Code No:R20A0415

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech II Semester Examinations

Microprocessors and Microcontrollers

(EEE & ECE)

Roll No										

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

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1 Sketch the Architecture of 8086 and summarize the role of EU unit. **[14M]**

OR

2 With a neat sketch describe the Minimum and Maximum mode of operation of 8086 with neat timing (read and write cycle) diagrams **[14M]**

SECTION-II

3 List and explain the addressing modes of 8086 with examples? **[14M]**

OR

4 a) Write an assembly language program to convert unpacked BCD to ASCII. **[7M]**

b) Write an assembly language program to find sum of squares. **[7M]**

SECTION-III

5 a) Discuss how 8251 is used for serial communication of data. **[8M]**

b) Write short notes on 5 types of interrupts supported by 8086. **[6M]**

OR

6 a) Construct an Interface of two 16k×8 EPROMS & and two 32k×8 RAM chips with 8086. Select suitable memory map. **[10M]**

b) Explain the purpose of interfacing 8257 with 8086 **[4M]**

SECTION-IV

7 a) Discuss the internal memory organization of the 8051 microcontroller. **[6M]**

b) Write an Assembly Language Program using 8051, **[8M]**
i) Addition of two 8 bit Numbers ii). Multiplication of two 8 bit Numbers

OR

8 a) Define ports and explain for ports in 8051 Microcontroller. **[8M]**

b) Sketch and illustrate how to access external memory devices in an 8051 based system. **[6M]**

SECTION-V

9 a) Explain the register IE format of 8051 **[7M]**

b) Describe the Interrupt, vector table and exception handler in ARM. . **[7M]**

OR

10 a) Explain about TCON & PCON operation with an example. **[8M]**

b) Mention about the program status register instructions in ARM processor. **[6M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech II Semester Model Paper-1

Microprocessors and Microcontrollers

(ECE)

Roll No										

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

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1 (a) Discuss register organization of 8086 microprocessor? What are the special functions of general purpose registers? **[8M]**

(b) Explain the following pins of 8086? **[6M]**

(i) HOLD (ii) TEST (iii) NMI

OR

2 (a) Explain physical memory organization for 8086 microprocessor. **[8M]**

(b) Describe the timing diagrams of minimum mode write operation and explain in detail. **[6M]**

SECTION-II

3 (a) Explain any 2 groups of instructions in 8086. **[6M]**

(b) Calculate physical address of the memory location being referred in the given instructions for the following values in the 8086 registers **[8M]**

CS=1120h,DS=1150h,ES=1250h,SS=1350h,AX=1000h,BX=2000h, CX=3000,DX=4000h, SI=1111h,DI=2222h,SP=1010h,BP=1100h

(i) MOV AX, [BX]
(ii) MOV AX, [BP][SI]
(iii) MOV AX, [BX][DI]10H
(iv) MOV AX, [BP][DI]-10H

OR

4 (a) Develop an assembly language program to find the sum of squares of first ten numbers. **[7M]**

(b) Develop an assembly language program to find number of even and odd numbers in an 8- bit array. **[7M]**

SECTION-III

5 With a neat block diagram explain the operation of 8251 USART. **[14M]**

OR

6 Explain the internal architecture of 8259 PIC and explain its blocks. **[14M]**

SECTION-IV

7 (a) Discuss internal memory organization of 8051 microcontroller. **[8M]**

(b) Interface a 2-digit 7 segment LED display to the 8051 microcontroller and write a program to display numbers 00 to 99. **[6M]**

OR

8 (a) How many number of IO ports are available in 8051? List all the ports with **[8M]**

relevant sketches and what are the ports used for external memory access?

(b) Develop assembly language program using branch instructions of 8051. **[6M]**

SECTION-V

9 (a) Explain how do you do the programming of 8051 by using timers and counters. **[8M]**

(b) Discuss interrupt structure of 8051 microcontroller and explain in detail. **[6M]**

OR

10 Write Short notes on the following **[7M]**

(i) Current program status register **[7M]**

(ii) Registers of ARM Processor

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Code No:R20A0415

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech II Semester Model Paper-2

Microprocessors and Microcontrollers

(ECE)

Roll No										

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

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1 ***(a)*** How do you implement memory segmentation and instruction pipelining in 8086 microprocessor, Explain? **[8M]**

(b) Explain the following pins of 8086? **[6M]**

(i)READY (ii) INTR (iii) ALE

OR

2 (a) Discuss Flag Register Format in 8086 and explain significance of each flag. **[8M]**

(b) Differentiate between minimum mode and maximum mode 8086 operation with the help of suitable diagrams. **[6M]**

SECTION-II

3 (a) Implement a programming logic in assembly language to sort the given list of ten numbers starting at memory location 1000h in ascending order. **[8M]**

(b) Explain the following instructions with an example to each? **[6M]**

(i) AAA (ii) SCASB (iii) SHR

OR

4 (a) Write an assembly language program to reverse the given string "1, 2, 3, 4, 5" with string instructions. **[6M]**

(b) List various addressing modes supported in 8086 microprocessor programming and give one example to each. **[8M]**

SECTION-III

5 With the help of a neat diagram discuss the operation of DMA controller 8257 and its interfacing with 8086 microprocessor. **[14M]**

OR

6 Discuss the need for an interrupt controller. Enumerate the functionality of 8259PIC (priority interrupt controller) with the help of neat block diagram. **[14M]**

SECTION-IV

7 (a) Enumerate the features of 8051 microcontroller with the help of neat architecture diagram. **[8M]**

(b) Discuss external memory access capacity of 8051 microcontroller and list the instructions used to access external memory. **[6M]**

OR

8 (a) Explain about the Timers of 8051 with its Modes of Operation, and the Registers **[8M]**

used for 8051 Timers.

(b) What are the interrupts available in 8051? Explain about the Interrupt Structure. **[6M]**

SECTION-V

9 Draw the Architecture of ARM processor and explain each function in detail. **[14M]**

OR

10 Explain about the Serial data communication of 8051 with its registers. Also explain about the Modes of operation of the same. **[14M]**

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R18

Code No: R18A0415

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech II Semester Model Paper-3

Microprocessors and Microcontrollers

(ECE)

Roll No										

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

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	a)	Draw the Architecture of 8086 and summarize the role of BIU unit.	**[10M]**
	b)	List the advantages of memory segmentation.	**[4M]**
		OR	
2	a)	Illustrate the functionality of Flag register with suitable examples.	**[8M]**
	b)	What is memory segmentation? Explain the use of segmentation in different applications.	**[6M]**

SECTION-II

3		Explain the Addressing Modes of 8086 microprocessor with examples	**[14M]**
		OR	
4	a)	Write an assembly language program to sort the given values in descending order with detailed explanation of taking example data.	**[7M]**
	b)	Define assembler directives and mention the purpose of assembler directives with some examples	**[7M]**

SECTION-III

5		Explain the control word format of 8255 in I/O & BSR mode.	**[14M]**
		OR	
6		Illustrate the purpose of 8251 USART and how it is interfaced with 8086	**[14M]**

SECTION-IV

7	a)	Explain the architecture of 8051 microcontroller.	**[10M]**
	b)	Write short notes on external hardware interrupts of 8051 microcontroller.	**[4M]**
		OR	
8	a)	Describe the operation of I/O ports in 8051 with neat sketch.	**[10M]**
	b)	List the format of PSW register of 8051 and explain each bit	**[4M]**

SECTION-V

9	a)	Explain about the CPSR register of ARM processor	**[7M]**
	b).	Explain about Architecture of ARM processor	**[7M]**
		OR	
10	a)	Explain the SCON register in 8051.	**[6M]**
	b)	Describe the Interrupt, vector table and exception handler in ARM.	**[8M]**

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R18

Code No: R18A0415

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech II Semester Model Paper-4

Microprocessors and Microcontrollers

(ECE)

Roll No										

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

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	Explain the architecture of 8086 with neat diagram.	**[14M]**
	OR	
2	Explain the function of following registers 8086 microprocessor. a) AX,BX,CX,DX b) CS,DS,SS, ES c) BP,SP, SI& DI d) IP and instruction queue	**[14M]**

SECTION-II

3	Explain the instructions of 8086 with examples.	**[14M]**
	OR	
4	a) Write an 8086 assembly language program to convert Binary to BCD number?	**[7M]**
	b) Describe in detail about the Procedures with suitable syntax and example.	**[7M]**

SECTION-III

5	Draw the Block diagram and explain the operations of 8255 PPI.	**[14M]**
	OR	
6	Explain the architecture of 8251A with neat diagram.	**[14M]**

SECTION-IV

7	a) Describe about the timer mode 0 with a neat sketch in 8051 microcontroller.	**[7M]**
	b) Write short notes on external hardware interrupts of 8051 microcontroller.	**[7M]**
	OR	
8	a) Explain about the Memory Structure of 8051.	**[8M]**
	b)Write an Assembly Language Program using 8051 i)Addition of two 8 bit Numbers ii). Addition of two 16 bit Numbers?	**[6M]**

SECTION-V

9	Describe the various timers/ counters of 8051.	**[14M]**
	OR	
10	a) Describe the Software Interrupt instructions in ARM.	**[7M]**
	b) Mention about the program status register instructions in ARM processor.	**[7M]**

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