

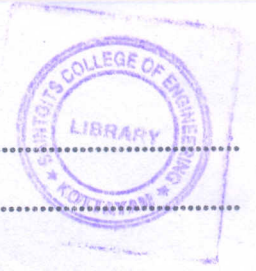
S4ME (New)

G 1561

(Pages : 2)

Reg. No.....

Name.....



B.TECH. DEGREE EXAMINATION, MAY 2015

Fourth Semester

Branch : Automobile/Mechanical/Production Engineering

AU 010 406/ME 010 406/PE 010 406—ELECTRICAL TECHNOLOGY (AU, ME, PE)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What are the functions of interpoles in DC machines ?
2. Discuss the advantages and disadvantages of Swinburne's Test.
3. Why single phase induction motor is not self starting ?
4. Draw and explain the mechanical characteristics of DC shunt motor.
5. Discuss the principle of Induction heating.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Explain the reasons why a DC shunt generator fails to excite.
7. Derive the EMF equation of Transformer.
8. Explain the types of rotor construction in Three-phase induction motors.
9. What are individual drive and group drives ?
10. Draw and explain the characteristics of SCR.

(5 × 5 = 25 marks)

Part C

Answer all questions.

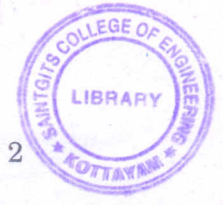
Each question carries 12 marks.

11. (a) Explain the load characteristics of DC shunt generator. (6 marks)
- (b) A long shunt compound generator supplies 100 A at 240 V. The resistances of Armature, series and shunt fields are 0.15 Ω, 0.25 Ω and 100 Ω respectively. The magnetic and mechanical losses are 1600 W. Calculate the efficiency. (6 marks)

(6 marks)

Or

Turn over



2

G 1561

12. (a) Explain the powerflow diagram in DC generator. (6 marks)
- (b) A 4 pole tap wound shunt generator supplies a load of 5 kW at 200V. The field and armature resistances are 50Ω and 0.2Ω respectively. Calculate the current per parallel path in the armature and power output of armature. (6 marks)

13. (a) Discuss the various methods of speed control in DC motor. (6 marks)
- (b) The no load current of a transformer is 4A at 0.25 pf when supplied at 250 V, 50 Hz. Calculate the maximum value of flux in the core and the iron loss of the transformer. (6 marks)

Or

14. (a) Explain how efficiency and regulation are predetermined in transformer. (6 marks)
- (b) Obtain the equivalent circuit of 200/400 V transformer with respect to LV side from the following data :
- OC test : 200 V, 0.9 A, 40 W on LV side
- SC test : 15V, 10 A, 85 W on HV side. (6 marks)

15. (a) Explain the method of finding regulation of Alternator by MMF method. (6 marks)
- (b) Derive the torque equation and obtain torque slip characteristics of three phase induction motor. (6 marks)

Or

16. (a) Explain the principle of operation of synchronous motor. (6 marks)
- (b) Explain No load and Blocked rotor tests on 3 phase induction motor. (6 marks)
17. (a) Explain the different systems of electric traction. (6 marks)
- (b) Write short notes on Rheostatic braking and Plugging. (6 marks)

Or

18. (a) Discuss the various factors affecting choice of motors in mines. (6 marks)
- (b) What is electric braking and list out its advantages ? (6 marks)
19. (a) Explain different types of power choices. (6 marks)
- (b) Write short notes on SCR rating. (6 marks)

Or

20. Explain the following :—
- (a) Dielectric heating. (6 marks)
- (b) Resistance welding. (6 marks)

[5 × 12 = 60 marks]