Register No:									

Sri Sivasubramaniya Nadar College of Engineering, Kalavakkam – 603 110

(An Autonomous Institution, Affiliated to Anna University, Chennai)

B.E. / B.Tech. End Semester Theory Examinations, Nov / Dec 2021

Fifth Semester

Computer Science and Engineering

UCS1502 MICROPROCESSORS AND INTERFACING

(Regulations 2018)

Time: **Three Hours** **Answer ALL Questions** Maximum:**100 Marks**

K1: Remembering K2: Understanding K3: Applying K4 :Analyzing K5: Evaluating

PART – A (10 × 2 = 20 Marks)

01.	K2	State the differences of the processors 8086 and 8088.	CO1
02.	K3	Identify the 20-bit operand address in the instruction MOV AL, 7000H [BX][SI] if DS=1000H, BX=5000H, SI=3000H.	CO1
03.	K2	Explain the differences between Memory mapped I/O and I/O mapped I/O.	CO2
04.	K1	Mention the different data types supported by 8087.	CO2
05.	K1	What is the control word format of 8254?	CO3
06.	K3	Identify the 8255 BSR mode control word for setting PC1.	CO3
07.	K3	Identify the stack top content and stack pointer value after executing the following instructions: Assume DPTR=4123, initial SP=09, PUSH DPL PUSH DPH	CO4
08.	K1	What is the format of PSW in 8051?	CO4
09.	K3	Identify the initial value to be loaded to a timer register of 8051 to generate a pulse width of 5ms to a port line. Assume the XTAL frequency as 11.0592MHz.	CO5
10.	K1	When is the serial port interrupt generated in 8051?	CO5

PART – B (5 × 6 = 30 Marks)

(No Sub-division in Part-B)

11.	K3	Develop an 8086 MASM assembly language programming to create an array that shows the count of 1's present in higher nibble of each element of an array of 8-bit numbers. (Input: set of n 8-bit numbers; Output: set of n 8-bit numbers; All inputs and outputs should be in memory locations).	CO1

12.	K3	Construct a flowchart that explains the communication process between 8089 and 8086.	CO2
13.	K2	Explain the interrupt mechanism based on multiple 8259s with neat block diagram.	CO3
14.	K2	Summarize the activities of 8051while multiple high priority interrupts are received at the same time. Explain it with required SFR formats.	CO4
15.	K3	Develop 8051 assembly language programming to configure the counter 1 in mode 2 to count the pulses that are fed to pin T1 and increment P2 after every five clock cycles.	CO5

PART – C (5 × 10 = 50 Marks)

(No Sub-division in Part-C)

16.	K2	Explain the architecture of 8086 with neat diagram.	CO1
		OR	
17.	K2	Explain different assembler directives and illustrate how it is used in assembly language programming.	CO1
18.	K2	Explain the interfacing of 8086 with 8087 describing the features of 8087 in detail.	CO2
		OR	
19.	K2	Explain the minimum and maximum mode configurations of 8086 with timing diagrams.	CO2
20.	K3	Construct a system that interfaces 8255 with 8086 to display the count of numbers that ends with bit 1 to a seven segment LED display connected to port A, after examining an array of 8 eight bit numbers available in memory. Use memory mapped I/O for interfacing and assume the port addresses as, port A = 08000, port B=08001, port C=08002, Control register=08003 and DS=0000. Explain the system design along with 8086 assembly language programming.	CO3
		OR	
21.	K3	Construct an 8086 interface with 8279 to operate in interrupt mode for reading a key press. Explain the main assembly language programming and interrupt service routine to store the row and column values of the pressed key in two different memory locations. Assume the port addresses.	CO3

22.	K2	Explain the internal architecture of 8051 in detail with necessary block diagrams.	CO4
		OR	
23.	K2	Explain various addressing modes of 8051 with examples.	CO4
24.	K3	Construct an 8051 based system to interface a 4x4 matrix keyboard. Develop an assembly language programming to scan the keys and send the code of pressed key to port 3.	CO5
		OR	
25.	K3	Construct an 8051 based system to interface LCD display. Develop an assembly language programming to display any 3 letters on it.	CO5

Course Outcomes:

CO1: Understand the basic architecture, operation, programming of microprocessor 8086
CO2: Understand the design of basic and multiprocessor based systems and their bus timings
CO3: Design the 8086 interfaces with memory, I/O and other peripherals chips
CO4: Understand the basic architecture and operation of microcontroller 8051
CO5: Apply programming concepts to implement microcontroller interfaces for different applications