

Code No: RT32041

R13**SET - 1****III B. Tech II Semester Regular/Supplementary Examinations, April - 2017****MICRO PROCESSORS AND MICRO CONTROLLERS**

(Common to Electronic and Communication Engineering, Electronics instrumentation Engineering and Electronics and Computer 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 compulsory3. Answer any **THREE** Questions from **Part-B**

PART -A

- 1 a) List different addressing modes of 8086. [3M]
- b) What is an assembler? [3M]
- c) What is interrupt service routine? [4M]
- d) What is DMA? [4M]
- e) Explain the process of Segmentation? [4M]
- f) What is the need of timers in PIC microcontroller? [4M]

PART -B

- 2 a) What are the different segments registers in 8086? Why need memory segmentation? [4M]
- b) Explain the addressing modes of 8086 microprocessor each with an example. [8M]
- c) List out the 4 assembler directives of 8086 processor and explain it. [4M]
- 3 a) Explain the programming development steps in 8086 microprocessor. [3M]
- b) Explain the different types of interrupts of 8086 processor. [8M]
- c) Write about Stacks with suitable Examples. [5M]
- 4 a) Explain memory mapped I/O and I/O mapped I/O. [8M]
- b) What is the advantage of DMA controlled data transfer over interrupt driven or program controlled data transfer? Why are DMA controlled data transfers faster? [8M]
- 5 a) Explain the Register organization of 80386 microprocessor. [8M]
- b) Explain the addressing modes of 80386 microprocessor. [8M]
- 6 a) Draw and discuss the internal architecture of 8051 family of microcontrollers. [8M]
- b) Classify and explain the instruction set of 8051 microcontroller. [8M]
- 7 a) Explain the overview and features of PIC Microcontroller. [6M]
- b) Draw and explain the ARM microcontroller. [10M]

Code No: RT32041**R13****SET - 2****III B. Tech II Semester Regular/Supplementary Examinations, April - 2017****MICRO PROCESSORS AND MICRO CONTROLLERS**

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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**

PART -A

- 1 a) What is the function of ALE signal? [3M]
- b) Define Stack. [4M]
- c) Write the features of 8251 USART. [4M]
- d) What is Paging? [3M]
- e) What is the significance of PSEN pin of 8051 microcontroller [4M]
- f) Give the overview of PIC micro controllers. [4M]

PART -B

- 2 a) What is the length of the instruction Queue in 8086? Discuss the use of the queue. [4M]
Explain the reason for limiting the length of the queue.
- b) Explain the execution of all instructions of 8086 with suitable examples. [8M]
- c) What is the minimum number of segment registers that are necessary to provide segmentation? How do access common data for different programs using segmentation? [4M]
- 3 a) Draw and explain the Interrupt and Interrupt service procedure. [3M]
- b) Draw and discuss interrupt structure of 8086 microprocessor. [8M]
- c) Explain 8086 address decoding for memory banks. [5M]
- 4 a) Write about the different modes of operations in 8255. [8M]
- b) In detail, explain about DMA controller with neat diagram. [8M]
- 5 a) Explain the data type of 80386. [8M]
- b) Explain and detail about segmentation and paging. [8M]
- 6 a) Explain the programming development tools In 8051 microcontroller. [8M]
- b) Explain the pin configuration of 8051 controller. [8M]
- 7 a) Explain the interrupts in PIC 16C61/71. [8M]
- b) Explain the Timer mode operation in microcontrollers. [8M]

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SET - 3

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PART -A

- | | | | |
|---|----|--|------|
| 1 | a) | What is the use of DS and ES registers in 8086. | [3M] |
| | b) | How the interrupt flag is set or clear. | [4M] |
| | c) | Name the two modes of operation of DMA controller. | [2M] |
| | d) | List out all the registers of 80386. | [3M] |
| | e) | Give the flag structure of 8051 microcontroller. | [4M] |
| | f) | Write the features of PIC microcontrollers? | [5M] |

PART -B

- | | | | |
|---|----|---|------|
| 2 | a) | Explain the following instructions i) AAS ii) DIV iii) CALL iv) RET | [4M] |
| | b) | Explain the maximum and minimum mode operation of 8086. | [8M] |
| | c) | Explain Direct addressing mode. | [4M] |
| 3 | a) | Write Hardware interrupt applications. | [3M] |
| | b) | Explain the interrupt response sequence of 8086 Microprocessor. | [8M] |
| | c) | Develop an 8086 assembly language program to arrange the numbers in ascending order. | [5M] |
| 4 | a) | Give the internal block diagram of 8259A and present the overview of it. | [8M] |
| | b) | Draw and discuss the asynchronous mode transmitter and receiver data formats of 8251? | [8M] |
| 5 | a) | Draw and discuss the internal architecture of 80386 in detail? | [8M] |
| | b) | Explain the execution of all instructions of 80386 with suitable examples. | [8M] |
| 6 | a) | Write the salient features of 8051 family of microcontrollers. | [8M] |
| | b) | Explain the Timers in 8051 and its modes? | [8M] |
| 7 | a) | Write short notes on PIC 16F8XX flash controllers? | [8M] |
| | b) | Explain in detail about ARM vs thumb programming model? | [8M] |

Code No: RT32041

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PART -A

- | | | | |
|---|----|--|------|
| 1 | a) | Define instruction pipelining of 8086 microprocessor. | [3M] |
| | b) | What is the difference between NMI and INTR of 8086 processor? | [4M] |
| | c) | Give the control word structure of 8255 PPI. | [4M] |
| | d) | Differentiate real and protected mode of 80386. | [3M] |
| | e) | What are register banks in 8051? | [4M] |
| | f) | Explain about ADDLW and ANDLW instructions of PIC? | [4M] |

PART -B

- | | | | |
|---|----|---|------|
| 2 | a) | Explain the 8086 Bus activities during a read machine cycle. | [4M] |
| | b) | Draw and explain the internal architecture of 8086 processor. | [8M] |
| | c) | What are assembler directives? Explain any 3 assembler directives. | [4M] |
| 3 | a) | Define interrupt and interrupt service routine. | [3M] |
| | b) | Write an assembly language program to generate fabonacci series up to a given number. | [8M] |
| | c) | Write the steps of 8086 when it is interrupted. | [5M] |
| 4 | a) | Draw a typical stepper motor interface with 8255 and explain? | [8M] |
| | b) | Draw and explain the interfacing of 8259 with 8086? | [8M] |
| 5 | a) | Explain about paging in 80386? | [8M] |
| | b) | Explain various addressing modes of 80386? | [8M] |
| 6 | a) | Discuss about memory organization of 8051 microcontroller? | [8M] |
| | b) | What is the purpose of using I/O ports of 8051? Classify and explain them in detail? | [8M] |
| 7 | a) | Explain ARM Architecture and organization? | [8M] |
| | b) | List the interrupts supported by PIC 16C61 and discuss them in brief? | [8M] |
