7003

C20-A-AA-AEI-CH-CHST-PCT-BM-TT-IT-MET-MNG-AMT-AMG-WD-CAI–103

7003

BOARD DIPLOMA EXAMINATION, (C-20)

SEPTEMBER/OCTOBER—2021 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. Define the terms absolute error, relative error and percentage error.

2. A force of 100 N is inclined at an angle of 60° with the vertical. Find its horizontal and vertical components.

3. Can a body possess velocity without having acceleration? Explain your answer.

4. Explain why it is easier to pull the roller than to push it.

5. The momentum of a body of mass 5 kg is 20 kg-m/s. Find its kinetic energy.

6. If $y = 3 \sin (2\pi/3\ t + \pi/5)$ m is the expression for displacement of a body in SHM, then find its maximum velocity and maximum acceleration.

7. State three gas laws.

8. Write any three applications of Doppler effect.

9. Define specific resistance. Write the units of specific resistance.

10. Define magnetic induction field strength. Write its units.

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)* State and explain triangle and polygon law of vectors with neat diagrams. 4+4

OR

(b) An aeroplane flying horizontally with a speed of 540 kmph releases a bomb at a height of 122·5 m above the ground. Find when and where the bomb will strike the ground. 4+4

12. *(a)* State the laws of friction and explain the necessity of friction in our daily life. 4+4

OR

(b) State and prove work-energy theorem. 8

13. *(a)* What is an ideal simple pendulum? Derive the expression for time period of simple pendulum. 2+6

OR

(b) Derive ideal gas equation. Distinguish between specific gas constant and universal gas constant. 2+6

14. *(a)* Define noise pollution. What are the units of noise pollution? Write any five methods of minimizing noise pollution. 2+1+5

OR

(b) Derive Newton's formula of viscosity. What is the effect of temperature on viscosity of liquids and gases? 4+4

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

OR

(b) What is an optical fiber? What is the working principle of an optical fiber? Write the applications of optical fibers. 2+2+4

PART—C

10×1=10

Instruction : (1) Answer the following question that carries **ten** marks.

16. Derive the relation between C_p and C_v for an ideal gas and write the differences between C_p and C_v. 7+3

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