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C23-EE-105

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BOARD DIPLOMA EXAMINATION, (C-23)

OCTOBER/NOVEMBER—2025

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. Define the process of annealing in metals.

2. Classify the semiconducting materials.

3. State the factors affecting insulation resistance.

4. List the applications of dielectric materials.

5. State the properties of ferromagnetic materials.

6. Draw a neat sketch of magnetic field pattern due to a straight current carrying conductor.

7. State Ampere's work law.

8. Write the SI unit of *(a)* Magnetic Flux Density, *(b)* Reluctance *(c)* Inductance.

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9. Draw the neat sketch of electric field pattern due to unlike charges placed side by side.

10. Define dielectric strength of a material and state the units of dielectric strength of paper and vacuum.

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. Compare copper with aluminum in any ten different aspects. 10

12. Explain the formation of N-Type semi conductor with neat diagrams. 6+4

13. *(a)* Distinguish among conductors, insulators and semiconductors any six different aspects. 6

(b) Draw neat sketches of energy band diagram of condoctors, semi conductors and insulators. 4

14. What is an electric dipole? Explain polarization in dielectic materials with neat diagrams. 2+4+4

15. Explain hysteresis loop in magnetic material with neat diagrams. 6+4

16. Explain the mechanical force produced in a current carrying conductor placed in magnetic filed with neat diagrams. 6+4

17. Derive an expression for energy stored in a magnetic fileld with neat diagrams. 6+4

18. Derive an expression for capacitance of a parallel plate capacitor with neat diagrams. 6+4

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