

GUJARAT TECHNOLOGICAL UNIVERSITY
ME – SEMESTER II (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2724504**Date: 27/05/2016****Subject Name: Advance Electrical Machines****Time: 10:30 am to 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) Discuss bi-polar type converters used to control BLDC motor. **07**
 (b) Discuss converter fed BLDC drive. Discuss its performance for 120° conduction period. **07**
- Q.2** (a) Draw and explain equivalent circuit of BLDC machine with equation. **07**
 (b) Explain the working principle of BLDC machine. Why BLDC motor is called DC motor. **07**
- OR**
- (b) Give the comparison between Brushless DC motor and induction motor. **07**
- Q.3** (a) Explain in brief construction and working of Variable Reluctance (V.R.) stepper motor. **07**
 (b) Explain concept of micro stepping control of stepper motor. **07**
- OR**
- Q.3** (a) Define following terms for a stepper motor: **07**
 Micro-stepping, Holding torque, Detent torque, Pull in torque, Pull out torque, Slew rate, Step angle.
 (b) Explain in brief construction and working principle of Hybrid stepper motor. **07**
- Q.4** (a) Derive expression for electromechanical conversion in S.R.M. **07**
 (b) Explain working of variable slip wind turbine Generator with diagram. **07**
- OR**
- Q.4** (a) With proper diagram explains the working of (n+1) converter used for S.R.M. **07**
 (b) With proper diagram explains the working of bifilar type converter used for S.R.M. **07**
- Q.5** (a) Explain principle, construction and characteristics of Hysteresis motor. **07**
 (b) With the help of a diagram (a) Discuss the power versus wind speed characteristic of a wind turbine (b) Discuss C_p versus tip speed ratio. **07**
- OR**
- Q.5** (a) Discuss the construction and working of a Linear induction motor and its applications. **07**
 (b) Explain Principle, Construction and characteristics of AC series motors. **07**
