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C23-EE-105

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BOARD DIPLOMA EXAMINATION, (C-23)

MARCH/APRIL—2026

DEEE – FIRST YEAR EXAMINATION

ELECTRICAL ENGINEERING MATERIAL SCIENCE

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 the applications of ACSR conductors.

2. Define semiconductor material and give example for it.

3. Classify different types of insulating materials.

4. State the permittivity values for the following di-electric materials :

(a) Air

(b) Glass

(c) Porcelain

5. Define magnetostriction.

6. State right hand thumb rule.

7. Draw the filed patterns for straight current carrying conductor.

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8. Define coefficient of coupling.

9. State Coulomb's laws of electrostatics.

10. Define capacitance and state its units.

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. State the properties and applications of nichrome.

12. Distinguish between intrinsic and extrinsic semiconductors in eight aspects.

13. State the properties and applications of PVC.

14. Explain polarization in dielectric materials with relevant figures.

15. Explain hysteresis loss and Eddy current loss.

16. Derive an expression for force acting on a current carrying conductor placed in a magnetic field.

17. *(a)* State Faraday's laws of electromagnetic induction.

(b) Explain the effect of air gap in a magnetic circuit.

18. Derive an expression for energy stored in capacitor.

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