



C14-M-303

4251

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**MARCH/APRIL—2018**  
**DME—THIRD SEMESTER EXAMINATION**

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Time : 3 hours ]

[ Total Marks : 80

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**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. A resistance of 7 ohms is connected in series with a parallel combination of 4 ohms and 5 ohms. If the applied voltage is 20 V, find the voltage across 7 ohms resistance.
2. Define magnetic field strength.
3. Explain Fleming's right-hand rule.
4. State the relationship between line and phase voltages, and line and phase currents in star connected circuit.
5. Define RMS value.
6. Write EMF equation of a transformer.
7. Explain significance of back EMF in a motor.

- \* 8. Explain indicating, recording and integrating instruments.
9. Explain conductor, semiconductor and insulators.
10. What is the need of earthing of electrical equipment?

**PART—B**

10×5=50

**Instructions :** (1) Answer *any five* questions.

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

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

11. (a) State and explain Faraday's laws of electromagnetic induction. 5
- (b) Distinguish between self-induced e.m.f. and mutual induced e.m.f. 5
12. (a) Explain Kirchhoff's laws. 4
- (b) An air-cored inductive coil of 1 m length and 5 cm mean diameter is wound with 1500 turns. What will be the energy stored by the coil when it carries a current of 20 A? 6
13. (a) Explain DC welding generator. 5
- (b) Explain the working principle of a DC motor. 5
14. An inductive coil having a resistance of 15 ohms takes a current of 4 A when connected to a 100 V, 60 Hz AC supply. If the coil is connected to a 100 V, 50 Hz supply, calculate—
- (a) the current;
- (b) the power;
- (c) the power factor. 3+3+4=10

- \* 15. (a) Explain the working principle of 3-phase induction motor. 5  
(b) Explain the working principle of AC generator. 5
16. (a) Describe the star-delta starter with a neat sketch. 5  
(b) Explain speed control of DC shunt motor with neat circuit diagram. 5
17. (a) Explain the construction and working of transistors. 6  
(b) Compare between *P*-type and *N*-type semiconductors in any four aspects. 4
18. Explain the construction and working of an AC single-phase induction-type energy meter. 6+4

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