



C09-A/AA/AEI/BM/C/CM/
CH/CHPP/CHPC/CHOT/
CHST/EC/EE/IT/M/MET/MNG/
PET/TT-RAC-103

3003

**BOARD DIPLOMA EXAMINATION, (C-09)
SEPTEMBER/OCTOBER - 2020
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 'dimensions' and 'dimensional formula' of a physical quantity.

2. The magnitude of the vector product is $\sqrt{3}$ times their scalar product. Find the angle between the two vectors.

3. Write the equations of motion for freely falling body.

4. Derive an expression for the acceleration of a body sliding downwards on a rough inclined plane.

5. Write the conditions for simple harmonic motion (SHM).

- * 6. Write any three differences between isothermal and adiabatic changes.
7. Define 'beats' and write two applications of beats.
8. Define the terms 'stress' and 'strain'.
9. State the properties of magnetic lines of force.
10. Define optical fiber and state its two applications.

PART—B

10×5=50

- Instructions :** (1) Answer *any five* questions.
 (2) Each question carries **ten** marks.
 (3) Answers should be comprehensive and the 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. 6
- (b) A force of 200 N is inclined at an angle of 30° with the vertical. Find the components in the vertical and horizontal directions. 4
12. (a) Show that the path of a projectile is a parabola in the case of oblique projection. 6
- (b) A stone is dropped from the top of a tower. If it covers 24.5 m in the last second, then find the height of the tower. 4
- * 13. (a) Define work, power and energy. 3
- (b) Derive an expression for PE of a body at a height above the ground. 4
- (c) Find the kinetic energy of a bullet of mass 50 g fired with a velocity of 300 m/s. 3

- * 14. (a) Define the terms 'amplitude', 'frequency', 'time period' and 'phase' for a particle in SHM. 4
- (b) Describe an experiment for the determination of acceleration due to gravity (g) using simple pendulum. 6
15. (a) State gas laws. 3
- (b) Prove $PV = RT$. 4
- (c) Calculate the value of universal gas constant (R). 3
16. (a) What is noise pollution? Explain the measures to be taken to minimise noise pollution. 6
- (b) Write any four applications of Doppler effect. 4
17. (a) Explain Newton's formula of viscous force and define coefficient of viscosity. 4
- (b) State and explain different moduli of elasticity. 6
18. (a) State and explain inverse square law of magnetism. 4
- (b) Explain Wheatstone bridge with a diagram and derive the condition for balancing the bridge. 6

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