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C16-EC-106

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BOARD DIPLOMA EXAMINATION, (C-16)
JUNE/JULY—2022

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 field intensity and flux density.
2. State Fleming's left hand rule.
3. Calculate equivalent capacitance when two capacitors of 20 micro farads and 15 micro farads are connected in series.
4. Define electric potential and potential difference.
5. Define inductive reactance and power factor.
6. Define quality factor of a coil.
7. State the reasons for using laminated core in transformers.
8. List the applications of transformers.
9. What is the need for starter in DC motors?
10. State the important specifications of AC motors.

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* 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.

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| 11. | (a) State and explain Coulomb's law of magnetism. | 5 |
| | (b) Explain dynamically and statically induced EMF. | 5 |
| 12. | (a) Compare electrical circuit with magnetic circuit. | 5 |
| | (b) Find the energy stored when three capacitors of 10 μF , 25 μF and 50 μF are connected in series across 400 V supply voltage. | 5 |
| 13. | Explain the charging and discharging of a capacitor. | 10 |
| 14. | Explain the effect of AC through capacitor with vector diagrams. | 10 |
| 15. | A resistance of 20 Ω , inductance of 0.2 H and capacitance of 150 μF are connected in series and are fed by a 230 V, 50 Hz supply. Find (a) inductive reactance, (b) capacitive reactance, (c) impedance of the circuit, (d) current flowing through the circuit and (e) power factor. | 10 |
| 16. | (a) Explain the working of auto transformer. | 6 |
| | (b) State the losses in a transformer. | 4 |
| * 17. | Derive the voltage equation of DC motor and condition for maximum power. | 10 |
| 18. | Explain the working of servo motor. | 10 |

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