Code: 20A04503T

R20

B.Tech III Year I Semester (R20) Regular & Supplementary Examinations January 2024

MICROPROCESSORS AND MICROCONTROLLERS

(Electronics & Communication Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a)	Define T – state and in which T-cycle the ALE signal is activated.	2M
(b)	Tabulate vectored and non-vectored interrupts.	2M
(c)	Draw the format of 8086 flag register.	2M
(d)	List the different types of addressing modes of 8086 instruction set.	2M
(e)	Specify the bit of a control word for the 8255, which differentiates between the I/O mode and the BSR mode.	2M
(f)	What is meant by cascading in 8259?	2M
(g)	List any four addressing modes of 8051.	2M
(h)	What is the operation carried out when 8051 executes the instruction MOV C A, @A+DPTR?	2M
(i)	List the SFR registers of PIC.	2M
(j)	Write a program to perform multiplication of 2 numbers using 8051.	2M

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2 Draw the 8086 functional block diagram and explain its architectural features. 10M

OR

3 With the help of neat block diagram, describe the functionality of Bus Interface Unit and Execution unit of 8086. 10M

4 Develop an 8086 assembly language program to evaluate the following expression: 10M
$W = 2x^2 + y^2 + 4z^2$.

OR

5 Draw the timing diagram for the execution of 8086 MOV instruction. 10M

6 Draw the circuit to show how an LED is interfaced with 8085 using 8255. Also, explain the operating modes of 8255. 10M

OR

7 Explain in detail about the successive approximation ADC using suitable diagram. 10M

8 Illustrate the architecture of 8051 with detailed explanation. 10M

OR

9 With neat diagram, explain how 8051 is interfaced to external memory. 10M

10 Explain the three stage pipelining implemented in ARM processor. 10M

OR

11 Represent the I^2C Bus of PIC in detail. Also, explain how memory is organized in PIC. 10M

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B.Tech III Year I Semester (R20) Supplementary Examinations August 2023

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(Electronics & Communication Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1		Answer the following: (10 X 02 = 20 Marks)	
	(a)	List out the features of 8086 microprocessor.	2M
	(b)	Define memory segmentation.	2M
	(c)	Mention the advantages of assembly language over machine language.	2M
	(d)	Distinguish JZ and JNZ.	2M
	(e)	What is the purpose of 8255 PPI?	2M
	(f)	Write the advantage and disadvantage of parallel communication over serial communication.	2M
	(g)	List the addressing modes of 8051.	2M
	(h)	What is the function of Port 0 of 8051 microcontroller?	2M
	(i)	Explain the SBUF function in 8051.	2M
	(j)	List the applications of PIC microcontrollers.	2M

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2	(a)	Draw the pin diagram of 8086 microprocessor.	3M
	(b)	Draw the block diagram of 8086 and explain EU in detail.	7M
		OR	
3	(a)	Discuss the write cycle timing diagram of 8086 in maximum mode.	5M
	(b)	Explain the concept of physical address calculation of 8086 microprocessor.	5M
4	(a)	Discuss any five assembler directives of 8086 processor with examples.	5M
	(b)	Explain data transfer instructions of 8086.	5M
		OR	
5	(a)	Write an assembly language program to find the factorial of a given number.	5M
	(b)	Discuss briefly about string manipulation instructions of 8086.	5M
6	(a)	Draw the internal architecture of 8237 DMA and explain the operation of each block.	5M
	(b)	Draw and explain the synchronous mode transmitter and receiver data formats of 8251	5M
		OR	
7	(a)	Explain the pin diagram of ADC 0808 and method of interfacing to 8086 microprocessor.	5M
	(b)	Discuss the need for 8259 programmable interrupt controller.	5M
8	(a)	Explain the salient features of the 8051 microcontrollers.	5M
	(b)	Draw the Internal RAM memory organization in 8051.	5M
		OR	
9	(a)	Discuss briefly about the special function registers of 8051 microcontroller.	5M
	(b)	Explain the importance of data transfer type instructions of 8051.	5M
10	(a)	Discuss about 8051 serial port programming.	5M
	(b)	Write a program to multiply the data in RAM location 5AH by the number 21H. Put the result in R4 and R5 registers.	5M
		OR	
11	(a)	Interface a 4x4 keyboard with 8051 microcontroller ports and get the key number after a key is pressed in R2.	7M
	(b)	Compare microprocessor and microcontroller.	3M

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