May - June 2012

Total No. of Questions—12] [Total No. of Printed Pages—4+1

Seat No.	

[4162]-211

S.E. (Information Technology) (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 restoring division algorithm and perform division of the following numbers using restoring division algorithm :

Dividend = 1100, Divisor = 11. [10]

P.T.O.

(*b*) Describe the IEEE standards for single precision floating point numbers. Represent $-(307.1875)_{10}$ in single precision format. [8]

Or

2. (*a*) Draw the flowchart for Booth's multiplication algorithm and solve the following using Bit Pair Recoding method : [10]

Multiplicand = 110101 Multiplier = 011011

(*b*) Explain IAS (Von Neumann) Architecture with the help of a neat diagram and list the instructions supported by IAS computer. [8]

3. (*a*) What do you mean by programmers model of 8086 ? Explain the same with the help of neat diagram. [8]

(*b*) Explain the following addressing modes of 8086 with *one* example of each : [8]

(*i*) Immediate

(*ii*) Register Indirect

(*iii*) Direct

(*iv*) Based Index with displacement.

Or

4. (*a*) Draw Timing diagram for memory read cycle of 8086 and list operations in each T state. [8]

(*b*) Sketch block diagram showing basic 8086 minimum mode system. Explain functions of 8282 latches and 8286 transceiver. [8]

5. (*a*) Draw and explain Single Bus Organization of the CPU, showing all the registers and data paths. [8]

(*b*) Explain the design of Multiplier Control unit using Delay Element Method. [8]

Or

6. (*a*) In microprogrammed control what is the necessity of the grouping of control signals ? Also explain the procedure of control signals with the help of suitable example. [8]

(*b*) Explain the sequence of operations needed to perform processor functions : [8]

(*i*) Fetching a word from memory

(*ii*) Performing an arithmetic or logical operation.

SECTION II

7. (*a*) State cache mapping techniques. Draw and discuss them with their merits and demerits [10]

(*b*) List and explain write policies used with cache memory and state write policy used for virtual memory with justification. [8]

Or

8. (*a*) Explain the terms virtual and physical address. How virtual address is converted into physical address when paging is enabled. [10]

(*b*) Write short notes on : [8]

(*i*) DVD

(*ii*) CDROM.

9. (*a*) Draw control word format of 8255 and give significance of each bit in it. List operating modes of 8251. [8]

(*b*) Explain the working principle of the following : [8]

(*i*) Display Devices

(*ii*) Scanner.

Or

10. (*a*) State and explain different data transfer techniques. [8]

(*b*) State features of 8251 and explain difference between synchronous and asynchronous serial communication. [8]

11. (*a*) Compare closely and loosely coupled multiprocessor system. [8]

(*b*) Write notes on : [8]

(*i*) Symmetric multiprocessors

(*ii*) Multiple processor organization.

Or

12. (*a*) State and explain goals of RISC design. [8]

(*b*) Write notes on : [8]

(*i*) Clusters

(*ii*) Vector Processors.