Roll No.	
Paper Code: MTED-101	

M.Tech.
FIRST SEMESTER EXAMINATION, 2016-17
ELECTRIC DRIVES

[Time: 3 Hours] [Total Marks: 70]

Note: This paper contains eight questions. Attempt any FIVE questions. Each question carries equal marks.

1. Explain the purpose of braking. With its types and speed torque characteristics explain braking of (i) DC motor. (ii) Three phase induction motor (iii) Synchronous motor

2. Explain the thermal model of heating and cooling and derive its expression.

A motor operates on periodic duty cycle in which it is clutched to its load for 10 min and declutched to run on no load for 20 min. minimum temperature rise is 40 degree Celsius. Heating and cooling time constant are equal and have values 60 min. when the load is declutched continuously the temperature rise is 15 degree Celsius. Determine, *(i) Maximum temperature during the duty cycle. (ii) - temperature when the load is clutched continuously.*

3. (i) Draw the speed torque curve showing the boundary between continuous and discontinuous conduction of single phase fully controlled converter fed separately excited dc motor drive and derive its expression.

(ii) Explain dual converter fed separately excited dc motor drive.

4. Explain voltage source inverter control. Explain dynamic and regenerative braking of VSI controlled induction motor drive?

5. Describe the principle of operation of switched reluctance motor? What are the difference between this motor and synchronous reluctance motor? What are the advantages of switched reluctance motor over other ac motor drive?

6. Derive the expression for equivalent values of parameter –moment of inertia of motor load system and equivalent torque? Write the expression in the generalized form for (i) Load with rotational motion (ii) Load with translational motion

7. What are drives? What are electrical drives? Explain the parts of electrical drives and state the function of power modulator?

8. Why is slip power scheme is suitable for is suitable mainly for drives for low speed range? Explain the static scherbius drive?