

GUJARAT TECHNOLOGICAL UNIVERSITY**B. E. Vth Semester–Examination – Nov-Dec- 2011****Subject code: 152404****Subject Name: Electro Mechanical Energy Conversion-II.****Date: 29/11/2011****Time: 02:30 pm – 05:30 pm****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) Explain three phase transformer connections in brief. **07**
(b) Write a short note on Scott connection. **07**

- Q.2** (a) Draw and explain equivalent circuit of single phase induction motor. **07**
(b) Explain working principle of shaded pole type single phase induction motor **07**

OR

- (b) Explain working operation of universal motor. **07**

- Q.3** (a) Explain the operating principle of synchronous motor. **07**
(b) Write a short note on V-curves with respect to synchronous motor. **07**

OR

- Q.3** (a) Discuss the effect of excitation on armature current and power factor for synchronous motor. **07**
(b) Discuss the properties of magnetic material. **07**

- Q.4** (a) Discuss the operation of induction motor with non sinusoidal supply voltage. **07**
(b) Two transformers are required for a scott connection operating from a 440V, 3 phase supply for supplying two single phase furnaces at 200 V on the two phase side. If the total output is 150 kVA, calculate the secondary to primary turn ratio and the winding currents of each transformer. **07**

OR

- Q.4** (a) Explain parallel operation of three phase transformers. **07**
(b) A synchronous motor absorbing 60 kW is connected in parallel with a factory load of 240 kW having a lagging power factor of 0.8. if the combined load has a power factor of 0.9, what is the value of the leading kVAR supplied by the motor and at what power factor is it working? **07**

- Q.5** (a) Explain working operation of switch reluctance motor. **07**
(b) Explain the starting process of synchronous motor. **07**

OR

- Q.5** (a) Explain working principle of permanent magnet brushless motor. **07**
(b) Write a short note on linear induction machine. **07**
