Reg. No.										

MANIPAL UNIVERSITY

THIRD SEMESTER B.S. (ENGG.) DEGREE EXAMINATION – DECEMBER 2015

SUBJECT: COMPUTER ORGANIZATION AND ASSEMBLY LANGUAGE PROGRAMMING (CS 232)
(BRANCH: CE/CS)

Monday, December 14, 2015

Time: 10:00 – 13:00 Hrs. Max. Marks: 100

- **Answer any FIVE full questions choosing THREE from Unit I and TWO from Unit II.**
- **Missing data can be suitably assumed.**

UNIT I

1A. Explain any five addressing modes of 8086 with one example each.

1B. Explain the segmented memory concept in 8086. How physical address is generated?

(10+10 = 20 marks)

2A. Assume an array A = 3, 16, 4, 6, 1, 32, 48, 5 in the memory. What is the content of A after the execution of the following sequence of instructions?

```
LEA SI, A
MOV CL, 8
MOV BL, 0AAH
L2:    SHL BL, 1
JC L1
INC SI
DEC CL
JNZ L2
MOV AH, 4CH
INT 21H
L1:    ADD BYTE PTR [SI + 1], 10
INC SI
DEC CL
JNZ L2
```

2B. Explain any five string instructions with examples.

2C. Write the 8086 instruction which will perform the indicated operation:

i) Copy the content of memory location whose offset is in DI, to accumulator.

ii) Invert the upper 4 bits of BL, but do not affect the lower nibble.

iii) Divide AX by BL

iv) If the 8086 data segment register contains 7000H, write the instruction that will copy the contents of DL to address 74B2CH

v) Set all the bits of least significant nibble of AX to 1, but do not affect the other bits.

(5+10+5 = 20 marks)

3A. What is a macro? How do you pass parameters to a macro? Explain with an example.

3B. Write a procedure to check a number is odd or even. Use this procedure to display all odd numbers in an array accepted from the keyboard.

(10+10 = 20 marks)

4A. Explain the following BIOS interrupt function requests:

i) To set cursor position

ii) To scroll the active page down

4B. Write a program using 8086 instructions to accept a word from the keyboard, reverse the case of each character in the word and to display the resulting sentence on the screen.

(10+10 = 20 marks)

5A. What are the actions taken by the 8086 in response to an interrupt request? Write a note on interrupt vector table.

5B. What do you mean by Reentrant procedures? Explain with an example. How do you make a procedure Reentrant?

(10+10 = 20 marks)

UNIT II

6A. Explain with the help of a neat block diagram the functional units of M68HC11 CPU.

6B. Discuss the operation performed by the following M68HC11 instructions with examples. Specify the addressing modes used by the instructions.

i) BRCLR ii) BSET iii) BITA iv) FDIV v) TXS

(10+10 = 20 marks)

7A. Explain the following BUFFALO ROM commands:

i) ASM ii) MOVE iii) MM iv) MD v) BF

7B. Write a program using M68HC11 instruction set to find the average of all the elements of the array, when the array elements are in bytes.

(10+10 = 20 marks)

8A. Explain Interlocked and Pulsed Full Handshake Parallel I/O in M68HC11.

8B. Explain the actions taken by M68HC11 when reset occurs.

(10+10 = 20 marks)