Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. / B. Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, NOV / DEC 2023

ELECTRICAL AND ELECTRONICS ENGINEERING
Semester 5
EE5502 MICROPROCESSORS AND MICROCONTROLLERS
(Regulation 2019)

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 microcontrollers

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	State the purpose of HOLD and HLDA signals in 8085 microprocessor.	2	1	L1
2	Draw the schematic circuit to generate read and write signals for memory and I/O from 8085 microprocessor control signals.	2	1	L2
3	Assume that in 8085 microprocessor, A=11H, B=22H, C=33H, D=44H, E=55H, H=66H, L= 77H, SP= 8899H, What is the end result of the following code? PUSH B XCHG XTHL STAX D	2	2	L2
4	Recall register direct addressing mode in 8085 microprocessor with an example.	2	2	L2
5	Differentiate asynchronous and synchronous serial data transfer.	2	3	L1
6	Write the expression for output current in a binary weighted resistance model DAC.	2	3	L1
7	What is split timer mode of operation in 8051 microcontroller?	2	4	L1
8	Compare and contrast microprocessor vs microcontroller.	2	4	L2
9	What are the functions of MMU in ARM processor?	2	5	L1
10	What do the letters T,D,M,I describe about the ARM processor core?	2	5	L2

PART- B (5 x 13 = 65 Marks)

Q. No	Questions	Marks	CO	BL
11 (a)	Explain the 8085 microprocessor interrupt structure with necessary diagram	13	1	L3
	OR			

11 (b)	Draw the timing diagram for the instruction LDA 2500 for 8085 microprocessor. Assume that the instruction is written in the address 95AE and the data present in the memory at 2500 is 10.	13	1	L3
12 (a) i)	Enumerate all conditional non conditional return instructions of 8085 microprocessor and state their purpose.	5	2	L4
ii)	Explain RIM and SIM instructions of 8085 microprocessor.	8		
	OR			
12 (b)	Write an a program in assembly language for 8085 processor to i) Multiply two 16 bit binary numbers	7	2	L4
	ii) Division of a 16 bit binary number by another 16 bit binary number	6	2	L4
13 (a)	Explain the block diagram, modes of operation and control words for 8254 Timer/ Counter	13	3	L3
	OR			
13 (b)	Explain the block diagram, modes of operation and control words for 8255 PPI	13	3	L3
14 (a)	Connect a stepper motor to 8051-microcontroller and write a program to make it rotate clockwise continuously.	13	4	L4
	OR			
14 (b)	Explain the serial communication and its different modes in the 8051-microcontroller	13	4	L4
15 (a) (i)	Write short notes about cache memory of ARM processors	7	5	L3
(ii)	Write short notes about TCM of ARM processors	6	5	L3
	OR			
15 (b)	Discuss the ARM cortex programmer's model with necessary details	13	5	L3

PART- C (1 x 15 = 15 Marks)

(Q.No.16 is compulsory)

Q. No	Questions	Marks	CO	BL
16.	Draw the picture to connect an 8255 programable peripheral interface to the 8085 microprocessor from the address 80H to 83H using NAND gate. Also connect a switch at 0^{th} pin of port A and an LED at 0^{th} pin of port B. Write a program to continuously read the switch and display the value of 1/0 using ON/OFF of LED inside a loop.	15	3	L6