* Derive an expression for time period of oscillation of simple pendulum. 8

(OR)

(b) Explain isothermal process and adiabatic process. 4+4

14. *(a)* Write any four relevant methods of controlling noise pollution. 4

A man at a certain distance from a hill produces sound. He hears echo of that sound after 3 s. Find the distance between the man and the hill if the speed of sound in air is 340 m/s. 4

(OR)

(b) Define coefficient of viscosity. Write Poiseuille's equation for determining the coefficient of viscosity and explain the terms in that equation. 2+6

15. *(a)* Derive an expression for magnetic induction field strength at a point on the axial line of a bar magnet. 8

(OR)

(b) State the laws of photoelectric emission. Write any four applications of photoelectric cell. 4+4

PART—C

10×1=10

Instructions : (1) Answer the following question.

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

(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. Explain the uniform circular motion of a particle is a combination of two perpendicular simple harmonic motions.

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