

1172**Code : 15EE-41T**

Register Number

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IV Semester Diploma Examination, April/May-2017**TRANSFORMERS AND A.C. MOTORS****Time : 3 Hours]****[Max. Marks : 100**

- Note :** (i) Answer any **six** questions from Part-A. (Each question carries 5 marks.)
(ii) Answer any **seven** questions from Part-B. (Each questions carries 10 marks.)

PART – A

1. Explain the working principle of transformer. 5
2. List the conditions for parallel operation of two single phase transformers. 5
3. Explain the star-star connection of transformer. 5
4. Explain with diagram the construction of squirrel cage rotor. 5
5. What is the effect of change in supply voltage on starting torque of an induction motor and explain. 5
6. Explain the necessity of starter for three phase induction motor. 5
7. Compare synchronous motor with induction motor. 5
8. Explain hunting in synchronous motors and how can it be prevented. 5
9. Describe the working of capacitor start induction motor. 5

PART – B

10. (a) Explain with sketch the construction of core type transformer. 5
(b) The maximum flux density in the core of 250/3000 volts, 50 Hz, single phase transformer is 1.2 Wb/m^2 . If the emf per turn is 8 volts, determine (i) primary and secondary turns (ii) area of the core. 5

11. (a) Explain with a neat vector diagram the operation of a transformer on no load. 5
(b) Draw the equivalent circuit diagram of a transformer. 5
12. (a) What are the various losses in a transformer? 3
(b) A 100 kVA lighting transformer has a full load loss of 3 kW, the losses being equally divided between iron and copper. During a day, the transformer operates on full load for 3 hours, one half load for 4 hrs, the output being negligible for the remainder of the day. Calculate the all-day efficiency (Assume unity p.f.) 7
13. (a) Explain the necessity of cooling of transformer. 5
(b) A three phase 4 pole. 50 Hz induction motor runs at 1000 rpm. Determine slip. 5
14. (a) Define slip and write the equation. 3
(b) Explain the principle of operation of 3-phase induction motor with a neat diagram. 7
15. (a) Write the condition for maximum torque of a 3-phase induction motor under running condition. 2
(b) The power input to a 3-phase induction motor is 60 kW. The stator losses are 1 kW. Determine the mechanical power developed and the rotor copper loss per phase if the motor is running with a slip of 3%. 8
16. (a) Write the different methods of speed control of induction motor. 3
(b) Explain with circuit diagram the working of star-delta starter. 7
17. (a) List any three applications of a synchronous motor. 3
(b) Analyse the effect of change in excitation at constant load on synchronous motor. 7
18. (a) Write the classification of single phase motors. 4
(b) Explain the working of Linear induction motor. 6
19. (a) Explain the working of Induction generator. 5
(b) Explain magnetic levitation. 5