Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V • EXAMINATION – SUMMER • 2015

Subject Code:150203   **Date:11/05/2015**
Subject Name: Power Electronics & Control Engineering
Time:02.30pm-05.00pm   **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 principle and operation of SCR with two transistor analogy.	**07**
	(b)	Explain following:	
		1) Latching current & Holding current in SCR	**02**
		2) Symbol and V-I Characteristics of DIAC & TRIAC	**02**
		3) Justify:"Once an SCR starts conducting, the gate loses control over it"	**03**
Q.2	**(a)**	Explain construction & characteristics of UJT with neat diagram.	**07**
	(b)	Explain the basic principle of operation of induction heating and list the advantages of induction heating.	**07**

OR

	(b)	Explain the basic principle of operation of dielectric heating and also explain its frequency range and mention some of its application.	**07**
Q.3	**(a)**	Explain all bits of flag register of 8085 with suitable example.	**07**
	(b)	Explain with diagram important components of resistance welding system. What are the advantages of resistance welding over other type of welding?	**07**

OR

Q.3	**(a)**	Draw timing diagram for the MVI A, 7Fh and explain de-multiplexing the address/data bus in 8085 microprocessor.	**07**
	(b)	Draw & explain torque-speed characteristics of DC motor. Show how SCRs can be used to control the speed of DC motor above/below rated speed.	**07**
Q.4	**(a)**	Sixteen bytes of data are stored in memory location at 2000h to 200Fh.Write a program to transfer the block of data to new memory location at 3000h.	**07**
	(b)	Draw block diagram of PLC and also explain any one application of it.	**07**

OR

Q.4	**(a)**	Explain the functions of following pins of 8085. (i) Address and Data Bus (ii) Control and status signals (iii) Power supply and clock frequency (iv) serial I/O ports.	**07**
	(b)	Explain successive-approximation type A/D converter and Dual slope A/D converter.	**07**
Q.5	**(a)**	Draw and explain block diagram of 8085 microprocessor and also explain its main features.	**07**
	(b)	Explain the following instruction of 8085 with example: 1. DCX 2. DAD 3. CMP 4. JMP 5. HLT. 6. XRA 7. RRC	**07**

OR

Q.5	**(a)**	Draw and explain pin diagram of 8085.	**07**
	(b)	Explain working principle of thermocouple and strain gauge with necessary diagrams.	**07**

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