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Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (EE) (2018 Batch) (Sem.-3)

**ELECTRICAL MACHINES-I**

Subject Code : BTEE-303-18

M.Code : 76383

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

**Write briefly :**

1. What do you mean by MMF? Explain.
2. What is B-H curve? Discuss its significance.
3. Discuss the importance of magnetic circuits in engineering.
4. Explain what happens when a d.c. motor is connected across an a.c. supply?
5. Why is it preferable to install two or more transformers in parallel than one large unit?
6. What do you mean by the term Harmonics? Discuss.
7. Discuss the significance of back emf in a DC machine.
8. Explain the principle of DC machines.
9. What do you mean by critical speed of DC machine? Explain.
10. Why back to back test is performed in DC machine? Explain.

### SECTION-B

11. Discuss (in detail) the working principle and construction of a single-phase transformer.
12. Explain the open circuit characteristics of separately excited DC generator.
13. What is the significance of magnetic flux lines? Discuss the influence of highly permeable materials on the magnetic flux lines.
14. Discuss the function and constructional details of the following parts of the DC machine :
  - a) Commutator
  - b) Brush Assembly
  - c) Interpoles
15. Discuss the principle, construction and applications of an auto transformer.

### SECTION-C

16. Discuss the VI characteristics and torque speed characteristics of separately excited, shunt and series motors.
17. Explain the short circuit and open circuit tests of single-phase transformer. Also discuss the importance of these tests.
18. Discuss the following :
  - a) Three winding Transformer
  - b) Speed control method of DC motor

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**