6040

BOARD DIPLOMA EXAMINATION, (C-16)

AUGUST/SEPTEMBER—2021

DEEE - 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. State Ohm's law.

2. Two resistances 2 ohm and 20 ohm are connected in parallel. Find the equivalent resistance.

3. Define electric power and give its units.

4. Define thermal efficiency.

5. Draw the field pattern due to solenoid.

6. Define Ampere.

7. State Faraday's laws of Electro-Magnetic Induction.

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8. State Lenz's law.

9. State Gauss theorem.

10. Define Absolute and Relative permittivity.

PART—B

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. Derive formula for resistance at any temperature, $R_t = R_0(1 + \alpha_0 t)$.   10

12. Derive an expression for equivalent resistance when three resistances are connected in (a) series and (b) parallel.   5+5=10

13. A house has the following loads :   10

(a) 10 lamps 100 watts each working 10 hours a day

(b) 5 ceiling fans 20 watts each working 6 hours a day

(c) One 1 kW heater working 1 hour a day

(d) One 1 HP motor efficiency 85% working 2 hours a day

*Calculate the monthly electricity bill for the month of September, if rate of charge per unit is ` 2.

14. Explain the application of heat produced due to electric current for the following :   4+3+3=10

(a) Electric kettle

(b) Geyser

(c) Infrared lamp

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15. Derive an expression for the magnitude of the force on a current carrying conductor inside a magnetic field.   10

16. Explain dynamically and statistically induced EMF.   10

17. Develop expression for energy stored in a magnetic field.   10

18. Define the following terms :   2+2+2+2+2=10

    (a) Electric flux

    (b) Electric flux density

    (c) Electric field intensity

    (d) Capacitance

    (e) Electric potential

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