

S.E. IT, sem - I
Nov-Dec-2012, 2008 pattern

Total No. of Questions—12]

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Seat No.	
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[4262]-211

S.E. (I.T.) (First Semester) EXAMINATION, 2012

COMPUTER ORGANIZATION

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 100

- N.B. :—** (i) Answer question 1 or 2, 3 or 4 and 5 or 6 from Section I and question 7 or 8, 9 or 10 and 11 or 12 from Section II.
- (ii) Answers to the two Sections should be written in separate answer-books.
- (iii) Neat diagrams must be drawn wherever necessary.
- (iv) Figures to the right indicate full marks.
- (v) Assume suitable data, if necessary.

SECTION I

1. (a) Draw flow chart for Non-Restoring Division Algorithm and perform division operation on the following numbers using the same method :

Dividend = 1101 Divisor = 0100

[10]

P.T.O.

- (b) Draw IEEE standards for Single Precision and Double Precision floating point numbers and state various fields in it with their size and significance. [8]

Or

2. (a) Draw the Hardware Implementation of Booth's multiplication algorithm and perform the multiplication operation of the following pair of signed numbers using Bit Pair Recoding method :
Multiplicand = 110011
Multiplier = 101100. [10]
- (b) Draw Von Neumann Architecture and explain function of registers in it. [8]
3. (a) Draw and explain instruction format for 8086 processor. [8]
- (b) Explain the following addressing modes of 8086 with *one* example of each :
- (i) Register Addressing
 - (ii) Based Addressing
 - (iii) Immediate Addressing
 - (iv) Based Index with Displacement Addressing. [8]

Or

4. (a) Draw and explain architecture of 8086. [8]
- (b) Draw Timing Diagram for Memory Write Cycle of 8086 in Minimum Mode and list operations in each T state. [8]
5. (a) Compare :
- (i) Hardwired Control and Micro-programmed Control.
- (ii) Horizontal and Vertical Microinstruction Format. [8]
- (b) Write the control sequence for the following instruction for the single bus organization : SUB (R_3), R_4
- Where R_3 is source register and R_4 is destination register. [8]

Or

6. (a) What is Microinstruction Sequencing ? Explain with the help of suitable diagram the technique used to solve the problem due to several branch instructions in micro-program sequencing. [8]
- (b) Draw the diagram of Micro-programmed control unit and give its advantages and disadvantages. [8]

SECTION II

7. (a) Compare SRAM Vs. DRAM. [8]
- (b) A cache consisting of 256 blocks of 16 word each for a total of 4096 (4K) words and assume that the main memory is addressable by a 16 bit address and it consists of 4K blocks. How many bits are there in each of the TAG, BLOCK/SET and WORD fields for direct mapping cache ? [8]

Or

8. (a) What is MESI Protocol ? Explain the meaning of each of the four states of the MESI Protocol. [8]
- (b) Write short notes on (any two) : [8]
- (i) Magnetic Disk
 - (ii) EPROM
 - (iii) CDROM
 - (iv) RAID.

9. (a) List the features of IC 8255 and IC 8251. [8]
- (b) Explain Programmed Control I/O with a neat diagram. [8]

Or

10. (a) Compare : [8]

- (i) Memory Mapped I/O and I/O Mapped I/O.
- (ii) Synchronous and Asynchronous Serial Communication.

(b) Explain the working principle of the following :

- (i) Video Displays
- (ii) Scanner. [8]

11. (a) Compare Closely coupled and Loosely coupled multiprocessor configurations. Explain loosely coupled multiprocessor configuration. [12]

(b) Explain instruction pipelining in brief. [6]

Or

12. Write short notes on (any *three*) : [18]

- (i) Superscalar Architecture
- (ii) RISC
- (iii) Cluster
- (iv) UMA
- (v) NUMA.