

Roll No .....

**EC-504**

**B.E. V Semester**

Examination, December 2015

**Microprocessors and Microcontrollers**

*Time : Three Hours*

*Maximum Marks : 70*

- Note:* i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.  
ii) All parts of each questions are to be attempted at one place.  
iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.  
iv) Except numericals, Derivation, Design and Drawing etc.

**Unit - I**

1. a) What are the functions of index registers, pointer registers and instruction pointers?
- b) Define logical address and physical address.
- c) Name and explain the function of different signals used in minimum mode of 8086 microprocessor.
- d) Draw the schematic block diagram of 8086 and explain the function of each block.

OR

What are the functions of the 8284 clock generator in the 8086 systems? If a crystal of frequency 15 MHz frequency is attached to 8284, what will be the frequency of signals at CLK and PCLK pins?

[2]

**Unit-II**

2. a) What is an instruction format? What are the types of instructions of 8086 microprocessors based on format?  
b) What is an assembler? What are the different assemblers used in 8086 programming?  
c) What are the different data types supported by 8087?  
d) Draw the block diagram of the 8087 co-processor architecture and explain briefly.

OR

What is 8089 I/O processor? Write different features of 8089 I/O processor.

**Unit-III**

3. a) What are the different modes of operation of 8253 timer?  
b) What are the applications of 8255 PPI?  
c) What is BSR mode of 8255? Also draw the control word format in the BSR mode.  
d) What are the different modes of 8279 programmable keyboard and display controller? Explain each mode with an example.

OR

Draw the functional block diagram of 8251 USART and explain the operation of each block.

**Unit-IV**

4. a) Distinguish between maskable and non-maskable interrupts.  
b) Draw and explain the status word register of 8257.  
c) Which signals/pins of 8086 are used for handling interrupts and for DMA transfer?

[3]

- d) Draw and explain the functional block diagram of 8259 interrupt controller.

OR

Explain the DMA operation with suitable diagram. What are the different modes of DMA transfer?

**Unit-V**

5. a) What are the features of Intel 8051 microcontroller?  
b) What is a microcontroller? How does it differ from a microprocessor?  
c) Explain the different registers of 8051 briefly.  
d) Explain the various timer modes of 8051 microcontroller. What is the auto-reload modes?

OR

Enlist and explain the addressing modes of 8051 microcontroller with the help of examples.

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