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C20-EC-106

7033

BOARD DIPLOMA EXAMINATION, (C-20)

JANUARY—2023

DECE – FIRST YEAR EXAMINATION

ELEMENTS OF 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 magnetic flux and flux density.
2. Define the terms absolute permeability and relative permeability.
3. Classify various types of induced e.m.f.
- * 4. State Ohm's law.
5. Define 'Q' factor of a coil.
6. Define the terms (a) Reactance and (b) Impedance.
7. State the losses in a transformer.
8. State the reason for using laminations in transformer core.
9. What is the necessity of starter for DC motor?
10. State the working principle of DC motor.

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PART—B

8×5=40

- Instructions :
- (1) Answer all questions.
 - (2) Each question carries eight marks.
 - (3) Answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

11. (a) Explain the charging and discharging of capacitor.

(OR)

(b) State and explain Faraday's laws of Electromagnetic Induction.

12. (a) When two resistances $10\ \Omega$ and $20\ \Omega$ are connected in series across a supply of 220 V, determine the current flowing in each resistance and voltage drop across each resistance.

(OR)

(b) When two resistances of $5\ \Omega$ and $20\ \Omega$ are connected in parallel across a supply of 240 V, calculate the total current and current through each resistance.

13. (a) Explain the effect of AC flowing through RLC series circuit.

(OR)

(b) Explain the admittance method for solving parallel AC circuits.

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14. (a) Explain the working principle of a transformer with neat sketch.

(OR)

(b) Explain the working principle of auto transformer.

15. (a) Explain the significance of back EMF.

(OR)

(b) Explain the principle of operation of stepper motor.

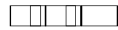
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PART—C

10×1=10

- Instructions :
- (1) Answer the following question.
 - (2) The question carries ten marks.
 - (3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. A circuit consists of 12Ω resistance in series with a capacitance of $100 \mu\text{F}$. It is connected across a supply of 230 V, 50 HZ. Find (a) reactance, (b) impedance, (c) current, (d) power factor and (e) power.



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