7003

BOARD DIPLOMA EXAMINATION, (C-20)

JUNE/JULY—2022

FIRST YEAR (COMMON) 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 scalar and vector. Give examples.

3. Write the equations of a freely falling body.

4. Explain the methods of reducing friction.

5. If the momentum of a body is doubled, how does its KE change.

6. Calculate the length of seconds pendulum (g = 9·8 m/s^2).

7. State the First law and Second law of thermodynamics.

8. Write the applications of beats.

9. State and explain Ohm's law.

10. Define magnetic moment and write its SI unit.

PART—B

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) Derive expressions for the magnitude and direction of the resultant vector using parallelogram law of vectors. 5+3

(OR)

(b) Derive expressions for maximum height, time of ascent, time of descent and time of flight of a body projected vertically upwards.

2+2+2+2

12. (a) A body is sliding down along a rough inclined plane which makes an angle of 30° with the horizontal and coefficient of friction is 0·1. Calculate the acceleration if the body is (i) sliding down and (ii) moving up. 4+4

(OR)

(b) Define PE and KE. Derive an expression for Kinetic Energy. 2+6

13. (a) Derive expressions for displacement and velocity of a particle performing simple harmonic motion (SHM). 4+4

(OR)

(b) State gas laws. Calculate the value of universal gas constant. 3+5

14. (a) Define doppler effect. Write its applications. 2+6

(OR)

(b) Define stress and strain. Define the different types of stress and strain. 2+3+3

15. *(a)* Describe Wheatstone's bridge and derive an expression for balancing condition of Wheatstone's bridge by applying Kirchhoff's laws. 2+6

(OR)

(b) Write Einstein's photoelectric equation. Write laws of photoelectric effect. 3+5

PART—C 10×1=10

Instructions : (1) Answer the following question.

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

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

16. Define horizontal and oblique projections. Show that the path of the projectile is a parabola in horizontal projection. 4+6

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