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FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2006

EC 04 506—MICROPROCESSOR AND MICROCONTROLLERS

(2004 admissions)

Time : Three Hours　　　　　　　　　　　　　　　　　　Maximum : 100 Marks

Answer **all** *questions.*

1.　(a)　Explain the use of SI and DI register in the string addressing mode with suitable example.

　　(b)　Discuss about the "MVL" and "DIV" instructions of 8086.

　　(c)　Name the various types of memories and discuss about their characteristics.

　　(d)　Name and explain the use of the control signals generated by 8086 in its minimum mode of operation.

　　(e)　What role is played by the registers :

　　　　　(i) ISR ; (ii) IMR ; (iii) IRR of 8259 interrupt controllers ?

　　(f)　Differentiate between the encoded mode and decoded mode of operation of the scan section of the 8279 keyboard display controller IC.

　　(g)　List the different addressing modes supported by the data transfer group instructions of 8051 and give *one* example to each one.

　　(h)　Discuss about the memory banks of 8051 microcontroller.

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2.　(a)　Discuss about address space, data organization, I/O space, assembler directives and stack all with reference to 8086 processor.

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　　(b)　Write an assembly language program to sort an array of unsigned binary numbers available in extra segment in ascending order. Assume the array size as 20 h. Explain the algorithm with an example (Bubble sort).

3.　(a)　Draw the internal architecture of 8086 in block diagram form and explain the function of each unit.
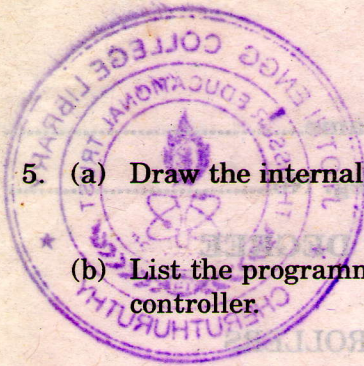
　　　　　　　　　　　　　　　　　　　Or

　　(b)　Explain the hardware organization of 8086 in its maximum and minimum mode of operation.

4.　(a)　Draw the internal architecture of 8237 DMA controller in block diagram form and explain the function of each block.

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　　(b)　Explain how 8251 programmable communication interface chip can be interfaced to a microprocessor for serial data transfer.

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5. (a) Draw the internal architecture of 8051 microcontroller in simplified form and explain.

Or

(b) List the programming steps for transmitting and receiving data serially using 8051 micro-controller.

(4 × 15 = 60 marks)