

MCA DEGREE I SEMESTER EXAMINATION NOVEMBER 2010

CAS 2102/2104 COMPUTER ORGANIZATION

Time: 3 Hours

Maximum Marks : 50

PART A

(Answer ALL questions)(Each question carries TWO marks)

(15 x 2 = 30)

- I. (a) Represent +7 and -7 in sign and magnitude, 1's complement and 2's complement representations using 4 bits.
 (b) Implement all basic gates using Universal gates.
 (c) Give an example for sequential circuits and combinational circuits. What is the difference between them.
- II. (a) What is the use of Directives in Assembly Language programming? Give an example for directive.
 (b) Describe the general addressing modes which are suitable for handling Arrays.
 (c) Write a short note on Synchronous Bus.
- III. (a) Define the terms 'Latency' and 'Bandwidth' of a memory.
 (b) Write a note on features of RAID disk arrays.
 (c) What are the various mechanisms for implementing virtual memory?
- IV. (a) What is meant by 'Out of Order Execution'?
 (b) Write a note on Data hazards, Control hazards and Structural hazards.
 (c) Write the function of Micro program Counter in micro programmed control Unit.
- V. (a) Describe any two rotate/shift instructions in 8086.
 (b) What is the usage of segment registers in 8086 Microprocessor?
 (c) Write the usage and function of following 8086 instructions.
 (i) LOOP (ii) LEA

PART B

(Each question carries FOUR marks)

(5 x 4 = 20)

- VI. A. Represent the following numbers in IEEE single precision format.
 (i) + 0.0010110.....x 2⁹ in unnormalized value, excess 127 exponent
 (ii) + 1.0110.....x 2⁶ in Normalized version, excess 127 exponent.
- OR**
- B. (a) Design a counter circuit that counts the sequence 0-2-4-6-1-3-5-7-0.
 (b) What is the usage of buffer registers in Single Bus Structure?
- VII. A. Describe the various operations while a Call Instruction is executing with the help of an example.
- OR**
- B. (a) Write a note on functions of an I/O Interface.
 (b) Describe the characteristics of PCI and SCSI bus standards.

- VIII. A. (a) Draw and explain the internal organization of a 2M x 8 dynamic memory chip.
(b) Write a note on Cache Mapping Functions.

OR

- B. Simplify the Boolean Function

$$F(w, x, y, z) = \sum(1, 3, 7, 11, 15) \text{ and don't care conditions.}$$

$$D(w, x, y, z) = \sum(0, 2, 5)$$

- IX. A. Write and explain the control sequence for execution of the instruction ADD(R3),R1.

OR

- B. Describe various techniques to handle Branch instructions to reduce their negative impact on the rate of execution of instructions.

- X. A. Explain *any four* addressing modes of 8086 microprocessor with the help of examples.

OR

- B. Compare the features of 80486 and Intel Pentium Processors.
