



Reg. No. : .....

Name : .....

**Fifth Semester B.Tech. Degree Examination, January 2018  
(2008 Scheme)**

**08.502 : ELECTRICAL TECHNOLOGY (MPU)**

Time : 3 Hours

Max. Marks : 100

**Instructions :** Answer *all* questions from Part – A (4 marks *each*) and *one full* question from *each* module in Part – B.

**PART – A**

1. Derive the equation for back emf in a dc motors.
2. Classify different sorts of DC machines according to their field excitation.
3. What is meant by critical resistance and critical speed of dc generator ?
4. Specify the conditions to realize an ideal transformer.
5. Briefly explain OC test on 2 winding transformer.
6. Explain star-delta starting mechanism for induction machine.
7. Why a single phase induction motor is not self-starting ?
8. Explain any one method of regulation calculation used in alternator.
9. Derive the emf equation of an alternator.
10. What are speed control methods for locomotives ?

**PART – B**

**Module – 1**

11. a) What is meant by armature reaction in DC machine ? Explain the different effects with figures. 10
- b) Explain and write the equations for total losses in a DC generator. 10

OR

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12. a) Explain the constructional details of practical DC generator. Also mention its various parts. 10
- b) Explain in detail with figures, any one starting method of dc motors. 10

### Module – 2

13. Derive the equations for resistance and leakage reactance of single phase transformer referred to primary and secondary. Also plot the vector diagram for different loads. 20

OR

14. How does the rotating field produced in a 3 phase induction motor from 3 phase supply ? Plot the vector representation for  $0^\circ$ ,  $60^\circ$  and  $120^\circ$ . 20

### Module – 3

15. a) Explain the working of stepper motor and universal motor. 12
- b) Explain different systems of power supply used in electric traction. 8

OR

16. a) What is meant by V and inverted V curves ? Explain each one in detail. 13
- b) Explain the principle of operation of synchronous machine. 7
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