



Reg. No. :

Name :

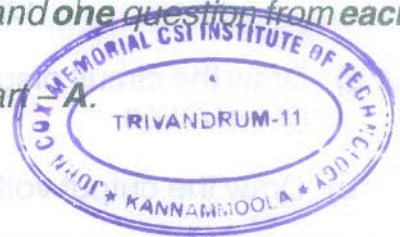
**Eighth Semester B.Tech. Degree Examination, April 2014
(2008 Scheme)**

08.804 : POWER SEMI CONDUCTOR DRIVES (E)

Time : 3 Hours

Max. Marks : 100

- Instructions :** 1) Answer **all** questions from Part – A and **one** question from **each** Module of Part – B.
2) **Each** question carries 4 marks in Part – A.



PART – A

1. Explain various classes of motor duty with the help of torque-time characteristics.
2. Explain the operation of single-phase-to-single-phase cyclo converter using integral cycle control.
3. Explain the concepts of circulating and non circulating current modes in cyclo converter.
4. Explain the method of speed control of a dc motor using 3-phase half controlled rectifier.
5. What is meant by regenerative braking ? How is it achieved in a chopper-fed dc motor drive ?
6. How is it possible to have a four quadrant drive employing single converter and reversing switch ?
7. Explain the method of stator frequency control employed in induction motor speed control.
8. What is meant by v/f control of induction motor ? Explain how high starting torque is achieved using this control.
9. Draw the schematic diagram of rotor chopper speed control scheme employed for induction motors.
10. Explain the salient features of a current source inverter fed induction motor drive.

(10×4=40 Marks)



PART – B

Module – I

11. a) What are the components of load torque ? 10
- b) A drive is having moment of inertia of 15 kg-m^2 and torque characteristics of $T = 100 - 0.1 N$ N – m, where N is the speed in rpm. For a passive load torque $T_l = 0.06 N$ N – m, the drive has to be reversed from its steady state operating condition. Calculate the time of reversal. 10

OR

12. a) Draw the circuit diagram of a 3 phase half wave cyclo converter and explain its operation. 15
- b) Draw the output voltage waveform from a 3 phase half wave cyclo converter. 5

Module – II

13. Obtain the equation of speed torque characteristics of a chopper fed dc separately excited motor. 20

OR

14. Obtain the speed torque characteristics of a 3 phase fully controlled rectifier fed separately excited dc motor. 20

Module – III

15. a) Draw the block diagram of closed loop control of static Scherbius drive and explain. 15
- b) Explain the concept of static Kramer Drive. 5

OR

16. Explain the operation of self-controlled synchronous motor drive employing load commutated inverter. 20