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(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2054 Roll No. | | | | | | | | | | |

B. Tech.

(SEM. IV) EXAMINATION, 2007-08

MICROPROCESSORS

Time : 3 Hours] *[Total Marks : 100*

Note : *Attempt **all** questions.*

1 Attempt any **four** parts of the following : **4×5=20**

(a) Define opcode and operand.

Consider the following instruction of 8085.

(i) MOV H,L

(ii) MVI H, 47H

(iii) ADI F5 H

(iv) SUB C

Specify the operand in each of the above instructions and explain the task performed by each of the above instructions.

(b) **Fig. 1** shows the 74LS138 (3-to-8 decoder), with the three input signals: **10/$\overline{\mathbf{M}}$**, $\overline{\mathbf{RD}}$ and $\overline{\mathbf{WR}}$ from 8085 microprocessor. Specify and name the valid output signals. Explain why four output signals are invalid or meaningless.

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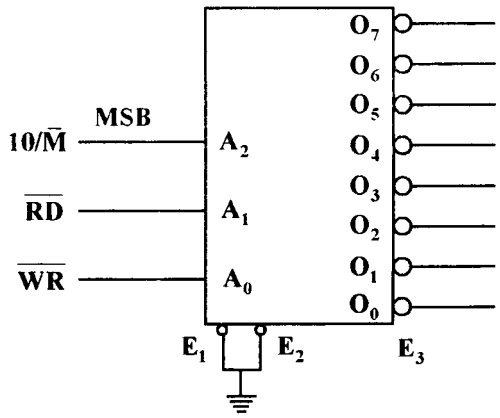

Fig. 1

(c) Explain the need of program counter (PC) and stack pointer (SP) in a 8085 μP.

(d) Explain the purpose of address bus and data bus in a 8085 μP. Which of these buses is bidirectional and why?

(e) Explain the concept of segmented memory in 8086. What are its advantages?

(f) Explain the instruction pipelining scheme in 8086.

2 Attempt any **two** parts of the following : **2×10=20**

(a) List the 8086 addressing modes, and give an example of each. Write a program using the mov instruction, to produce the following results.

(i) Move the contents of register AX to registers BX, SI and DS.

(ii) Move the contents of memory location DS: 1ACDH to register ES.

(b) With reference to logical AND instruction of 8086, why "No segment register may be source or destination." Explain the operation of AND instruction.

(c) Explain the action performed by each of the following instructions:

SUB dx, si

SUB ax (6789H)

SUB ax, (bx)

SUB (4598H), di

What is the difference between SUB and SBB instructions?

3 Attempt any **two** parts of the following: **2×10=20**

(a) Enlist the advantages of assembly language programming over machine language. What do you mean by an assembler and a linker?

(b) What is the role of stack in calling a subroutine and returning from routine? What is the difference between hardware and software interrupts?

(c) Explain the interrupt response sequence of 8086. How do you set or clear the interrupt flag IF? What is its importance in the interrupt sequence of 8086?

4 Attempt any **two** parts of the following : **2×10=20**

(a) What do you mean by following modes operation of 8255?

(i) Bit set-reset (BSR) mode

(ii) I/O modes

How one of the above two modes can be selected through control word ?

(b) Design a real time clock using 8253 interfaced with 8086. The clock input at CLK to the 8253 is of 1.5 MHz frequency. Assume suitable addresses for 8253. Further, display the time using a 6-digit 7-segment multiplexed display unit.

(c) What do you mean by the minimum mode or maximum mode? How to select minimum mode? Name the maximum mode signals.

5 Attempt any **two** parts of the following : **2×10=20**

(a) Draw and discuss the block diagram of the internal architecture of 8259A.

(b) What is the advantage of DMA controller data transfer over interrupt driven or program controlled data transfer? Why are DMA controlled data transfer faster?

(c) Enlist the salient features of 80386. Explain the function of following signal of 80386 :

(i) W/R #

(ii) D/C

(iii) ADS #

(iv) NA #
