Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME SEMESTER–II • EXAMINATION – SUMMER 2015

Subject Code: 2723110 **Date: 26/05/2015**

Subject Name: Embedded Systems for Biomedical Application

Time:02:30 PM To 5:00 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 Architecture of Intel MCS51 in detail.	07
	(b)	What are the important considerations in selecting a processor for embedded system design?	07
Q.2	(a)	Explain different Types of Embedded Operating systems.	07
	(b)	Explain different types of DAC in detail.	07
		OR	
	(b)	What is a Watch dog timer? Write the programming for the ADC in the PIC micro controllers.	07
Q.3	(a)	What is System on Chip and explain it with an examples.	07
	(b)	Differentiate between parallel port and serial port communication?	07
		OR	
Q.3	(a)	Explain specific requirements of RAM and FLASH memory in Embedded systems applications.	07
	(b)	Explain the merits and demerits of an assembly language programming and higher level language programming for Embedded System design.	07
Q.4	(a)	It is required to design an embedded system for the monitoring of room temperature. The temperature sensor gives 0 to 10 milivolts of output for 0 to 60°C temperature. Design signal conditioning circuit appropriately and interface an analog to digital convertor with +5V reference with 8051 microcontroller. Write a program for reading the temperature to show the reading on seven segment LEDs with 0.1ºC resolution.	07
	(b)	Explain the multitasking feature supported by an RTOS.	07
		OR	
Q.4	(a)	Write a program for 8051 microcontroller to calculate the time difference between two rising edges of clock pulses given as input to Port pins P1.0 and P1.1. Use 6 MHz crystal clock for the system.	07
	(b)	Why do we require application development with Real Time Operating System (RTOS) support?	07
Q.5	(a)	Answer the following questions. 1) Explain the use of preprocessor directives in the 'C' programming language. 2) Explain the differences between a compiler and a cross compiler.	07
	(b)	Explain with two examples, Real Time systems and their characteristics.	07
		OR	
Q.5	(a)	Explain Sequential and Concurrent programming models to build application software for Embedded system.	07
	(b)	Explain the interface of seven segment displays with any microcontroller and use of Timer to implement refresh logic for each display field.	07

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