NEW

2016

BCA

3rd Semester Examination

MICROPROCESSOR

PAPER—2105

Full Marks : 70

Time : 3 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer *Question no. 1* and any *four* from the rest.

1. Answer any *five* questions : 5×2

(a) What are the advantages of an assembly language in comparison with high-level languages ?

(b) Explain the differences between a microprocessor and a microcomputer.

(c) Identify the difference between the ASCII and the extended ASCII codes.

(d) Why are the program counter and the stack pointer 16-bit registers ?

(e) The memory address of the last location of a 1k byte memory chip is given as FBFFH. Specify the starting address.

(f) If the 8085 microprocessor has fetched the machine code located at the memory location 205FH, specify the contents of the program counter.

(g) If the clock frequency is 5 MHz, how much time is required to execute an instruction of 18 T-states ?

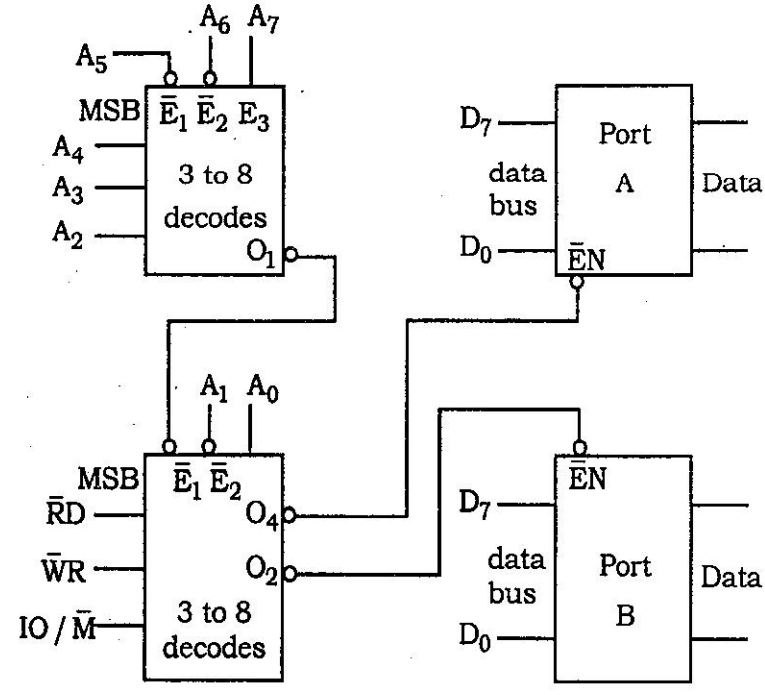
(h) Explain the function of ALE and IO/ $\bar{M}$ signals of the 8085 microprocessor.

2. (a) The instruction LDA 2050H copies the contents of the memory location 2050H into the accumulator. It is a 3-byte instruction with four machine cycles and 13 T-states. Identify the fourth machine cycle and its control signal.

(b) Assume that memory location 2075H has a data byte 47H. Specify the contents of the address bus A_{15} – A_8 and the multiplexed bus AD_7 – AD_0 when the microprocessor asserts the $\overline{RD}$ signal.

(c) Why is a 16-bit address (data) stored in memory in the reversed order – the low order byte first, followed by the order byte. 7+5+3

3.



(a) In the above figure, identify the Port A and Port B as input or output ports?

(b) What are the addresses of ports A and ports B in the above figure.

(c) How does the microprocessor differentiate among a positive number, a negative number, and a bit pattern ? 2+(5+5)+3

4. (a) Write an assembly language program using ADI instruction to add the two hexadecimal numbers 3AH and D8H and to display the answer at two memory locations 2050H and 2051H.

(b) Write instruction to clear CY flage, to load number FFH in regists C, and to add 01 to (C). If the CY flag is set, display 01 at an output port, otherwise, display the constants of reg C. Explain your results. 8+7

5. (a) Explain the memory organisation of 8086 microprocessor. Draw the timing diagram of a typical memory write machine cycle.

(b) Define foldback memory with example. 10+5

6. (a) What do you understand by Direct Memory access ? What are the advantages of DMA ?

(b) Draw and explain the architecture of 8257 DMA controller. (4+3)+8

7. Write short notes on : 5×3

(a) Hardware interrupt ;

(b) Latch ;

(c) Keyboard controller.

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