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C20-BM–105

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BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

DBME – FIRST YEAR EXAMINATION

BASIC ELECTRICAL ENGINEERING

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 electric charge.

2. State Ohm's law.

3. Define the term 'node'.

4. Compare magnetic circuit with electric circuit.

5. Define absolute permeability.

6. Define the co-efficient of coupling.

7. Define capacitances and give its SI unit.

8. State Joule's Law.

9. Draw electric iron.

10. Define frequency.

PART—B

8×5=40

Instructions : (1) Answer **all** questions.

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

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

11. *(a)* *(i)* Derive the formula for equivalent resistances connected in series combination. 4

(ii) Write the temperature coefficient of resistance. 4

(OR)

(b) *(i)* Mention transformation formulae from star to delta. 4

(ii) State Kirchhoff's laws. 4

12. *(a)* Draw and explain the field patterns due to straight current carrying conductor.

(OR)

(b) Explain the terms *(i)* leakage flux and *(ii)* leakage co-efficient.

13. *(a)* Derive the expression for dynamically induced E.M.F.

(OR)

(b) Calculate the equivalent inductances when self-inductances are connected in series.

14. *(a)* Explain the charge residing outside the surface of sphere.

(OR)

(b) Explain electrostatic induction.

15. *(a)* Explain *(i)* phase and *(ii)* phase difference.

(OR)

(b) Explain the concept of single-phase AC circuits.

PART—C

10×1=10

Instructions : (1) Answer the following question.

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

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

16. A flux of 30 m Wb links with a coil having 500 turns and carrying a current of 2.5 A. Also calculate the emf induced in the coil if current through it reverses in 2 ms.

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