C **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 99406

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2024

Elective

Electronics and Communication Engineering

19UEC906- ARM SYSTEM DEVELOPMENT

(Regulations 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. How many registers does ARM have? CO1- U

   (a) 4 (b) 8 (c) 16 (d) 37

2. Cortex-M0 processor supports_____ CO1- U

   (a) 36 Instructions (b) 56 Instructions (c) 64 Instructions (d)89 Instructions

3. Whenever the data is found in the cache memory it is called as _____ CO2 -U

   (a) HIT (b) MISS (c) FOUND (d)ERROR

4. To overcome the problems of the assembler in dealing with branching code we use _____ CO1 -U

   (a) Interpreter (b) Debugger (c) Op-Assembler (d)Two-pass assembler

5. Cortex-M3 processor consist of pipeline_____ CO1- U

   (a) 2 stage (b) 3 stage (c) 4 stage (d) 5 stage

PART – B (5 x 3= 15 Marks)

6. Explain the important design rules of RISC philosophy. CO1- U

7. Explain the function of following instructions one by one: CO2 -App

   i) SUB r0, r1, #7ii) ADD r2, r3, r3, LSL, #1

8. Why is cache memory necessary for memory organization? CO1- U

9. Explain Non-protected memory, MPU & MMU. CO2 -App

10. What are the types of Debug Modes? CO1- U

PART – C (5 x 16= 80 Marks)

11.	(a)	Draw and explain the format of CPSR, SPSR and pipeline used in ARM processor.	CO2- App	(16)
		Or		
	(b)	Illustrate the instruction set of ARM processor with examples in detail.	CO2- App	(16)
12.	(a)	(i) Explain briefly about the data processing instructions for ARM Cortex M3 processor.	CO1- U	(10)
	(a)	(ii) Write program for ARM7 ALP fragment that implements 'block move' functions assuming the elements of the block are words, the starting address of source block is in 'r9' register, the destination address is in 'r10' register and the size of the block is 8 words.	CO2 -App	(6)
		Or		
	(b)	(i) Explain briefly about branch instructions for ARM Cortex M3 processor.	CO1 -U	(10)
	(b)	(ii) Formulate necessary code using ARM assembly language program for creating a delay?	CO2 -App	(6)
13.	(a)	Describe in detail about the block diagram of Cache memory.	CO3- Ana	(16)
		Or		
	(b)	Explain in detail about Translation Look aside buffer	CO3 -Ana	(16)
14.	(a)	Write a C program to show how to merge three loop counts into a single loop count. Suppose we wish to multiply matrix B by matrix C to produce matrix A, where A, B, C have the following constant dimensions. We assume that R, S, T are relatively large but less than 256.	CO2 -App	(16)
		Or		
	(b)	Write a C program to show the improvement if we switch to a decrementing loop rather than an incrementing loop.	CO2 -App	(16)
15.	(a)	With necessary diagram explain in detail about the Trace System in the Cortex-M3	CO1- U	(16)
		Or		
	(b)	Explain in detail about the Debug Modes.	CO1- U	(16)