



Reg. No. : .....

Name : .....

**Fifth Semester B.Tech. Degree Examination, December 2012  
(2008 Scheme)**

**08.504 : ELECTRICAL DRIVES & CONTROL (T)**

Time : 3 Hours

Max. Marks : 100

**PART – A**



Answer **all** questions. **Each** question carries **4** marks.

1. Explain the function of commutator in a dc generator.
2. A 4 pole generator, having wave wound armature winding has 51 slots, each slot containing 20 conductors. What will be the voltage generated in the machine when driven at 1500 rpm assuming the flux per pole to be 7.0 mwb.
3. Explain the electrical characteristic of dc series motor.
4. Give the features of dc shunt motor and series motor. List its applications.
5. What are the requirements of a drive circuit for power BJT ? Explain any one drive circuit.
6. Give the advantages and disadvantages of power BJT and power MOSFET.
7. Explain the principle of phase controlled converter. Give its significance.
8. With block schematic explain online UPS.
9. Compare vector control and scalar control.
10. Draw the circuit diagram of half bridge inverter and explain its operation.

**PART – B**

Answer **any two** questions from **each** Module. **Each** question carries **10** marks.

**MODULE – 1**

11. a) Explain the principle of operation of dc generator.  
b) A shunt generator delivers 100 A at 500 V the resistances of field and armature are  $125\Omega$  and  $0.025\Omega$  respectively. Brush drop is IV at each brush. Calculate the generated emf and power developed in armature.



12. Explain the operating characteristics of dc shunt motor.
13. a) With schematics, explain the working of 3 phase induction motor.  
b) A 4 pole 3 phase Induction motor operates from a supply whose frequency is 50 Hz. Calculate
  - a) Speed at which magnetic field of stator is rotating
  - b) Speed of the rotor when slip is 0.04.



### MODULE – 2

14. a) Give the features of IGBT.  
b) Draw the structure of IGBT and explain its working.
15. a) Explain the principle of PWM switching control.  
b) With circuit diagram, explain the operation of two quadrant converter.
16. Explain the operation of single phase full wave controlled rectifier with resistive load.

### MODULE – 3

17. Draw circuit diagram and explain the operation of full bridge inverter.
  18. With schematics, explain sinusoidal PWM.
  19. a) How speed of induction motor is controlled by varying stator frequency and voltage ?  
b) Explain the principle of vector control.
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