

II B.Tech. II Semester Regular Examinations, April/May -2005
COMPUTER ORGANIZATION
(Common to Computer Science & Engineering, Information Technology,
Computer Science & Systems Engineering and Electronics & Computer
Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Draw and explain the timing of read operation in both synchronous and asynchronous timing.
(b) Discuss various data transfer types supported by buses
2. (a) Explain the subtraction of binary numbers in twos complement notation
(b) Discuss about floating point addition.
3. Discuss about various Pentium operation types with examples.
4. (a) List and describe Load/Store instructions of MIPS R-Series processor
(b) Discuss about synthesizing other addressing modes with MIPS addressing mode
5. (a) What do you mean by virtual memory. Also explain about virtual memory organization.
(b) Criticize the following statement: "Using a faster processor chip results in a corresponding increase in performance of a computer, even if the main memory speed remains the same".
6. (a) Explain about the magnetic disk principles along with its advantages.
(b) Discuss the format of a disk address word.
(c) Discuss about disk operations.
7. (a) Elaborate on control of micro sequencer.
(b) Discuss about 8832, which is a registered ALU
8. (a) Why special handling is required for branch instruction in a pipelined processor. Explain with examples.
(b) How would you determine the number of pipeline stages in a pipelined processor

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1. (a) Discuss the interconnection structure design of a computer.
(b) Explain various bus lines.
(c) What do you mean by multiple - bus hierarchies.
2. (a) Find the output binary number after performing the following arithmetic operations
i. $111.01 + 10.111$
ii. $11.01 + 110.11$
iii. $110.11 - 111.01$
(b) Explain about the longhand division of binary integers.
3. (a) List various data transfer operations of IBM S/370 system
(b) Explain about common transfer-of-control operations found in instruction sets.
4. (a) Explain about the machine state register.
(b) List the characteristics of CISC and RISC processors
5. (a) Discuss about principles of cache memory.
(b) Elaborate on elements of cache memory.
(c) Explain the purpose of replacement algorithms
6. (a) What is data striping ?
(b) Discuss about the recent disk system developments.
(c) Explain the control command operations enabled by magnetic tape drive controller. Also explain about cartridge tape system.
7. (a) Explain the features and function of inkjet printers.
(b) Differentiate between inkjet and laser printers.
8. (a) Differentiate between short and long pipeline. Which is more advantageous?
(b) Elaborate on depending constraints of pipelining. Give an example for pipeline stalled by data dependency.
(c) Give an example for idle cycle caused by a branch instruction.

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1. (a) Differentiate between traditional and high performance bus architectures
(b) List the key elements of bus design.
2. Write an algorithm to find all allowable weights for a weighted BCD code. Assume that all weights are positive numbers
3. NOOP instruction has no effect on the CPU state other than incrementing the program counter. Suggest some uses of this instruction with examples.
4. (a) Explain the key design elements of typical a RISC system.
(b) Differentiate between RISC and non-RISC systems.
(c) What is semantic gap problem?
5. (a) Explain any three replacement algorithms with examples.
(b) Discuss in detail about set associative mapping in cache memory.
6. (a) Explain about magnetic disk layout
(b) Elaborate on Winchester disk track format.
7. Discuss about current applications of micro programming in detail.
8. (a) Explain the following terms.
 - i. Read miss
 - ii. Read hit
 - iii. Write miss
 - iv. Write hit
(b) Discuss different approaches to vector computation

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1. (a) Explain about IAS memory formats.
(b) List various registers in a computer along with their purpose
2. (a) What is BCD representation. List the advantages of it.
(b) Convert the following binary numbers to decimal and octal forms
 - i. 101101110
 - ii. 1.011101
3. (a) What is big-endian and little-endian address mapping
(b) List points favoring big-endian and little-endian styles.
(c) What is bit ordering?
4. (a) List and describe all arithmetic instructions of MIPS R-Series processors
(b) Discuss how R3000 pipeline can be modified to improve performance
5. Write short notes on the following approaches with suitable examples. What are merits and demerits of each.
 - (a) First - fit
 - (b) Best - fit
 - (c) Worst - fit
6. (a) Explain about magnetic disk layout
(b) Elaborate on Winchester disk track format.
7. (a) Discuss about the evolution of I/O function.
(b) Explain the characteristics of I/O channels.
8. (a) Differentiate between high-level and low-level parallelism
(b) Discuss about Flynn's classification of parallel processor systems.
(c) Explain different MIMD interconnection topologies.
