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

Question Paper Code: U4425

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

Fourth Semester

Computer Science and Engineering

21UEC425-MICROPROCESSORS AND MICROCONTROLLERS

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5Marks)

1. How much memory a 20 bit address bus can access? CO1-U

   (a) 1KB (b) 1MB (c) 2MB (d) 256KB

2. Which allows the full duplex synchronous communication betweenthe master and the slave CO1-U

   (a) SPI (b) Serial port (c) Mode3 (d) Mode4

3. What is the bit size of the 8051 micro controller ? CO1-U

   (a) 8bit (b) 4 bit (c)16bit (d) 32 bit

4. For writing commands on an LCD,RS bit is CO1-U

   (a) Set (b) Reset (c) Set& Reset (d) none of the above

5. How many RPO status bits are required for the selection of two Register banks? CO1-U

   (a)1 (b) 2 (c)8 (d)16

PART – B (5 x 3= 15 Marks)

6. If AX =1234$_H$, what will be the content of AX after execution of RCL AX,02 instruction? CO2-App

7.		Write a BSR control word subroutine to set bits PC7 and PC3 and reset them after 10 ms. The Control register address is 83H. Assume that the delay subroutine is available	CO2-App	
8.		Calculate the time duration for one state and one machine cycle if a 6 MHz crystal is connected to 8051.	CO2-App	
9.		What is the function of pin no5 & 6 in LCD?	CO1- U	
10		List the applications of aurdino.	CO1- U	

PART – C (5 x 16= 80Marks)

11	(a)	The numbers in ASCII codes are stored in A1 and A2. Subtract A2 from A1, convert the result in ASCII and store in A3	CO2-App	(16)
		Or		
	(b)	Calculate the effective address & physical address of the following instructions. **(a)** IMUL AX,[BP+BX–8D] **(b)**SBB AL,ES:[SI+5D] **(c)** PUSH AX **(d)** AND AH, [SI + 42D] **(e)** CMPSB **(f)** CMP DX, [SI] Assume CS = 5000H, DS = 8000H, SS =A000H, ES = B000H, SI= 2000H, DI = 6000H, BP = 1002H, SP = 0002H, AX = 0000H, BX = 5200H, CX =2000H	CO2-App	(16)
12 .	(a)	Design the hardware interface circuit for interfacing 8251 with 8086. Set the 8251A in asynchronous mode as transmitter and receiver with even parity enable, 2 stop bits, 8-bit character length, frequency 160 kHz and baud rate 10K. Write an ALP to transmit 100 bytes of data string at location 2000:5000H. Analyze the same design with baud rate of 5 k.	CO5- Ana	(16)
		Or		
	(b)	Interface keyboard and display controller 8279 with 8086 at address 0080H. Write an ALP to set up 8279 in scanned keyboard mode with encoded scan ,N-key roll over . Use 16 character display in right entry display format. Then clear display RAM with zeros. Read the FIFO for key closure. If any key is closed , store it's code to register CL. Then write the byte 55 to all displays, and written to DOS. the clock input to 8279 is 2MHz, operate it at 100kHz.	CO5- Ana	(16)

13	(a)	Explain about different instruction set associated with 8051micro controller.	CO1- U	(16)
		Or		
	(b)	Describe the internal architecture of 8051 microcontroller with neat diagram.	CO1- U	(16)
14	(a)	Assume that the 8255 is interfaced to the 8051 at the addresses 8000H-8003. Write a program to read the content of Port A and write it in other ports.	CO3- App	(16)
		Or		
	(b)	Interface stepper motor with 8051 microcontroller and developa code to rotate the motor in clockwise direction.	CO3- App	(16)
15	(a)	Design traffic light controller using aurdino microcontroller.	CO3- App	(16)
		Or		
	(b)	Interface LCD with aurdino microcontroller and develop code for the same.	CO3- App	(16)