GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(NEW) EXAMINATION – SUMMER 2019

Subject Code:2171711   Date:18/05/2019

Subject Name:Embedded System Design

Time:02:30 PM TO 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 differences between embedded systems and general purpose computing systems	**03**
	(b)	Explain difference between CISC and RICS architecture.	**04**
	(c)	Explain block diagram of embedded system in detail with neat diagram	**07**
Q.2	**(a)**	Compare process, task and thread.	**03**
	(b)	Explain function of CPSR register of ARM processor.	**04**
	(c)	Explain in detail the ARM programmers model in detail with neat sketch	**07**
		OR	
	(c)	Explain pipeline concept of ARM processor.	**07**
Q.3	**(a)**	Explain difference between ADDS and ADD instructions in ARM Assembly language.	**03**
	(b)	Explain LDMIA instruction in detail with all possible operands.	**04**
	(c)	Write a program to find average of 10 numbers stored in an array. Consider data size of 32 bits	**07**
		OR	
Q.3	**(a)**	Enlist all the control flow instructions of ARM assembly language.	**03**
	(b)	Explain all the multiplication instructions of ARM assembly language in detail.	**04**
	(c)	Write a program in ARM assembly language to find largest number from an array. Assume the array length and starting address suitably.	**07**
Q.4	**(a)**	What is meant by RTOs. How they differ from other operating systems.	**03**
	(b)	Explain instructions: STMIB and BICS	**04**
	(c)	Write a program in embedded C to blink LEDs connected to alternate bit of port0 i.e. P0.0, P0.2, P0.4 and so on up to P0.30 of ARM GPIO.	**07**
		OR	
Q.4	**(a)**	Enlist various serial communication protocols.	**03**
	(b)	Explain Watchdog Timer in brief.	**04**
	(c)	Write a program in ARM embedded C to blink LED connected to Port pin P0.10 with 75 % duty cycle and 10 ms OFF time period.	**07**
Q.5	**(a)**	State advantages and disadvantages of I^2C protocol	**03**
	(b)	Explain how PWM works for DC loads	**04**
	(c)	Explain memory management in RTOs in detail.	**07**
		OR	
Q.5	**(a)**	Write short note on "Harvard Architecture"	**03**
	(b)	Write a brief note on exception handling in ARM processor.	**04**
	(c)	Explain USB protocol in detail.	**07**

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