GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2021

Subject Code:3170914   **Date:27/12/2021**
Subject Name:Advanced Microcontrollers
Time:10:30 AM TO 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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	(a)	Describe the flow of ARM development tools .	03
	(b)	List the difference between RISC and CISC architectures.	04
	(c)	Explain the ARM programmer's model with appropriate diagram.	07
Q.2	(a)	What do you mean by load & store architecture?	03
	(b)	Explain ARM architecture inheritance.	04
	(c)	With the help of diagram, explain 3 stage pipeline of ARM.	07
		OR	
	(c)	Explain in detail ARM 5-stage pipelining with neat Sketch.	07
Q.3	(a)	Explain following instructions with examples. (1) SMULL (2) ASR (3) BL	03
	(b)	Explain ARM Data Format & Directives.	04
	(c)	Explain Data Transfer instructions of ARM processor with example.	07
		OR	
Q.3	(a)	Explain following instructions with examples. (1) SWP (2) ADDEQ (3) BNE	03
	(b)	Explain CPSR in details.	04
	(c)	Explain concept of delayed branch. Why FIQ response is fast in ARM processor compared to IRQ?	07
Q.4	(a)	Explain following instructions with examples. (1) EOR (2) RSB (3) CMP	03
	(b)	Explain conditional execution with example.	04
	(c)	What is Stack? Explain types of stack operation supported by ARM processor along with Instruction use for Stack.	07
		OR	
Q.4	(a)	Explain following branch instructions with examples. (1) BEQ (2) BX R12 (3) BLX	03
	(b)	List out C data types use in programming.	04
	(c)	Explain basic Interrupt Stack Design and Implementation in ARM.	07
Q.5	(a)	List advantage and disadvantages of Harvard Architecture over Von Neumann architecture.	03
	(b)	Explain STM32F401 Nucelo board.	04
	(c)	Explain ARM Processor Exception and Modes.	07

OR

Q.5	(a)	Explain following assembly language instructions for ARM processor (1) MOV R1,R2,LSL #3 (2) TST R2,R3	03
	(b)	Explain Speed control of DC motor using STM32 .	04
	(c)	Explain Interfacing LED and LCD using STM32F401 board.	07

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