Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER–VI (NEW) EXAMINATION – WINTER 2020

Subject Code:2161102   **Date:27/01/2021**

Subject Name:Advanced Microprocessor

Time:02:00 PM TO 04:00 PM   **Total Marks: 56**

Instructions:
1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	What are the advantages of advanced microprocessor?	**03**
	(b)	Give the difference between	**04**
		(a) Little-Endian & Big-Endian	
		(b) Harvard & Von-Neumann Architecture	
	(c)	Why ARM instruction set suitable for embedded applications? Discuss the CPSR and SPSR with suitable example.	**07**
Q.2	**(a)**	What is the standard use of register r14? Register r13? Register r15?	**03**
	(b)	Explain ARM design philosophy.	**04**
	(c)	What is role of pipeline in advanced microprocessor? Also explain 3-stage pipeline and 5-stage pipeline with necessary diagram	**07**
Q.3	**(a)**	Explain the current program state of an ARM7TDMI if the CPSR had the value 0xF00000D3.	**03**
	(b)	What are assembler directives? Explain any three assembler directives used for ARM assembly programming.	**04**
	(c)	Describe the following instruction:	**07**
		[i] ORR r0, r1, r2 ;	
		[ii] MUL r0, r1, r2 ;	
		[iii] MOV r1, r2, LSL#2 ;	
		[iv] BIC r0, r1, r2 ;	
		[v] ADD r0, r1, r2 ;	
		[vi] TST r0, r1 ;	
		[vii] EOR r0, r1, r2;	
		where r0 =0x00h ,r1 = 0x04h , and r2 =0x02h	
Q.4	**(a)**	List and explain branching instruction set with suitable example.	**03**
	(b)	Write short note on FIQ and IRQ. Why FIQ response is fast than IRQ?	**04**
	(c)	Write an assembly language program to find maximum number from given array	**07**
Q.5	**(a)**	Explain Division, floating point, Inline functions.	**03**
	(b)	How do you enable interrupts on the ARM7TDMI?	**04**

	(c)	List out portability issues encounter when porting C code into ARM.	**07**
Q.6	**(a)**	Explain timer control register (TCR) and how to use it to start and stop timer in ARM processor	**03**
	(b)	Explain the various mapping techniques of cache	**04**
	(c)	Write the Program in C for LPC 2148 to send " WELCOME" word continuously with baud rate of 9600,assume suitable clock frequency, no of stop bits, character length etc?	**07**
Q.7	**(a)**	Explain the importance of Memory Protection Unit.	**03**
	(b)	Explain rotate and barrel shifter instruction in ARM.	**04**
	(c)	Write a short note on Advanced Microprocessor Bus Architecture (AMBA).	**07**
Q.8	**(a)**	List out the differences between ARM System Bus (ASB) and ARM Peripheral Bus (APB)	**03**
	(b)	Discuss memory organization in virtual memory system.	**04**
	(c)	Explain various exception handling schemes used in ARM processor	**07**

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