23009

C23-A-AA-C-M-MET-MNG-MRAC–103

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BOARD DIPLOMA EXAMINATION, (C-23)

MARCH/APRIL—2025

DAE-FIRST YEAR 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 any three advantages of S.I. system of units.

2. A force of 100 N is inclined at an angle of 30° with the horizontal. Find its horizontal and vertical components.

3. A body of mass 10 kg is lifted to a height of 20 m from the ground. If the value of acceleration due to gravity g = 9·8 m^1s^{-2}, find its potential energy at that height.

4. What is absolute scale of temperature? Write the relation between Absolute scale and Celsius scale of temperature.

5. Mention any three applications of ultrasonics.

6. Define reverberation and reverberation time in sound.

7. In a meterbridge experiment, two resistances of 15 Ω and 35 Ω are connected in left and right gaps. Find the balancing length.

8. State Coulomb's inverse square law of magnetism. Write its equation.

9. Write any three applications of optical fibers.

10. Define superconductivity and superconductors.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

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

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

11. *(a)* State and explain Lami's theorem with a neat diagram. 6

(b) The resultant of two forces of 4 N and 3 N is 5 N. Find the angle between them. 4

12. Define acceleration due to gravity (g) and universal gravitational constant (G). Derive the relation between them. 2+2+6

13. Define Geostationary satellite and polar satellite. Write any five applications of artificial satellites. 3+2+5

14. Explain the construction and working of a photo-voltaic cell with a neat diagram. 10

15. *(a)* Derive the ideal gas equation. 6

(b) A gas at 30 °C is heated to 130 °C at constant pressure. If the final volume is 240 cc, find its initial volume. 4

16. *(a)* Define longitudinal wave and transverse wave. Write one example for each. 6

(b) Write any four methods of reducing noise pollution. 4

17. *(a)* Three currents 1 mA, 3 mA and *i* mA are flowing towards a junction in a circuit. Two currents 2 mA and 3 mA are flowing away from the junction. Find the value of i. 4

(b) Define ferro, dia magnetic materials. Write one example for each. 6

18. *(a)* What is photoelectric effect? Write any four applications of photo-electric cell. 2+4

(b) Define intrinsic and extrinsic semiconductors. 4

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