Code No: **R204104O** **R20** **Set No. 1**

IV B.Tech I Semester Regular Examinations, January – 2024
FUNDAMENTALS OF MICROPROCESSORS AND MICROCONTROLLERS
(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 70**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks
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UNIT - I

1 a) Explain the role of Address Bus, Data Bus and Control Bus of Microcomputer? [7]
b) Explain about hardware interrupts and software interrupts of 8085 μp? [7]

(OR)

2 a) Illustrate in detail about the Execution Unit (EU) of 8086 μp? [7]
b) Explain about the 16-bit Flag Register Format of 8086 μp? [7]

UNIT - II

3 a) Explain about Addressing modes for control Transfer Instructions of 8086 μp? [8]
b) Write an ALP in 8086 μp to print $n - Fibonacci$ numbers? [6]

(OR)

4 a) Illustrate about the Shift instructions of 8086 μp with examples? [8]
b) Write an ALP to check the given number is **even** or **odd** and display appropriate message? [6]

UNIT - III

5 a) Explain stepper motor interfacing with 8086 μp. [6]
b) Design an interface between 8086 μp with $2-32KX8$ EPROM and $2-32KX8$ RAM. Select starting address of EPROM Suitably and RAM at $4FFFH$? [8]

(OR)

6 a) Illustrate about Demand Transfer Mode and Block Transfer Mode of 8237 DMA Controller? [8]
b) write the sequence of command use to initialize an 8259 with Edge Triggered, Only one 8259, 8086 system, interrupt type 40 corresponds to IR_0 input, Normal EOI, Non-buffered mode, Not specially fully nested mode, IR_1 & IR_3 unmasked? [6]

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UNIT - IV

7 a) Explain about functional building blocks of 8051 μc with help of block diagram? [8]

b) Describe Program memories and Data memories of 8051 μc? [6]

(OR)

8 a) Illustrate about each bit in PSW register of 8051 μc? [7]

b) Explain in detail with examples about any four Addressing Modes of 8051 μC? [7]

UNIT - V

9 a) Write a programme to insert a string using 8051 μC. [7]

b) Write an ALP for addition, subtraction, multiplication and division of two 8-bit numbers using 8051 μc? [7]

(OR)

10 a) Draw the interfacing of stepper motor control with 8051 μC? [7]

b) Write about the applications of Home Automation systems? [7]

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Code No: **R204104O** **R20** **Set No. 2**

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Time: 3 hours **Max. Marks: 70**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks
*****

UNIT - I

1 a) Define Software, Hardware and Firmware and explain about the terms Bit, Nibble, Byte and Word with examples? [7]
b) Explain about the Memory Organization of 8085 μp? [7]

(OR)

2 a) Illustrate in detail about the Bus Interface Unit (BIU) of 8086 μP? [7]
b) Describe about maximum mode configuration of 8086 μP. [7]

UNIT - II

3 a) Explain about data transfer instructions of 8056 μp along with necessary syntax? [8]
b) Write an ALP in 8086 μP to count number of positive and negative numbers from an array of 8-bit integers? [6]

(OR)

4 a) Illustrate about Assembler Directives of 8086 μP with examples? [8]
b) Write an ALP in 8086 μP to compare to strings. [6]

UNIT - III

5 a) Explain how SRAM is interfaced to 8086 μP? Assume appropriate signals and memory? [8]
b) Illustrate about serial data transfer schemes of 8255 PPI? [6]

(OR)

6 a) Explain how a 8257 DMA controller operates in a microcomputer system with the help of block diagram? [6]
b) Mention clearly how master and slave of 8259 PIC are differentiated when interfaced with 8056 μp? [8]

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Code No: **R204104O** **R20** **Set No. 2**

UNIT - IV

7	a)	Explain about addressing modes of 8051 μc along with syntax?	[7]
	b)	Illustrate about IE Register and IP Register of 8051 μc?	[7]
		(OR)	
8	a)	Illustrate about External Interrupts with 8051 μc?	[7]
	b)	Exemplify about the Data Transfer Instructions and Logic Instructions of 8051 μc with examples?	[7]

UNIT - V

9	a)	Illustrate about instruction format of 8051 μc?	[7]
	b)	Write a program to perform four basic mathematical operations using 8051 μc?	[7]
		(OR)	
10	a)	Draw the Interfacing of Key Board with 8051 μc?	[7]
	b)	Write about the applications of Process Automation systems?	[7]

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Code No: **R204104O** **R20** **Set No. 3**

IV B.Tech I Semester Regular Examinations, January – 2024
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Time: 3 hours **Max. Marks: 70**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks
*****

UNIT - I

1	a)	Explain about the architecture of 8085 μp with the help of neat diagram?	[8]
	b)	Write data transfer instructions related to memory with examples?	[6]
		(OR)	
2	a)	Draw the pin configuration of 8086 μP and explain about the pins related to interrupts?	[8]
	b)	Explain in detail about the significance of control bus of 8086 μP?	[6]

UNIT - II

3	a)	Represent the flag register and explain about significance of each bit with example of 8086 μP?	[8]
	b)	Write an ALP to move a block of N bytes of data from source to destination?	[6]
		(OR)	
4	a)	Explain about Addressing modes for sequential control Instructions of 8086 μP?	[8]
	b)	Write explanation for END, ENDS and ENDP of 8086 μP with examples?	[6]

UNIT - III

5	a)	Draw the internal architecture and explain the working of 8259 PIC?	[7]
	b)	Illustrate about A/D and D/A interfacing with 8086 μP.	[7]
		(OR)	
6	a)	Explain about DMA Address, Terminal Count and Mode Set Registers of 8257 DMA Controller?	[7]
	b)	Draw and explain about the interface of 8251 USART with 8086 µP?	[7]

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Code No: **R204104O** **R20** **Set No. 3**

UNIT - IV

7 a) Explain in detail about the architecture of 8051 μC with the help of block diagram? [8]

b) Exemplify about Arithmetic Instructions and Branch Instructions of 8051 μc with examples? [6]

(OR)

8 a) Illustrate internal RAM organization of *8051 μC* with neat diagrams? [7]

b) Explain in detail about interrupt structure of *8051 μC*? [7]

UNIT - V

9 a) Draw the Interfacing of seven segment display with *8051 μC*? [8]

b) Write a program to perform AND, OR, NAND, NOR Logical operations using *8051 μC*? [6]

(OR)

10 a) List out the different levels of Automation and explain in brief about process Automation? [8]

b) Write a program to perform reverse the string using *8051 μC*? [6]

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Code No: **R204104O** **R20** **Set No. 4**

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Time: 3 hours **Max. Marks: 70**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks
*****

UNIT - I

1 a) Write salient features of 8085 μp and draw its pin configuration? [8]
b) Explain about the flag register of 8085 μp with format and each bit explanation? [6]

(OR)

2 a) Draw the Architecture of *8086* μp? Explain about the allocation of segment registers in *8086* μp? [8]
b) Explain the concept of interrupts of 8086 μp in detail with the help of Interrupt vector table? [6]

UNIT - II

3 a) Draw the pin diagram of 8086 μp and explain in detail about control bus of 8086µP? [8]
b) Justify why 8086 μp is called as pipeline processor and mention the length of queue? [6]

(OR)

4 a) Explain the following instructions with examples (i) MUL (ii) IMUL (iii) DIV and (iv) IDIV? [8]
b) Write an ALP using *8086* μp to compute the average of four bytes stored in memory? [6]

UNIT - III

5 a) Explain about terms Cache memory, RAM, SRAM, ROM, PROM and EPROM? [6]
b) Design an interface between 8086 μP with $two - 8\ kB\ SRAM$ and $two - 32\ kB\ EPROM$. Select starting address of $SRAM\ is\ F0000H$ and for $EPROM\ is\ A0000H$? [8]

(OR)

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Code No: **R204104O** **R20** **Set No. 4**

6 a) Draw and discuss about the Asynchronous and Synchronous formats of 8251 USART? [7]

b) What is the need of DMA Controller and Explain about the concept of DMA Controller with help of block diagram? [7]

UNIT - IV

7 a) Draw the format of PCON and TMOD of *8051* μc, hence describe about significance each bit? [7]

b) Explain about I/O ports in 8051 μc. [7]

(OR)

8 a) How $\boldsymbol{\mu p}$ differs from $\boldsymbol{\mu c}$ and list out salient features of *8051* μc? [7]

b) Explain about the Instruction Format of 8051 μC with necessary formats? [7]

UNIT - V

9 a) Draw the Interfacing of keyboard display with *8051* μc? [8]

b) Write a programme to find length of a string using *8051* μc. [6]

(OR)

10 a) List out the different levels of Automation and explain in brief about home Automation? [8]

b) Write a program to perform multiplication of two bytes using *8051* μc? [6]

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