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Reg. No. : .....

Name : .....

Fourth Semester B.Tech. Degree Examination, February 2016
(2013 Scheme)
13.403 : ELECTRICAL TECHNOLOGY
(MP)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions.

1. What are the functions of interpoles in DC Machines ?
2. Series motors are never started on no load. Why ?
3. Why core loss of transformer is taken as constant ?
4. Define synchronous speed and slip of 3 phase induction motor.
5. What are the applications of instrument transformers ?
6. Draw and explain the phaser diagram of split phase motor.
7. Define step angle and holding torque in stepper motors.
8. What are the advantages of stationary armature in synchronous generators ?
9. What is Regenerating braking ?
10. Mention the difference between carbon and metal arc welding. **(10×2=20 Marks)**

PART – B

Answer **any one full** question from **each** Module.

Module – I

11. a) Explain the load characteristics of shunt generator. What are the reasons for voltage drops in shunt generator ? **12**

    b) A 250V shunt motor takes 5A on no load at runs at 1000 rpm. The armature and field resistances are 0.2Ω and 250Ω respectively. Assuming constant flux, calculate the speed when loaded and taking 50A. **8**

12. a) Explain how torque is developed in DC motor and derive the Torque Equation. 12

b) A long shunt compound generator has armature, series and shunt field resistances of 0.15Ω , 0.2Ω and 200Ω respectively. It supplies a load current of 180A at 400V. Calculate the power output of armature. 8

Module – II

13. a) Draw and explain the equivalent circuit of transformer. How the parameters in the equivalent circuit are obtained ? 15

b) A 3 phase, 50Hz 6 pole induction motor runs at 950 rpm. Determine the slip and the frequency of rotor emf. 5

14. a) Explain no load and blocked rotor tests on induction motor. 10

b) A single phase transformer with ratio 440/100V takes a no load current of 5A at 0.2 pf lagging. If the secondary supplies a current of 120A at p.f. of 0.8 lag, estimate the primary current and power factor. 10

Module – III

15. a) Explain the construction and working of universal motor with neat sketches. 12

b) Explain the principle of operation of synchronous motor. 8

16. a) Define voltage regulation of alternator. Describe how this is predetermined by EMF method. 12

b) Calculate the no load terminal voltage of a 3 phase, 8 pole star connected alternator having the following data :

Flux per pole = 55 mwb, total no. of slots in the armature = 72, no. of conductors per slot = 10. Distribution factor = 0.96. Assume full pitch coils. 8

Module – IV

17. a) What is the fundamental difference between Arc welding and Resistance welding ? Discuss the operation of any one type of Resistance welding machine. 12

b) Explain the characteristics of dc series motors for traction. 8

18. a) Explain the various methods of speed control used in induction motors for traction. 12

b) Explain how Rheostatic braking is employed with dc motors. 8