Roll No.

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. / B. Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, APR / MAY 2025

ELECTRICAL AND ELECTRONICS ENGINEERING
Semester 5
EE 23404 MICROPROCESSORS AND MICROCONTROLLERS
(Regulation 2023)

Time: 3hrs   Max.Marks: 100

CO 1	To study the addressing modes and instruction set of 8085 and 8051
CO 2	To develop skills in simple program writing in assembly languages
CO 3	To introduce commonly used peripheral interfacing ICs
CO 4	To study and understand typical applications of microprocessors
CO 5	To study and understand typical applications of microprocessors

BL – Bloom's Taxonomy Levels
(L1 - Remembering, L2 - Understanding, L3 - Applying, L4 - Analysing, L5 - Evaluating, L6 - Creating)

PART- A (10 x 2 = 20 Marks)
(Answer all Questions)

Q. No	Questions	Marks	CO	BL
1	What is the use of auxiliary carry in the 8085 microprocessor?	2	1	L1
2	Can you maintain two different stack locations in a single program in 8085 microprocessor? Yes/ No ? justify your answer.	2	1	L2
3	What is the value stored at the location 8000H at the end of execution of this code? 　　　　MVI A, 01H 　　　　MVI B, 02H 　　　　ADD B 　　　　LXI D, 0001H 　　　　PUSH D 　　　　POP PSW 　　　　JNC VALUE2 VALUE1　MVI A, #10H 　　　　STA 8000H 　　　　JMP STOP VALUE2　MVI A, #20H 　　　　STA 8000H STOP　　HLT	2	2	L2
4	what is the use of software interrupts in a microprocessor in real world situations?	2	2	L2
5	Does the 8254 counter operation run as an up counter or down counter? Give any example mode diagram.	2	3	L1
6	What are the operations in mode 0, 1,2 operations basically in a 8255 PPI(programmable Peripheral Interface)?	2	3	L1
7	Which port in 8051 microcontroller handles extra functions like external interrupt input pins and serial data I/O pins?	2	4	L1
8	Give an example instruction for Memory Indirect Addressing mode in 8051 microcontroller.	2	4	L2
9	Differentiate FIQ and IRQ interrupt modes in ARM architecture.	2	5	L1
10	What are the ARM family architectures A, R and M series typically used for?	2	5	L2

PART- B (5 x 13 = 65 Marks)
(Restrict to a maximum of 2 subdivisions)

Q. No	Questions	Marks	CO	BL
11 (a)	Draw and explain the timing diagram for the instruction LXI B 1234H. This instruction is written in the address 8000H. The opcode of LXI B is 01H. | label | opcode | mnemonic 8000H 01 LXI B, 1234H	13	1	L3
	OR			
11 (b)	Explain the 8085- interrupt system with necessary diagram.	13	1	L3
12 (a) (i)	Describe all controll instructions in detail which are used in 8085 microprocessor.	7	2	L4
(ii)	List and explain all kind of jump instructions available in 8085 microprocessor.	6	2	
	OR			
12 (b) (i)	Write an assembly language program using 8085 microprocessor for 8 bit division operation.	7	2	L4
(ii)	Write an assembly language program using 8085 microprocessor to find the first occurrence of the digit '1' from LSB side in the given number. Write clear comments for each line of code. Replace all opcodes as XX while writing the program.	6	2	L4
13 (a)	Explain the block diagram, modes of operation and control words for 8259 PIC	13	3	L3
	OR			
13 (b)	Explain the block diagram, modes of operation and control words for 8251 USART	13	3	L3
14 (a)	Explain the working of serial port in 8051-microcontroller with different modes of operations.	13	4	L4
	OR			
14 (b)	Explain the 8051-timer and explain its complete operation.	13	4	L4
15 (a) (i)	Write short notes about coprocessors used in ARM architecture	6	5	L3
(ii)	Write about the pipeline concept used in ARM processors with neat diagrams.	7	5	L3
	OR			
15 (b) (i)	Explain the ARM cortex series processor's programmer's model with a necessary diagram.	13	5	L3

PART- C (1 x 15 = 15 Marks)
(Q.No.16 is compulsory)

Q. No	Questions	Marks	CO	BL
16.	Connect a 32K ROM at 0000H to an 8085 microprocessor . Also in the next immediate available memory address, connect a 32K RAM. Use a suitable gate to generate the required chip select signal.	15	3	L6