

GUJARAT TECHNOLOGICAL UNIVERSITY
ME – SEMESTER II– • EXAMINATION – SUMMER 2017

Subject Code: 2724501**Date: 26/05/2017****Subject Name: Solid State AC Drives****Time: 02:30 PM to 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain slip power recovery method for induction motor. **07**
(b) Make comparison between Current Source Inverter (CSI) and Voltage Source Inverter (VSI) drives. **07**
- Q.2** (a) Explain constant torque and constant power region of 3-phase induction motor drive. **07**
(b) Explain speed control of induction motor with closed loop V/f control and slip regulation with help of block diagram. **07**
- OR**
- (b) Explain speed control of induction motor with closed loop torque and flux control for V/f control with help of block diagram. **07**
- Q.3** (a) Explain direct vector control of induction motor with current model. Give the limitation of the model. **07**
(b) What is the difference between scalar control and vector control of induction motor drives? Explain merit and demerits of it. **07**
- OR**
- Q.3** (a) Explain principle of vector control of induction motor drives with the help of block diagram. **07**
(b) Explain the field oriented control method for induction motor. **07**
- Q.4** (a) Explain control strategy for DTC drives with help of block diagram. **07**
(b) Explain open loop V/f speed control of induction motor with voltage fed inverter. **07**
- OR**
- Q.4** (a) Explain Chopper based rotor resistance control of an induction motor. **07**
(b) Write a brief note on Static Kramer Drive. **07**
- Q.5** (a) Explain Brush and Brushless D.C. excitation for wound field synchronous machine. **07**
(b) Explain self-controlled synchronous motor drive employing load commutated thyristor inverter. **07**
- OR**
- Q.5** (a) Derive torque expression with stator and rotor flux in direct torque control for induction motor. **07**
(b) Explain how a voltage source inverter fed induction motor is operated in dynamic braking. **07**
