Code No: R31041   **R10**   **Set No: 1**

III B.Tech. I Semester Supplementary Examinations, June/July - 2014
COMPUTER ARCHITECTURE & ORGANIZATION
(Com.to.ECE,EIE)

Time: 3 Hours   **Max Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Discuss various functional units of a computer.
   (b) Explain the following with examples for each.
      (i) Fixed point representation.
      (ii) Integer representation
      (iii) Floating point representation

2. (a) Explain the various Instruction types.
   (b) Draw and explain the flow chart for instruction cycle.

3. Discuss the basic organization of a micro programmed control unit and the generation of control signals using micro program

4. (a) Perform the arithmetic operations (+70) + (+80) and (-70) +(-80) in binary using signed-2's complement representation for negative numbers.
   (b) Explain the Booth's algorithm for multiplication of signed two's complement numbers.

5. (a) Discuss the memory hierarchy in a computer system with regard to speed, size and cost.
   (b) Explain the three types of mapping procedures related to cache memory organization at length.

6. (a) What is an interrupt? What are the different types of interrupts known to you, describe briefly?
   (b) How is data transmitted between main memory and secondary memory using DMA?

7. What is cache coherence problem? What are the conditions for Incoherence? Discuss solutions for cache coherence problem.

8. (a) Discuss the characteristics of Multiprocessors.
   (b) Explain how synchronization is achieved in multiprocessor systems.
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Set No: 2

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Time: 3 Hours   **Max Marks: 75**

Answer any FIVE Questions
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*****

1. (a) What is a bus? Draw the figure to show how functional units are interconnected using a bus and explain.
   (b) Describe fixed point representation with examples.

2. (a) Explain various instruction formats with examples.
   (b) Write short notes on process organization.

3. Explain the concept of micro programmed control unit.

4. (a) Perform the arithmetic operations (+70) + (+80) and (-70)+(-80) in binary using signed-2's complement representation for negative numbers.
   (b) Draw the flowchart for floating point division and explain.

5. (a) Draw and explain Associative cache organization.
   (b) Explain in brief virtual memory.

6. (a) Give a brief note on various peripheral devices.
   (b) Discuss the features of Intel 8089 IOP.

7. (a) List and explain the applications of multiprocessors.
   (b) Illustrate the concept of multithreading with example.

8. (a) Differentiate between tightly coupled and loosely coupled multiprocessors.
   (b) What is the need for bus arbitration? Explain in detail the two static bus arbitration procedures.

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Code No: R31041   **R10**   **Set No: 3**

III B.Tech. I Semester Supplementary Examinations, June/July - 2014
COMPUTER ARCHITECTURE & ORGANIZATION
(Com.to.ECE,EIE)

Time: 3 Hours   **Max Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
*****

1. (a) Draw the basic structure of a computer and explain.
   (b) Explain about sign magnitude and 2's complement approaches for representing the Fixed point numbers. Why 2's complement is preferable.

2. (a) List and explain the characteristics of machine instructions.
   (b) Discuss instruction cycle in detail.

3. (a) Explain the variety of techniques available for sequencing of microinstructions based on the format of the address information in the microinstruction.
   (b) Compare and Contrast hardwired control unit with micro programmed control unit.

4. (a) Perform the arithmetic operations (+42) + (-13) and (-42)-(-13) in binary using signed-2's complement representation for negative numbers.
   (b) Discuss floating point arithmetic operations with examples.

5. (a) Write a note on memory hierarchy.
   (b) What is associative memory? Why is it faster than main memory? Explain its hardware organization in detail.

6. (a) Give a detailed note on parallel priority interrupt.
   (b) Explain the operation of DMA controller with a neat block diagram.

7. (a) Write a short note on cache coherence.
   (b) Illustrate vector computations with examples.

8. (a) With a neat diagram explain the working of 8x8 omega switching network.
   (b) Explain various mechanisms for achieving synchronization in multiprocessor systems.
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Set No: 4

III B.Tech. I Semester Supplementary Examinations, June/July - 2014
COMPUTER ARCHITECTURE & ORGANIZATION
(Com.to.ECE,EIE)

Time: 3 Hours   **Max Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1. (a) What are the different types of information handled by a computer? Explain.
   (b) Represent the number (+46.5)10 as a floating point binary number with 24 bits. The normalized fraction mantissa has 16 bits and the exponent has 8 bits.

2. (a) Describe various addressing modes in detail.
   (b) Give a short note on instruction pipelining.

3. (a) Hardwired control unit is faster than microprogammed control unit? Justify this statement.
   (b) Briefly explain the basic organization of a micro programmed control unit and the generation of control signals using micro program

4. (a) With an example explain how BCD addition is performed.
   (b) Illustrate Booths multiplication algorithm with an example.

5. (a) Explain direct mapped cache organization in detail.
   (b) What is virtual memory? What is the relation between address and memory space in a virtual memory system? Explain with the help of example

6. Write notes on the following:
   (i). Programmed I/O   (ii). Interrupt driven I/O
   (iii). Serial communication   (iv). DMA.

7. (a) Describe the characteristics of multiprocessors.
   (b) Discuss MESI protocol in detail.

8. (a) Give a note on Inter processor communication
   (b) Explain various mechanisms for achieving synchronization in multiprocessor systems.

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