

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII • EXAMINATION – WINTER 2013****Subject Code: 172402****Date: 05-12-2013****Subject Name: Industrial Drives and Control-II****Time: 10:30 TO 01:00****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Notations used have usual meaning.

- Q.1** (a) Draw and explain characteristics of three phase induction motor. Indicate stable region of operation. **07**
(b) Discuss plugging applied to induction motor. **07**
- Q.2** (a) Write a brief note on closed loop operation of induction motor with stator voltage control. **07**
(b) A 400 V, 4 pole, 50 h.p., and 3-phase 50 Hz squirrel cage induction motor has a slip of 5% on full load torque. The ratio of its rotor stand still reactance per phase to rotor resistance per phase is 3:1. Calculate the value of plugging torque in N-m at full load. **07**
- OR**
- (b) Write a brief note on parameter sensitivity of vector controlled induction motor. **07**
- Q.3** (a) Explain V/F control of induction motor with its merits and demerits. **07**
(b) Discuss the operation of induction motor operated with non-sinusoidal voltage source. **07**
- OR**
- Q.3** (a) Discuss the speed control of induction motor with super synchronous speed operation. **07**
(b) Explain starting of induction motor with star-delta starter. **07**
- Q.4** (a) Discuss indirect rotor flux oriented vector control scheme for induction motor. **07**
(b) Explain pulse width modulated inverter drives. Draw appropriate waveforms. **07**
- OR**
- Q.4** (a) Write a brief note on dynamic d-q modeling of induction motor. **07**
(b) Explain the principle of synchronous motor control. For what type application, synchronous motor is suitable? **07**
- Q.5** (a) Explain the concept of sensor less control of induction motor. **07**
(b) Discuss the closed loop rotor resistance control method for speed control of induction motor. **07**
- OR**
- Q.5** (a) Explain principle of Direct torque control of induction motor. **07**
(b) Write a brief note on trapezoidal PMAC motor drives. **07**
