R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2016
COMPUTER ORGANIZATION AND OPERATING SYSTEMS
(Common to ECE, ETM)

Time: 3 hours   **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) A digital computer has a common bus system for 16 registers of 32 bits each. The bus is constructed with multiplexers. How many selection inputs are there in each multiplexer? [2]

  b) Give one example for Arithmetic Micro Operations, Logic Micro Operations and Shift Micro Operations. [3]

  c) What is the difference between hardwired control and a micro programmed control? [2]

  d) Differentiate between SRAM and DRAM. [3]

  e) Why bus arbitration is required? [2]

  f) In a computer system, why a PCI bus is used? [3]

  g) What is the purpose of paging the page tables? [2]

  h) Why do some operating systems store the operating system in firmware, while others store it on disk? [3]

  i) List the operations on a file. [2]

  j) Give a note on indexed allocation of disk space. [3]

PART – B

(50 Marks)

2.a) Explain how floating point numbers are represented.

  b) What is an Addressing mode? List and explain the various addressing modes with an example. [2+8]

OR

3.a) Design a 4 bit combinational circuit decrement using four full adder circuits.

  b) Explain with an example Booth's algorithm for multiplication of signed 2's complement numbers. [5+5]

4. With a neat block diagram, explain in detail about micro programmed control unit and explain its operations. [10]

OR

5.a) A block set associative cache consists of a total of 64 blocks divided into 4 blocks sets. The main memory contains 4096 blocks, each consisting of 128 words.
    i) How many bits are there in main memory address?
    ii) How many bits are there in each of the TAG, SET, and WORD fields?

  b) Give a brief note on RAID. [4+6]

6.a)   Using block diagram explain the working of DMA Controller.
  b)   When a device interrupt occurs, how does the processor determine which device issued
       the interrupt? Explain.   [5+5]

OR

7.   What is the basic advantage of using interrupt-initiated data transfer over transfer under
       programmed control without an interrupt? Explain interrupt-initiated I/O in detail. [10]

8.a)   How network computers differs from traditional personal computers? Describe some
       usage scenarios in which it is advantageous to use network computers.
  b)   Is it possible to have a deadlock involving only a single process? Justify your answer.
                                                                                         [5+5]

OR

9.a)   Describe the three general methods for passing parameters to the operating system.
  b)   What is the purpose of the command interpreter? Why is it usually separate from the
       kernel?   [5+5]

10.   Why do some systems keep track of the type of a file, while others leave it to the user
       and other simply do not implement multiple file types? Which system is better? Explain
       in detail.   [10]

OR

11.a) In What situations would use memory as a RAM disk be more useful than using it as a
       disk cache?
   b) Give a brief note on free space management.   [5+5]