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**C16-A-AA-BM-CH-CHST-AEI-MNG-
CHPP-EE-CHOT-M-RAC-C-CM-CHPC-
EC-PET-MET-TT-IT-PCT-103**

6003

**BOARD DIPLOMA EXAMINATION, (C-16)
MARCH/APRIL—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. State any three advantages of SI units.
2. Define the following :
 - (a) Unit vector
 - (b) Proper vector
 - (c) Negative vector
3. Write the equations of motion of a body moving with uniform acceleration.
4. State the laws of simple pendulum.
5. Write any three differences between specific gas constant and universal gas constant.

/6003

1

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6. State any three methods of minimizing noise pollution.
7. State Newton's law of viscosity. What are the SI units of co-efficient of viscosity?
8. Define capillarity. Write formula for surface tension based on capillarity.
9. State and explain Ohm's law.
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 criterion for valuation is the content but not the length of the answer.

11. (a) State any six properties of scalar product. 6
 (b) Two vectors $\vec{A} = 2\hat{i} + \hat{j} - 2\hat{k}$ and $\vec{B} = 2\hat{i} - 3\hat{j} + 2\hat{k}$ are represented by two adjacent sides of a parallelogram. Find the area of the parallelogram. 4
- * 12. (a) Show that the path of a projectile in oblique projection is parabola. 6
 (b) A ball is thrown vertically upwards from the top of a building with velocity 9.8 m/s and it reaches the ground in 3 seconds. Find the height of the building. 4
13. (a) Derive expression for acceleration of a body while moving upwards on a rough inclined plane. 6
 (b) State any four laws of static friction. 4

/6003

2

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- 14.** (a) Define kinetic energy and derive expression for kinetic energy. 6
 (b) If kinetic energy of a body is made 9 times of the initial value, keeping its mass constant, how many times does the momentum change? 4
- 15.** (a) Derive expressions for velocity and acceleration of a particle executing simple harmonic motion. 6
 (b) Find the length of seconds pendulum at a place where $g = 9.78 \text{ m/s}^2$. 4
- 16.** (a) Derive the ideal gas equation, $PV = nRT$. 6
 (b) On supplying 1800 J of heat energy to a gaseous system its volume increases by $5 \times 10^{-3} \text{ m}^3$ at constant pressure $2 \times 10^5 \text{ N/m}^2$. Calculate the increase in internal energy of the system. 4
- 17.** (a) Write any four differences between musical sound and noise. 4
 (b) Define echo. Write four methods to minimize echoes. 6
- 18.** (a) Derive the expression for magnetic induction field strength at a point on axial line of a bar magnet. 6
 (b) Two resistances 20Ω and 30Ω are connected in left and right gaps of a meter bridge. Find the balancing length. 4

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