

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-II Examination July 2010

Subject code: 720701**Subject Name: Advanced Electrical Machines****Date: 05 /07 /2010****Time: 11.00am – 1.30pm****Total Marks: 60****Instructions:**

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

- Q.1** (a) Derive winding inductance and voltage equation of induction machine. **06**
 (b) Explain energy relationship in electromechanical system. **06**
- Q.2** (a) Determine the expression for f_{as} , f_{ds} and f_{os} for $f_{as}=\sin t$, $f_{bs}=t$, $f_{cs}=-\cos t$, **06**
 assume $\theta(0)=-\pi/2$ and $\omega=1$ rad/sec, for $t=\pi/6$.
 (b) Explain balanced steady state relationship. **06**
- OR**
- (b) Discuss converter fed BLDC drive. Discuss performance for **06**
 120° conduction period.
- Q.3** (a) Explain control and application of linear induction motor. **06**
 (b) Explain Assymetric bridge converter used for S.R.M. **06**
- OR**
- Q.3** (a) Explain segregation method of efficiency evaluation technique. **06**
 (b) Explain direct saving and pay back analysis of energy efficiency motor. **06**
- Q.4** (a) Discuss fault detection and diagnosis technique for transformer. **06**
 (b) Explain recent trends in condition monitoring. **06**
- OR**
- Q.4** (a) Discuss reactive power compensation of wind mill generator. **06**
 (b) Explain concepts of condition monitoring. **06**
- Q.5** (a) Write Short note on **06**
 Hybrid stepper motor.
 (b) Detection and diagnosis technique for induction motor. **06**
- OR**
- Q.5** (a) Explain concept of micro stepping control of stepper motor. **06**
 (b) Explain torque angle characteristic of srepper motor. **06**
