

GUJARAT TECHNOLOGICAL UNIVERSITY**BE SEM-III Examination May 2012****Subject code: 131901****Subject Name: Electrical Machines and Electronics****Date: 11/05/2012****Time: 02.30 pm – 05.00 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) Explain the Construction of DC Machine 07
(b) Explain working principle of transformer under lagging power factor load 07

- Q.2** (a) Explain speed control of dc shunt and series motor by armature control and flux control method 07
(b) Determine Armature torque and Shaft torque of 220 V , 4-pole, series motor with 800 conductors wave connected supplying a load of 8.2KW by taking 45 A from the mains. The flux per pole is 25 mwb and its armature circuit resistance is 0.6 ohm 07

OR

- (b) Explain Three point dc shunt motor starter 07

- Q.3** (a) Explain construction of single phase transformer 07
(b) Explain different methods of speed control of three phase induction motor 07

OR

- Q.3** (a) What are the conditions to be fulfilled for parallel operation of two synchronous machine? Give any one method of synchronizing 07
(b) Describe construction features and operating characteristic of a shaded pole motor. also give its applications 07

- Q.4** (a) Write short notes on substation Equipment 07
(b) A 12-pole, three phase, 600 V, 50 Hz star connected induction motor has rotor resistance and stand-still reactance of 0.03 and 0.5 ohm per phase respectively. Calculate (1) Speed of maximum torque (2) Ratio of full load torque to maximum torque, if the full-load speed is 495 rpm 07

OR

- Q.4** (a) Explain Comparison of DC and AC transmission system 07
(b) Explain different methods to improve power factor 07

- Q.5** (a) Explain De-morgan's theorem 07
(b) What are the causes of low power factor also list disadvantage of low power factor 07

OR

- Q.5** (a) Define rectification. Draw and explain operation of three phase full wave rectifier 07
(b) Draw Functional block diagram of 8085 microprocessor and explain in brief 07
