



**23009**

**BOARD DIPLOMA EXAMINATION, (C-23)**

**OCTOBER/NOVEMBER—2025**

**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 SI unit of the following physical quantities.  
(i) Work done, (ii) Pressure and (iii) Universal gas constant.
2. A force of magnitude 100 N is inclined at angle  $60^\circ$  with the horizontal. Find horizontal and vertical components of the force.
3. State any three uses of solar energy.
4. State and explain Gay-Lussac's law.
5. Write any three differences between musical sound and noise.
6. A boy hears his own voice from a distant cliff after 3 seconds. Find the distance between the cliff and the boy, if the speed of sound in air is 350 m/s.
7. State and explain Coulomb's inverse square law of magnetism.
8. If two resistances  $15\Omega$  and  $30\Omega$  are connected in left and right gaps in a meter bridge respectively. Find the balancing length.
9. Define critical angle. On what principle of light an optical fiber works?
10. State any three applications of superconductors.

**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 parallelogram law of forces. Explain with one example. 5  
(b) Two forces of magnitude 30 N and 40 N are acting on a body at an angle 60°. Find their magnitude of resultant. 5
- 12.** (a) State and explain Newton's universal law of gravitation. 5  
(b) Derive relationship between  $g$  and  $G$ . 5
- 13.** (a) Write briefly about polar satellites. 5  
(b) Write any six applications of satellites. 5
- 14.** (a) Define potential energy and kinetic energy. Derive the relationship between kinetic energy and momentum. 5+2  
(b) Calculate the work done in lifting a body of mass 3 kg against gravity through a height of 12 m. 3
- 15.** (a) Derive ideal gas equation,  $PV = nRT$ . 7  
(b) Calculate the value of universal gas constant  $R$ . 3
- 16.** (a) Write any four differences between longitudinal and transverse waves. 4  
(b) State any six applications of ultrasonic waves. 6
- 17.** (a) Derive an expression for the balancing condition of Wheatstone bridge. 7  
(b) State any three properties of magnetic lines of force. 3
- 18.** (a) State the laws of photoelectric effect. 4  
(b) Explain briefly about n-type. 6

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