Roll No.....

BCA-305

B.C.A. (Semester III) Examination – 2011
Introduction to Microprocessor

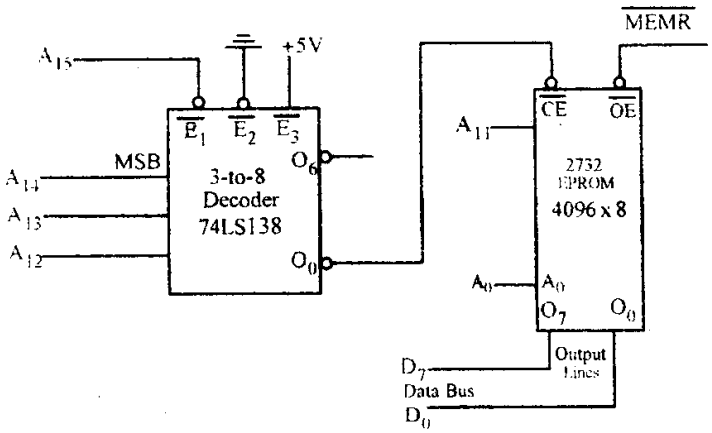
Time: Three Hours] *[Maximum Marks:* **75**

Note: Attempt question from all the sections.

Section-A

Note: Section A is compulsory.

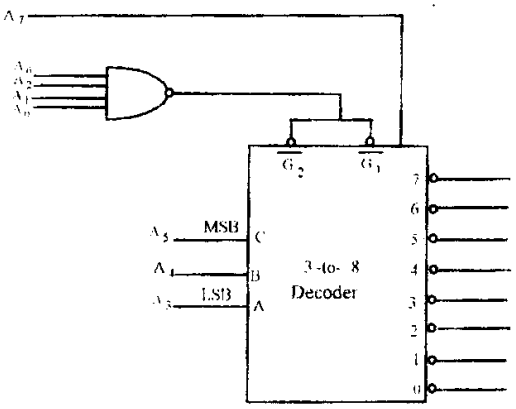
1. (a) In Figure -1 below identify the memory map (in Hex) **(3)**



(b) Connect the output line O_6 of the decoder to CE of the memory chip instead of O_0 and identify the memory map.

(c) If 8085 has fetched the machine code located at memory location205FH, specify the content of program counter.

2. In figure-2 below:



Specify the output line that goes low if the input (Including the enable lines) to the 3x8 decoder (to be used in interfacing a memory chip with 8085) is

	A_7	A_6	A_5	A_4	A_3	A_2	A_1	A_0
(a)	1	1	1	1	0	1	1	1
(b)	1	0	0	1	0	1	1	1

3. (a) If the memory chip size is 1024x4 bits , how many chips are required to make up 2K byte of memory. **(2)**

(b) If the memory address of last location of 16K byte memory chip is given as FBFF, specify the starting address. **(2)**

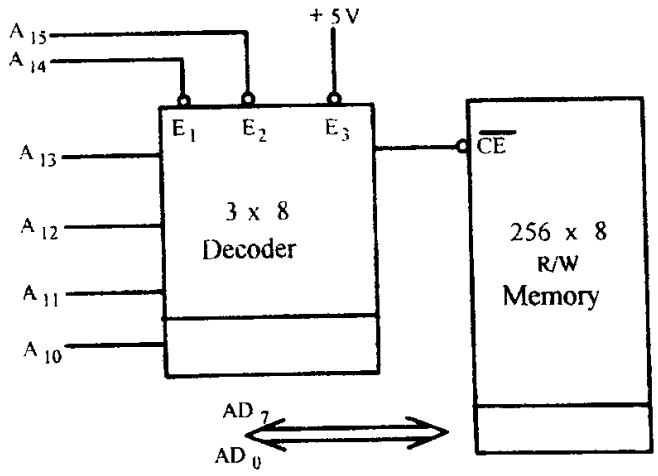
Section-B (6 marks each)

(Short Answer Type Questions)

Note: Attempt any seven questions.

4. What are the derived control signals for memory read and memory write operations? From which basic control signals these control signals are derived and how? Show trough a schematic diagram to generate Read/ write control signals for memory.

5. Using figure-3 below:



Specify the entire memory map (address). Explain the significance of don't care address line on memory address.

6. Define T states. If the clock frequency is 5MHz, how much time is required to execute an instruction of 18 T-states?

7. Illustrate RRC and RAR individually with the content of accumulator 82H and CY=1.

8. (a) Explain how many times the following loop will be executed

```
        LXI B, 0009H
LOOP: DCX B
        JNZ LOOP
```

(b) Explain how many times the following loop will be executed

```
        LXI B, 0009H
LOOP: DCX B
        MOV A, B
        ORA C
        JNZ LOOP
```

9. Describe all machine of OUT instruction.

10. Explain the following terms:

(a) Program counter

(b) Stack and stack counter

11. Write a program in 8085 assembly language to find the largest number from a series of 10 numbers stored in memory locations 2601H to 260AH. The result to be stored in 2800H.

12. Explain sign, carry and zero flags. Which flags are affected after the following instructions are executed:

(a) INX (b) INR (c) CMP

13. Discuss the sequence of events that occurs when 8085 microprocessor fetches the opcode from memory.

Section –C

(Long Answer Type Question)

Note: Attempt any one question.

14. (a) Differentiate different types of I/O interfacing.

(b) Why a subroutine is used in programming? What are the instruction available to use a subroutine in 8085 assembly language? Discuss them.

(c) Write a subroutine using 8085 assembly language to clear the memory location starting from 2090H to 2099 H.

15. The following program has a delay subroutine located at location 2080H. Analyze the program and answer the questions given at the end of the program.

Memory Location	Mnemonics
2000	LXI SP 20CDH; Main Program
2003	LXI H, 0008H
2008	MVI B, 0FH
2009	CALL 2080H
200B	OUT 01H
200D	DCR B
200E	HLT
2082	PUSH H
2083	PUSH B
|	MVI B, 05H
|	|
|	|
	POP B
	POP H
	RET

(a) When the execution of the CALL instruction located at 2008H-200AH is completed, list the contents stored at 20CCH and 20CBH, the contents of the program counter, and the contents of the stack pointer register.

(b) List the stack location and their contents after the execution of the instruction PUSH H and PUSH B in the subroutine.

(c) List the contents of the stack pointer register after the execution of the instruction PUSH B located at 2081H.

(d) List the contents of the stack pointer register after the execution of the instruction RET in the subroutine.