

D 12045

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Name.....

Reg. No.....

**FIFTH SEMESTER B.TECH. (ENGINEERING) (14 SCHEME) DEGREE  
EXAMINATION, NOVEMBER 2016**

**EC 14 505—MICROPROCESSORS AND MICROCONTROLLERS**

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer any eight questions.*

1. Explain the function of unsigned multiplication and division instructions in 8086 with suitable examples.
2. Describe the functional units and their functions in BIU and EU of 8086.
3. Explain the basic read and write machine cycle.
4. Compare closely coupled and loosely coupled configuration.
5. Draw the write cycle timing diagram for maximum mode.
6. Write a program to make the stepper motor rotate in anticlockwise direction.
7. What are the signals a microprocessor should have to support DMA? Explain briefly.
8. Briefly write about the IE and IP register in 8051 microcontroller.
9. What are the functions of following signals of 8051 ? ALE/PROG, PSEN.
10. What is the difference between microprocessor and microcontroller.

(8 × 5 = 40 marks)

**Part B**

*Answer all questions.*

11. (a) Write an 8086 assembly language program to find the sum of numbers in the array of 12 elements. Add comments to your program.  

*Or*

  - (b) (i) discuss about the 8086 instruction used for transferring data between registers, memory, stacks and I/O devices.
  - (ii) write a program based on 8086 instruction set to multiply a constant value to a sequence of data from 1 to  $n$  stored in memory.
12. (a) Describe the maximum mode signals, bus cycles and maximum mode system configuration of 8086 microprocessor in detail.

*Or*

- (b) Elaborate with neat diagram the hardware organization of address space.

**Turn over**

13. (a) Describe with neat block diagram, the architecture of 8259 programmable interrupt controller and its features.

*Or*

(b) Explain about the interfacing of LED and LCD displays with 8086 microprocessor.

14. (a) Explain the internal data memory structure of 8051 microcontroller with its SFRs.

*Or*

(b) What is an ARM processor ? Explain the features of ARM 7 and ARM 9 processors.

(4 × 15 = 60 marks)