

GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC - SEMESTER – II • EXAMINATION – WINTER 2012

Subject code: X 21901**Date: 16/01/2013****Subject Name: Electrical Machines and Electronics****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) Draw and explain the construction of a D.C generator. Mention the functions of following **07**
1. Yoke 2. Poles 3. Armature
(b) Explain the different methods of speed control of DC shunt and series Motor. **07**

- Q.2** (a) Explain shaded pole Induction Motor in detail. **07**
(b) Explain the operating principle of a 3-phase Induction Motor. **07**

OR

- (b) Explain and sketch the torque slip characteristics of 3- phase Induction Motor. **07**

- Q.3** (a) Explain the parallel operation of alternators. **07**
(b) Explain the working principle of transformer. Draw the construction of shell type and core type transformer. **07**

OR

- Q.3** (a) The power input to the rotor of 440V, 50 Hz, 6 pole, 3-phase Induction Motor is 80KW. The electromotive force is observed to make 100 complete alternations per minute. Calculate **07**
1. The slip
2. The rotor speed
3. Rotor copper losses per phase
(b) A 220V, Shunt Motor has an armature resistance of 0.2Ω and field resistance of 110Ω , the motor draws 5A at 1500rpm at no load. Calculate the speed and shaft torque if the motor draws 52A at rated voltage. **07**

- Q.4** (a) State advantages of high transmission voltage. Compare DC transmission line with AC transmission line. **07**
(b) Give the classification of substation. Compare Indoor substation with outdoor substation. **07**

OR

- Q.4** (a) Explain the full wave rectifier in detail with the help of circuit diagram and waveforms **07**

- Q.4** (b) What are the causes of low power factor? Explain various methods of power factor improvement. **07**

- Q.5** (a) With the help of neat diagram. Explain the architecture of 8085 microprocessor. **07**

- (b) Explain the following logic gates with their truth tables. **07**

- OR**
