Code: 9A05406

1

B.Tech II Year II Semester (R09) Regular & Supplementary Examinations, April/May 2013

COMPUTER ORGANIZATION

(Common to ECC and CSE)

Time: 3 hours Max Marks: 70

Answer any FIVE questions

All questions carry equal marks

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1 With the help of a neat diagram explain the interconnection of processor and main memory.

2 (a) Explain the operation of 4-bit adder-subtractor with example.
(b) Give hardware implementations to perform logic and shift operations.

3 Discuss in detail the design of control unit with block diagram.

4 (a) Perform the arithmetic operations given below with binary and negative numbers in signed -2's complement representation. Use seven bits to accommodate each number together with its sign. (i) (-53) + (-80) (ii) (-53) - (+80)
(b) Explain the decimal division algorithm flowchart with a suitable example.

5 (a) Explain with the help of a block diagram the cache memory system.
(b) A block set-associative cache consists of 64 blocks divided into 4 block sets. The main memory contains 4096 blocks; each consists of 128 words of 16 bits length.
(i) How many bits are there in main memory?
(ii) How many bits are there in each of the TAG, SET and WORD fields?

6 (a) How are hardware controlled I/O also known as? Discuss the merits of the same.
(b) Discuss in detail interrupt driven I/O.

7 (a) Explain the attached array processor with conventional computer.
(b) What is structural hazard?

8 (a) Explain memory update policies to prevent cache coherence problem.
(b) Discuss on the advantages of loosely coupled systems.

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2

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Answer any FIVE questions

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1 (a) Write a note on performance measure.
(b) Explain basic operational concepts of a computer with neat diagram.

2 (a) Explain interrupt cycle with flow chart.
(b) Describe general branch and call/return instructions.

3 (a) Explain mapping techniques to convert an operation to a micro routine address in control memory.
(b) Explain the operation of a micro programmed control unit.

4 (a) Multiply 100111 with 11011 using booths algorithm.
(b) Give and explain the hardware implementation for signed 2's complement addition and subtraction.

5 Explain the various features and applications of DVD.

6 (a) Explain the PCI bus commands.
(b) Draw and explain the timing diagram for PCI read operation.

7 Classify the pipeline processors and explain them in detail.

8 (a) What do you mean by bus arbitration?
(b) Explain the serial arbitration technique with the help of a neat diagram. State advantages and disadvantages.

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3

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1 Explain in detail on floating-point representation. Support your answer with examples wherever necessary.

2 (a) Explain the setup involved in instruction execution using state diagram.
(b) Explain the various addressing modes of an instruction.

3 (a) Write about the control memory in detail.
(b) Compare and contrast hardwired control and micro-programmed control. Is it possible to have a hardwired control associated with a control memory?

4 (a) Draw the flow chart for multiplication of two signed magnitude fixed point number and explain with a numerical example.
(b) With the help of diagram explain “all serial decimal addition”.

5 (a) Explain the concept of cache updating and the need for its updating. Discuss the different updating systems.
(b) Explain the necessity of replacement algorithms for cache memory.

6 (a) Explain the arrangement for group handling of priority interrupts.
(b) Explain the need for assigning priorities to the interrupts.

7 Explain the two phases instruction fetch and execute.

8 (a) Explain with the help of a neat sketch how a time shared bus inter connection system for multiple processors provide a common communication path connecting all of the functional units.
(b) Draw the sketch and explain the multiprocessor with unidirectional buses.

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4

B.Tech II Year II Semester (R09) Regular & Supplementary Examinations, April/May 2013

COMPUTER ORGANIZATION

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Answer any FIVE questions

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1 (a) Distinguish between fixed-point and floating-point representations of given number.
(b) What are the various ways of representing negative numbers? Explain with an example.

2 Draw and explain the flow chart for instruction cycle.

3 (a) Support or oppose the statement "the control unit is a firmware".
(b) What are micro-sub-routines? Write micro-subroutines for ADD and SUB operations.

4 (a) Explain non restoring method of division with a simple example.
(b) With the help of a flow chart explain the division operation.

5 Describe and explain in detail optical memories.

6 (a) What is I/O interface? Explain I/O interface with the help of a block diagram.
(b) With the help of a neat sketch explain the I/O interface for I/O device and I/O interface for O/P device.

7 (a) Explain the hardware organization for four stage instruction pipeline.
(b) What is a data hazard?

8 Discuss the cache coherence in the centralized share memory architecture.

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