6040

BOARD DIPLOMA EXAMINATION, (C-16)

JUNE/JULY—2022

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. Define Electric Current and EMF.

2. The resistance of a coil of wire increases from 40Ω at 10 °C to 48·25 Ω at 60 °C. Find the temperature coefficient at 0 °C.

3. Define electrical power and electrical energy. Mention its units.

4. What are the parts of the Electric kettle?

5. State the Fleming's Right hand rule.

6. Define magnetic leakage factor.

7. Explain dynamically induced EMF.

8. Define *(a)* MMF, *(b)* Flux and *(c)* Reluctance.

9. Draw the field pattern of isolated positive charge and isolated negative charge.

10. Write any three uses of Capacitors.

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. *(a)* State the laws of resistance.

(b) A silver wire has a resistance of 5Ω, what will be the resistance of manganin wire having a diameter half of the silver and its length being one-fourth. The specific resistance of manganin is 30 times that of silver. 5+5=10

12. Calculate the current in 20Ω resistor of the below figure. 10
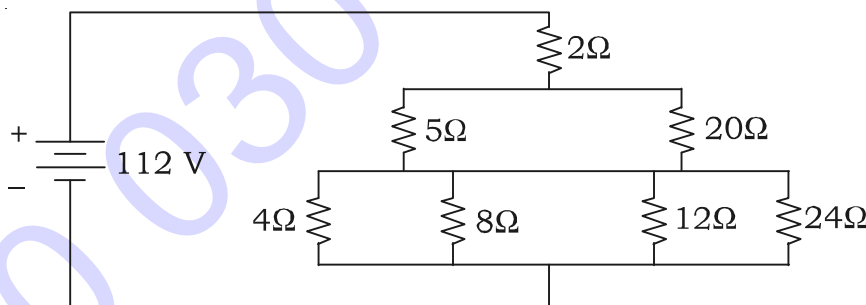
13. A house has the following loads : 10

(a) 5 lamps of 60 W each, working 8 hours a day

(b) 4 lamps of 100 W each, working 5 hours a day

(c) 2 heaters of 1000 W each, working for 3 hours a day

(d) One 1 HP pumpset of efficiency 85% running 2 hours/day

Calculate the monthly electricity bill at the rate ₹ 1·35 per unit for 50 units and ₹ 2·35 per unit for the remaining units.

14. *(a)* Explain the operation of electric Iron with a neat sketch. 5

(b) State and explain Joules law of heating. 5

15. *(a)* Compare Electric and Magnetic Circuits. 5

(b) Derive an expression for the force between two parallel current carrying conductors. 5

16. *(a)* Derive an expression for energy stored in a magnetic field. 5

(b) State and explain Faraday's laws of electromagnetic induction. 5

17. *(a)* State and explain Lenz's law with a neat sketch. 5

(b) Derive the formula $L = L_1 + L_2 + 2M$. 5

18. Explain Coulomb's Laws of electrostatics with a neat sketch. 10

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