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C20-M–303

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BOARD DIPLOMA EXAMINATION, (C-20)

FEBRUARY/MARCH — 2022

DME - 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 laws of resistance.

2. Write three advantages of polyphase system over single-phase system.

3. State the methods of speed control of DC motors.

4. State any three effects of electric shock.

5. List out the applications of capacitor-start motor and repulsion motor.

6. Classify moving coil instruments based on usage for DC and AC.

7. What is controlling torque in indicating instrument?

8. List the any six materials required for pipe earthing.

9. Name the three possible transistor connections.

10. Draw the symbol for NPN, Zener diode and PNP transistors.

PART—B

8×5=40

Instructions : (1) Answer **all** questions.

(2) Each question carries **eight** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* Derive the expression for average power of R-C circuit connected in series across an single-phase AC source.

(OR)

(b) Derive the expressions for self-inductance, mutual inductance and coefficient of coupling.

12. *(a)* Describe the construction and working principle of a 1-phase induction motor.

(OR)

(b) Derive the relation between currents and voltages of DC shunt motor and long shunt DC compound motor.

13. *(a)* Describe the construction and working of attractive type moving iron measuring instrument.

(OR)

(b) Describe the working of induction type single-phase energy meter.

14. *(a)* Explain the pipe earthing with a legible sketch.

(OR)

(b) Explain the first aid methods to be followed after electrocuted.

15. *(a)* Explain the input and output characteristics of common base configuration.

(OR)

(b) Explain the formation of potential barrier in a PN junction.

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) The question carries **ten** marks.

(3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.

16. Why electric shocks can be avoided by adopting certain procedures?

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