Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U5303

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

Fifth Semester

Electrical and Electronics Engineering

21UEE503 - MICROPROCESSORS AND MICROCONTROLLER PROGRAMMING

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	Describe the role of the Control Unit in the 8085 microprocessor and its significance in executing instructions	CO1-U
2.	Write a short program in assembly language that uses direct addressing mode to load data from memory into a register.	CO1-U
3.	Give the PSW setting for making register bank 1 as default register bank in 8051 microcontroller.	CO1-U
4.	Write an 8051 assembly program to find the sum of a series of numbers stored in RAM.	CO2-App
5.	Describe the purpose of the "DMA request" and "DMA acknowledge" signals in the operation of the 8237 DMA controller.	CO2-App
6	Explain the concept of "sampling rate" in the context of an ADC interfaced with an 8051 microcontroller.	CO2-App
7	Describe a scenario where you would use the Watchdog Timer as a safety mechanism in a PIC 16F877-based project.	CO2-App
8	Name two common applications of the Watchdog Timer in embedded systems.	CO1-U
9	If you want to add two numbers using the ARM instruction set, which type of instruction would you use, and what registers would you typically use for this operation?	CO2-App
10	Examine the role of the Program Counter (PC) in the ARM processor's instruction execution process and how it changes during branch instructions.	CO1-U

PART – B (5 x 16= 80 Marks)

11.	(a)	Develop a 8085 assembly language program to divide a 8 bit number by another 8-bit number and store the remainder and quotient in memory locations 4252 and 4253 respectively.	CO2- App	(16)
		Or		
	(b)	Develop an ALP to perform the operation ($B^2 - 4AC$) using 8085 instructions with proper algorithm and flow chart.	CO2- App	(16)
12.	(a)	Explain the Pin outs of Microcontroller 8051 with relevant diagrams.	CO1- U	(16)
		Or		
	(b)	Discuss the internal memory organization of 8051 microcontroller.	CO1- U	(16)
13.	(a)	Explain the functional block diagram of 8255 PPI interface with neat sketches and analyze its modes of operation.	CO1- U	(16)
		Or		
	(b)	Explain the functional block diagram of 8279 with neat sketches and analyze its modes of operation.	CO1- U	(16)
14.	(a)	Choose the correct IC to transfer byte of data simultaneously. Explain the operation of the IC, where port A programmed as input and output in mode 1 with necessary handshaking signals.	CO4- Ana	(16)
		Or		
	(b)	Identify the suitable IC to transfer the data serially with neat sketches and analyze its modes of operation.	CO4- Ana	(16)
15.	(a)	Explain the working of ARM processor with neat architecture	CO1- U	(16)
		Or		
	(b)	Explain various operating models of ARM, what is coprocessor? and how it works. Explain the working of MPU and MMU related memory	CO1- U	(16)