

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – III • EXAMINATION – SUMMER • 2013

Subject code: 730704**Date: 15-05-2013****Subject Name: Advanced Electrical Drives****Time: 10.30 am – 01.00 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) Discuss the merits of sensorless speed control over the speed sensed vector control of induction motor **07**
- (b) Draw the block diagram of sensored vector control of PMSM. And explain the operation of this in detail. **07**

- Q.2** (a) Explain the concept of vector flux oriented speed control using equivalent circuit and phasor diagram. **07**
- (b) Draw the inductance profile of Switched Reluctance Motor. Explain the each step of this profile in detail. **07**

OR

- (b) Explain the concept of rotor flux oriented direct vector control Support your answer with necessary diagram. **07**

- Q.3** (a) Explain the strategy of direct vector control of IM **07**
- (b) Explain the inverter control strategies of BLDC motor to work. **07**

OR

- Q.3** (a) Developed the dynamic model of PMSM motor using proper assumption. **07**
- (b) Explain the sensorless vector control of an IM. What are the different methods employed for speed estimation. **07**

- Q.4** (a) What is the constant torque strategy to control the speed of PMSM motor? Support your answer with proper characteristic curve. **07**
- (b) Draw the block diagram schematic of direct torque induction drive. Explain each block properly. **07**

OR

- Q.4** (a) Develop the switching table to control BLDC motor in both the direction. Prove your logic with inverter control strategy. **07**

- Q.4** (b) Explain the stator flux oriented direct vector control of IM **07**

- Q.5** (a) Enlist the classification of PMSM motor and explain in view of construction of rotor. **07**
- (b) Explain the control strategy for Hysteresis motor. **07**

OR

- Q.5** (a) Write the advantages and disadvantages of rotor flux oriented and stator flux oriented vector control. **07**

- (b) Show the control strategy for Stepper motor. Explain each block in detailed. **07**
