Code No: RT32021   R13   SET - 1

III B. Tech II Semester Regular Examinations, April – 2016
MICROPROCESSORS AND MICROCONTROLLERS
(Electrical and Electronics Engineering)

Time: 3 hours   Maximum Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**
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PART –A

1	a)	Specify the size of data, address, memory word and memory capacity of 8086 microprocessor	[3M]
	b)	What do you mean my masking the interrupt? Explain	[4M]
	c)	How is PUSH B instruction executed? Find the status after execution	[4M]
	d)	Write the function of OBF in 8255?	[3M]
	e)	List the on-chip peripherals of 8051 microcontroller.	[4M]
	f)	What is the difference between A/D and D/A converters?	[4M]

PART –B

2	a)	Draw the flag register of 8086 microprocessor.	[4M]
	b)	Discuss how pipelined architecture is implemented in 8086	[8M]
	c)	List classification of signals in 8086 microprocessor.	[4M]
3	a)	Give two examples for logical and branch instructions of 8086.	[4M]
	b)	Draw the timing diagram for op-code fetch machine cycle and memory read machine cycle.	[7M]
	c)	Write an assembly language program to multiply two 16 bit numbers.	[5M]
4	a)	Write instructions to load hexadecimal numbers 61B4H in register C and 8245H in accumulator. Display the number 61B4H in port0 and 8245H in port1.	[8M]
	b)	List various assembler directives of 8086 microprocessor.	[8M]
5	a)	Draw the logical block diagram of 8279 keyboard display controller and explain.	[8M]
	b)	How data is transmitted in asynchronous serial communication?	[8M]
6	a)	Draw the pin Diagram of 8051 and explain the function of various signals.	[10M]
	b)	Explain addition and subtraction instructions of 8051.	[6M]
7	a)	Interface an 8×8 keyboard using 8255 ports and write a program to read the code of pressed key	[8M]
	b)	Quantify the number of register banks in 8051 and say how CPU knows which bank is currently in use.	[8M]

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Code No: RT32021   **R13**   SET - 2

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Time: 3 hours   Maximum Marks: 70

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2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**
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PART –A

1   a)   How the identified memory segment is accessed by 8086 microprocessor?   [3M]

   b)   Differentiate between maximum mode and minimum mode of 8086.   [4M]

   c)   List the alternative functions assigned to Port 3 pins of 8051microcontroller   [4M]

   d)   Discuss basic features of 8259   [3M]

   e)   Mention the I/O instructions of 8051 microcontroller.   [4M]

   f)   What do you mean by quantization noise?   [4M]

PART –B

2   a)   Discuss architecture of 8086 microprocessor.   [8M]

   b)   List basic features of 80286 microprocessor.   [4M]

   c)   List any two data manipulation instructions.   [4M]

3   a)   Describe interrupt structure of 8086 microprocessor in brief.   [3M]

   b)   Discuss about instruction format and different addressing modes of 8086.   [8M]

   c)   Draw and explain timing diagram of memory write operation.   [5M]

4   a)   What is an assembler directive? Explain following assembler directives.   [8M]
       (i)   ORG   (ii) DT   (iii) GROUP   (iv) SEGMENT   (v) EQU
   b)   Write an ALP in 8051 to count number of positive and negative numbers from an array   [8M]
      of 8-bit integers.

5   a)   With neat block diagram explain the functions of 8259   [8M]

   b)   Discuss the process of stepper motor interfacing.   [8M]

6   a)   List the various instructions available in 8051 microcontroller.   [8M]

   b)   Explain in detail the modes of operation of Timer unit in 8051 Microcontroller.   [8M]

7   a)   How to interface a 7 segment display using 8051 microcontroller   [8M]

   b)   What do you understand by bit addressable RAM in 8051 microcontroller?   [8M]

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Code No: RT32021   **R13**   **SET - 3**

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Time: 3 hours   Maximum Marks: 70

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2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**
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PART –A

1	a)	If the stack segment register contains 3000h and stack pointer register contains 8434h, what is the physical address of the top of the stack in 8086 microprocessor?	[3M]
	b)	Define machine cycle	[4M]
	c)	Mention the size of DPTR and Stack Pointer in 8051 microcontroller	[4M]
	d)	Write advantages of PIC chips in microprocessor based systems.	[3M]
	e)	What are the addressing modes of 8051 microcontroller?	[4M]
	f)	Name any two types of A to D converters.	[4M]

PART –B

2	a)	List basic features of 80386 microprocessor.	[4M]
	b)	Draw the signal configuration of 8086 and explain the purpose of each signal.	[8M]
	c)	Discuss the similarities and differences between COMPARE and SUBTRACT instructions.	[4M]
3	a)	Draw the timing diagram of I/O read cycle.	[3M]
	b)	Discuss the addressing modes of 8086 with suitable examples.	[8M]
	c)	Describe with a suitable example, operation of a stack.	[5M]
4	a)	Compare macros and procedures with suitable examples.	[8M]
	b)	Give the assembly language implementation of the following: (i) FOR LOOP (ii) REPEAT (iii) IF-THEN-ELSE	[8M]
5	a)	Draw block diagram of 8255 and explain its modes of operation.	[8M]
	b)	Discuss the features of 8259 and 8279.	[8M]
6	a)	Write an 8051 ALP to find Fibonacci series of N numbers.	[8M]
	b)	Explain various types of jump instructions in 8051.	[8M]
7	a)	How do you interface a 4 × 4 matrix keyboard using 8051 microcontroller?	[8M]
	b)	Explain different methods of memory address decoding in 8051 microcontroller.	[8M]

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Code No: RT32021   (**R13**)   (SET - 4)

III B. Tech II Semester Regular Examinations, April – 2016
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Time: 3 hours   Maximum Marks: 70

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2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**
*****

PART –A

1	a)	Why do we need look-up table?	[3M]
	b)	Define instruction cycle	[4M]
	c)	What is the operation of given 8051 microcontroller instructions: XRL A, direct?	[4M]
	d)	What is key debouncing?	[3M]
	e)	What are the different operations performed by boolean variable instructions of 8051?	[4M]
	f)	How much current is needed to drive an LED?	[4M]

PART –B

2	a)	Discuss the features of 80486 microprocessor	[4M]
	b)	Discuss in-detail about instruction set of 8086 microprocessor.	[8M]
	c)	What is instruction pipelining?	[4M]
3	a)	Compare the similarities and differences of CALL and RET instructions with PUSH and POP instructions.	[3M]
	b)	Write a program with a flowchart to multiply two 8-bit numbers.	[8M]
	c)	How address decoding is done in memory interface? Discuss.	[5M]
4	a)	What is the difference between Microprocessors and Microcontrollers?	[8M]
	b)	What is a MACRO? How do you pass parameters to MACRO's?	[8M]
5	a)	Make a comparison between parallel and serial type of data transfer.	[8M]
	b)	Show the control word format of 8255 and explain how each bit is programmed?	[8M]
6	a)	Write an 8051 ALP to find the average of N numbers.	[8M]
	b)	Explain the Data transfer instructions and Program control instructions of 8051 microcontroller.	[8M]
7	a)	Explain the interfacing of keyboard/display with 8051 microcontroller.	[8M]
	b)	Why do we need opto-isolator circuit between microcontroller and the stepper motor?	[8M]

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