

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V • EXAMINATION – WINTER • 2014****Subject Code: 150802****Date: 01-12-2014****Subject Name: Electrical Machine****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)** What is the armature reaction? Explain the effect of armature reaction on performance of D.C. Machine. **07**
- (b)** Explain in brief about the techniques to improve the commutation in DC machine. **07**
- Q.2 (a)** Explain the Scott connection with vector diagram for 3-phase transformer. **07**
- (b)** Explain the Swinburne test of DC machine with equation. **07**
- OR**
- (b)** Write short note on Hopkinson test for determination of efficiency of a DC machine. **07**
- Q.3 (a)** Describe briefly the methods of controlling speed of a 3-phase Induction motor. **07**
- (b)** Why single phase induction motor is not self starting? Explain Double field revolving theory of single phase induction motor. **07**
- OR**
- Q.3 (a)** State various methods of starting of a 3-phase induction motor. Explain with the help of diagram the working of a star – delta starter. **07**
- (b)** Discuss construction, phasor diagram and torque-speed characteristics for the single phase capacitor start induction run motor. **07**
- Q.4 (a)** Explain No load & Blocked rotor test of 3-phase Induction motor. **07**
- (b)** Write a short note on shaded pole induction motor. **07**
- OR**
- Q.4 (a)** Draw and explain Equivalent circuit of a 3-phase Induction motor. **07**
- (b)** Discuss the construction, operation and speed control for the Universal Motor. **07**
- Q.5 (a)** Derive the equation of power developed by synchronous motor. **07**
- (b)** Explain the construction and working of variable reluctance stepper motor. **07**
- OR**
- Q.5 (a)** Explain “V curve” and “invert V curve” of synchronous motor. **07**
- (b)** Discuss construction and operation of permanent magnet brushless DC motor. **07**
