



Reg. No. : .....

Name : .....

**First Semester M.Sc. Computer Science Degree Examination, July 2009**  
**SYSTEM ARCHITECTURE**

Time : 3 Hours

Max. Marks : 80

**PART – A**

Answer **any eight** questions is full.

**(4×8=32 Marks)**

1. What are the roles of the functional units of CPU-Control Unit, ALU and Registers ?  
What are general purpose and Special Purpose Registers ?
2. What are the advantages of using hexa-decimal and binary number system in computers ?
3. What are Interrupts ? How Interrupts are handled by CPU ?
4. What are buffers ? What are the advantages of using buffers ?
5. Briefly describe about the following registers :  
a) Memory Buffer Register and      b) Memory Address Register
6. How many bits of data can be transmitted through a 16 bit bus ? What do you mean by a bus width ?
7. How does the processor know what operation to perform first (Read/Write memory or Read/Write Input/Output) ?
8. What could be the possible uses of the following types of memory :  
a) ROM (Read Only Memory)      b) RAM
9. What is the difference between program, hardware, firmware and software ?
10. Briefly describe about addressing modes.
11. How does the processor differentiate among a positive number, a negative number and a bit pattern ?
12. Briefly discuss about the Cache memory organization.

**P.T.O.**



## PART – B

Answer **any six** questions is full.

**(8×6=48 Marks)**

13. Briefly describe about the structure and organization of CPU.
  14. By having many processors, the execution time of the task can be made always faster. If yes, then how ? If not, then why not.
  15. Briefly describe how the following factors affect the system performance.
    - a) Speed of the processor
    - b) Clock Speed
    - c) Co-Processor
  16. Assume that CPU is currently executing a particular interrupt, same time another interrupt raised. How CPU will handle the new request ?
  17. A virtual memory system has an address space of 10 K words, a memory space of 5 K words and page and block sizes of 1 K words. The following page reference changes occur during a given time interval.
    - a) 4 2 0 1 2 6 1 4 0 1 0 2 3 5 7 16 12 3 5 7 2
    - b) Determine the pages that are resident in main memory after each page reference change for any one of the page replacement algorithms.
  18. How processor will execute an instruction ? Explain with an example.
  19. Describe the internal memory organization.
  20. What are the different types of secondary storage devices ? Compare the features of the different devices.
  21. A computer employs RAM chips of  $256 \times 8$  and ROM chips of  $1024 \times 8$ . The computer system needs 2K bytes of RAM, 4K bytes of ROM and four interface units, each with four registers. The two highest order bits of address bus are assigned 00 for RAM, 01 for ROM, and 10 for interface registers. How many RAM and ROM chips are needed to construct such a memory structure ?
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