(Pages : 2) **A – 4173**

Reg. No. : .....

Name : .....

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

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions :

1. How does armature reaction affect the performance of DC generator ?
2. What is the necessity of starter for DC motor ?
3. Define voltage regulation in transformer.
4. What are the losses in transformer and on what factors they depend ?
5. What is the advantage of slip ring induction motor over squirrel cage induction motor ?
6. What is universal motor ? List the applications.
7. How does armature current of synchronous motor vary with filed current ?
8. Give classification of single phase motors.
9. Mention the various systems of traction.
10. What is plugging ?

(10×2=20 Marks)

PART – B

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

Module – I

11. a) Explain OCC of shunt generator. What are the conditions of building up of voltage in shunt generator ? 12

    b) A 440 V DC shunt motor takes 32A and runs at 750 rpm. The armature and field resistances are 0.25 Ω and 220 Ω respectively. Calculate the armature torque developed. 8

12. a) Explain the various losses in DC machine and find the condition for maximum efficiency. 12

    b) A short shunt compound generator has armature, series and shunt field resistances of 0.1 Ω , 0.15 Ω and 110 Ω respectively. Find the generated emf if it supplies 4 kw loads at 250 V. Contact drop/brush = 1 V. 8

Module – II

13. a) Discuss the operation and applications of autotransformer. Derive the expression for saving of copper. 15

    b) A 10 pole alternator driven at 720 rpm supplies a 6 pole induction motor. If the motor is running at 1175 rpm, determine the % slip. 5

14. a) Obtain the Torque Equation and explain the torque slip characteristic of 3 phase induction motor. 10

    b) The efficiency of a 400 KVA single phase transformer was 98.77% when delivering full load at 0.8 pf and 99.13% at half full load, upf. Find the efficiency at 3/4 full load, 0.9 pf. 10

Module – III

15. a) Explain the principle of operation of single phase induction motor. 10

    b) Derive the EMF equation of Alternator. 10

16. a) Explain the methods of starting of synchronous motor. 10

    b) Explain types of alternators. What are the advantages of stationary armature in alternators ? 10

Module – IV

17. a) Explain how rheostatic and regenerative braking is obtained with dc series motors. 13

    b) Draw and explain with schematic, the principle of AC electric traction. 7

18. a) Discuss the principle of arc welding and the difference between carbon and metal arc welding with their relative merits. 10

    b) Explain the various methods of speed control in dc traction motors. 10
