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C16-RAC/M–305

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BOARD DIPLOMA EXAMINATION, (C-16)

MARCH/APRIL—2021

DRAC - THIRD SEMESTER EXAMINATION

BASIC ELECTRICAL AND ELECTRONICS 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 the ohm's law.

2. Define the following terms :

(a) Self Inductance

(b) Mutual Inductance.

3. List the parts of a DC machine.

4. Write the applications of DC Series Motors.

5. Define Average value and R.M.S value.

6. Give the applications of 1-ϕ induction motor.

7. State the types of starters used in AC machines.

8. Draw the symbol and characteristics of Zener diode.

9. Write the classification of measuring instruments.

10. What are the effects of electric shock?

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)* Three resistances 10 Ω, 20 Ω and 30 Ω are connected in parallel across a supply of 230 V. Calculate the equivalent resistance, current and voltage across each resistor.

(b) State Lenz's Law. 7+3

12. *(a)* State Faraday's law of electromagnetic induction.

(b) Explain dynamically and statically induced emf. 5+5

13. Explain the speed control of DC shunt motor by field control method with legible sketch. 10

14. *(a)* Sketch the connection of welding generator and label the parts.

(b) Explain forward and reverse running of 1-ϕ induction motor. 5+5

15. A circuit consists of 10 Ω resistance in series with a inductance of 100 mH. It is connected across 1-φ supply of 230 V, 50 Hz. Find *(i)* impedance, *(ii)* current flowing through the circuit, *(iii)* power factor and phase angle and *(iv)* power consumed in the circuit. 10

16. Explain the Construction and working principle of an Alternator. 10

17. *(a)* Draw the input and output characteristics of Common Emitter configuration. 5

(b) Explain the operation of LED. 5

18. Explain construction and working principle of single phase induction type Energy meter with neat sketch. 10

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