

GUJARAT TECHNOLOGICAL UNIVERSITY**B. E. Sem. - V - Examination – June- 2011****Subject code: 150203****Subject Name: Power Electronics & Control Engineering****Date: 24/06/2011****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) State & explain various methods to turn on SCR. 4
 (b) Explain V-I characteristics of TRIAC. 3
 (c) 1. Explain working & characteristics of UJT. 5
 2. Explain working of SCR as a rectifier. 2
- Q.2 (a) 1. Explain V-I characteristics of 3-phase Induction motor. 2
 2. Explain various methods to control speed of 3-phase Induction motor using SCRs. 5
 (b) 1. Explain various methods to control speed of DC shunt motor using SCRs. 4
 2. How speed-torque characteristics of motor can be matched with load. 3
 OR
 (b) Explain leading & trailing tube circuits. 7
- Q.3 (a) Write a short note on welding transformer. 4
 (b) Explain variable reluctance methods for current control in welding. 5
 (c) Explain resistance welding by using DIAC & TRIAC. 5
 OR
- Q.3 (a) 1. Explain resistance welding by using SCR. 5
 2. State basic principle of induction & dielectric heating. 2
 (b) 1. Compare induction heating with dielectric heating. 4
 2. Explain energy storage welding system. 3
- Q.4 (a) Explain control of heating by using SCR, DIAC & TRIAC. 7
 (b) 1. Derive an equation for the penetration of heat. 4
 2. Draw pin diagram of microprocessor 8085. 3
 OR
- Q.4 (a) Draw & explain architecture of microprocessor 8085. Also explain function of various pins. Explain flag register. 7
 (b) 1. Explain the following instructions: 3
 1. LXI 2. STA 3. DCR
 2. Write a programme in 8085 for the following: 4
 Data 37H is in memory location 2000H, Data 54H is in memory location 2001H.
 Add these two data. Increase the final result by three. Then, store the final result at memory location 2002H.
- Q.5 (a) 1. What is program counter & stack pointer in 8085 microprocessor? 2
 2. Classify Analog to digital converter (ADC). Explain any one ADC. 5
 (b) 1. Explain thermocouple in brief. 3
 2. Explain briefly the working of strain gauge. 4
 OR
- Q.5 (a) Explain PLC in detail. 7
 (b) Explain construction, working & speed control of stepper motor. 7
