

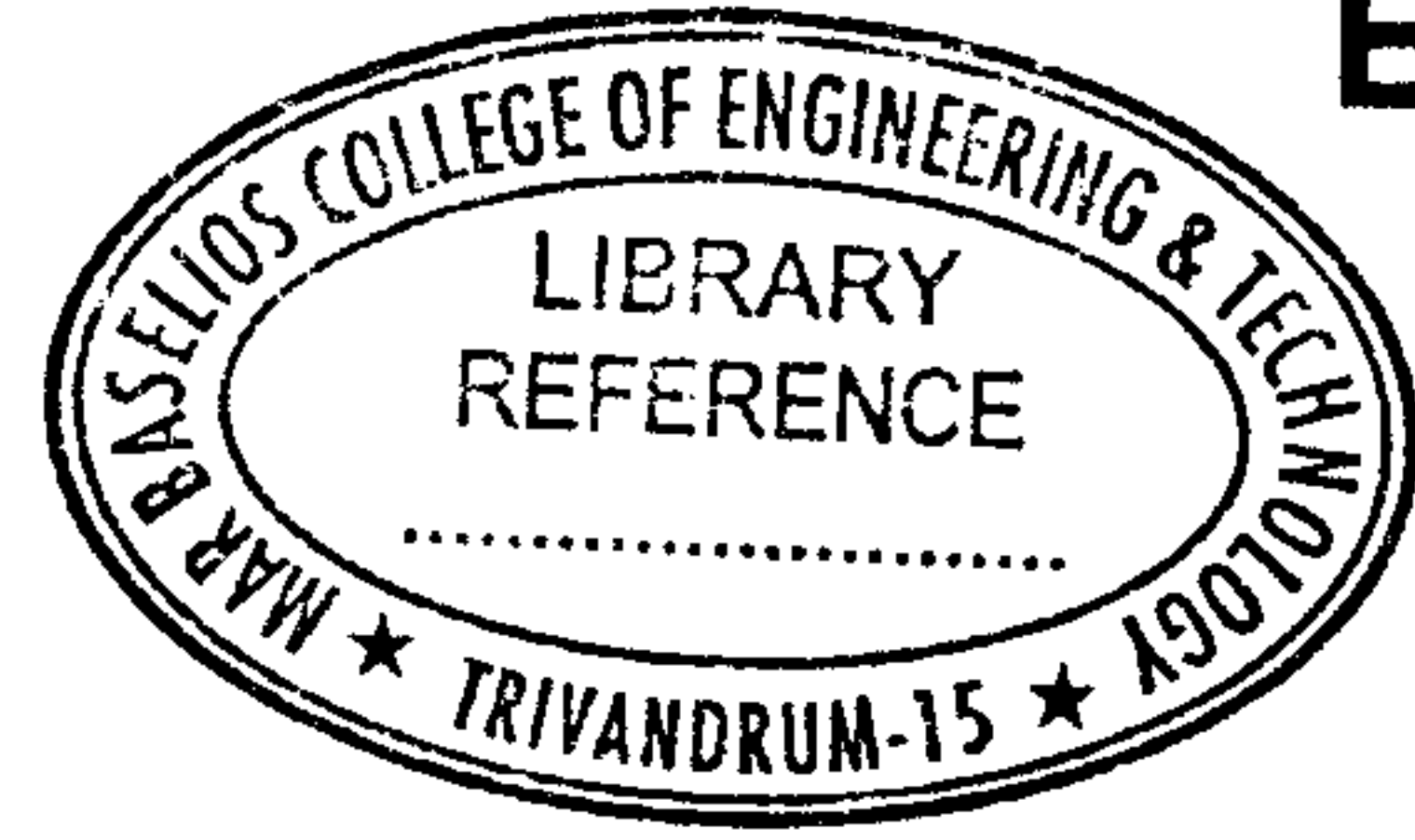


(Pages : 2)

B – 2892

Reg. No. :

Name :



**Second Semester M.Tech. Degree Examination, December 2016
(2013 Scheme)**

**Branch : Electrical Engineering
EMC 2001 : ELECTRIC DRIVES**

Time : 3 Hours

Max. Marks : 60

Instruction : Answer any two full questions from each Module.

MODULE – 1

1. Obtain the stable and unstable operating points for electric motor and mechanical load. Draw and explain the closed loop speed control scheme for separately excited DC motor for speed control below and above base speed. **10**
2. A 200V 875 rpm 150A separately excited DC motor has an armature resistance of 0.06Ω and inductance of 0.85 mH . It is fed from a 1ϕ full converter with an AC source voltage of 220V, 50 Hz. Now external inductance of 2 mH is added to the armature circuit to reduce the region of discontinuous conduction. Calculate the torque for
 - i) $\alpha = 120^\circ$ and speed = -400 rpm
 - ii) $\alpha = 120^\circ$ and speed = -600 rpm . **10**
3. With diagram explain the operation of a dual converter fed separately excited DC Drive for four quadrant operation. Draw the torque speed characteristics in all quadrants. **10**

MODULE – 2

4. Explain the stator voltage control method of speed control of induction motor and draw the circuit diagram for 2 quadrant operation. Mention the application and limitation of this method. **10**

P.T.O.



5. Explain in detail the v/f control of induction motor drive and draw and explain the implementation of closed loop v/f control strategy with slip compensation for induction motor drive. 10
6. With block diagram explain the direct vector control of three phase induction motor with respect to rotor flux orientation. 10

MODULE – 3

7. Draw the schematic diagram for VSI fed three phase Synchronous Motor drive. Explain the working of drive using inverter current and voltage waveforms. 10
8. Explain the vector control of permanent magnet BLDC motor and derive the equation for electromagnetic torque developed. 10
9. Using phasor diagram and block diagram, explain the operation of a load commutated current fed synchronous motor drive for speed control application. 10

