

Seat No.: _____

Enrolment No. _____

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 120° conduction period. 06
- Q.3** (a) Explain control and application of linear induction motor. 06
(b) Explain Asymmetric 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 Hybrid stepper motor. 06
(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 stepper motor. 06
