

Code No: C0502, C5802, C4002

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech I Semester Examinations, March/April 2011

COMPUTER SYSTEM DESIGN

(COMMON TO COMPUTER SCIENCE, COMPUTER SCIENCE AND ENGINEERING,  
INFORMATION TECHNOLOGY)

Time: 3hours

Max. Marks: 60

Answer any five questions

All questions carry equal marks

- - -

1. a) Write an IA – 32 program to reverse the order of bits in register EAX. For example, if the starting pattern in EAX is 1011,1010, .....0110 the result left in EAX should be 0110,..... 0101,1101.  
b) Write the differences between interrupts and exceptions? Briefly discuss about the exceptions. [12]
2. a) Write the function of the following instructions  
PADDB MMI, src  
LEA EAX, CVEC  
MOV DOTPROD, EAX  
b) Explain about the SCSI bus interface. [12]
3. a) Why is the wait-for-Memory-Function-completed step needed when reading from or writing to the main memory? Explain.  
b) Differentiate the micro-operation, micro-instruction and micro-program. [12]
4. a) What is Pipelining? Discuss about pipeline performance issues?  
b) A pipelined processor has two branch delay slots. An optimizing compiler can fill one of these slots 85% of the time and can fill the second slot only 20% of the time. What is the percentage improvement in performance achieved by this optimization, assuming that 20% of the instructions executed are branch instructions? [12]
5. a) Draw and explain the function of the CMOS DRAM and SRAM cells.  
b) A block-set-associative cache consists of a total of 64 blocks divided into 4-block sets. The main memory contains 2048 blocks, each consisting of 32 words. [12]  
i) How many bits are there in a main memory address?  
ii) How many bits are there in each of the TAG, SET, and WORD fields? [12]
6. (a) What is Message Passing? Write about the design issues of Message Passing systems.  
(b) The implementation of monitors using semaphores did not use an explicit linked list of blocked processes, whereas the implementation of semaphores using monitors did. Why and Explain? [12]
7. a) Describe about mutual exclusion with Busy waiting Processes in interprocess communication of an OS.  
b) Would CD storage periodically be of any conceivable value? Explain? [12]

Contd.....2

::2::

8. (a) When a file is removed, blocks associated with are generally put back on the free list, but are not erased. Do you think it would be a good idea to have the OS erases each block before releasing it? Consider both security and performance factors in your answer, and explain the effect of each.
- (b) Some Operating systems provide a system call `RENAME` to give a file a new name. Is there any difference at all between using this call to rename a file? Discuss. [16]

\*\*\*\*\*

FIRSTRANKER