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06CS46

Fourth Semester B.E. Degree Examination, June 2012
Computer Organization

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Define and explain briefly the following :
i) Clock rate ii) CISC
iii) RISC iv) Basic performance equation. **(12 Marks)**

b. Describe the basic functional units of a computer with a neat diagram. **(08 Marks)**

2 a. What are generic addressing modes? Write down the assembler syntax and addressing function. **(10 Marks)**

b. Explain the following with reference to subroutines :
i) Subroutine nesting and the processor stack ; ii) Parameter passing ; iii) Stack frame. **(10 Marks)**

3 a. What is an exception? Describe the different kinds of exception. **(10 Marks)**

b. How do you enable and disable interrupts? **(05 Marks)**

c. Define privileged instruction and explain how privilege exception occurs. **(05 Marks)**

4 a. Explain the use of a PCI bus in a computer system with a neat sketch. **(08 Marks)**

b. Draw the diagram of universal serial bus tree structure. **(04 Marks)**

c. Define the following : i) Serial port ii) Parallel port
iii) SCSI iv) USB. **(08 Marks)**

PART – B

5 a. Draw a neat block diagram of memory hierarchy in a computer system. Discuss the variation of size, speed and cost per bit in the hierarchy. **(07 Marks)**

b. What are static and dynamic RAMS? Explain. **(05 Marks)**

c. Define memory latency and bandwidth of a synchronous DRAM memory unit. **(04 Marks)**

d. Define and explain the following :
i) Static memories ii) Memory access time
iii) RAM iv) Memory cycle time. **(04 Marks)**

6 a. Draw the block diagram of virtual memory organization. **(04 Marks)**

b. Explain the virtual – memory address translation with a neat diagram. **(10 Marks)**

c. Discuss the organization and accessing of data on a disk. **(04 Marks)**

d. A 3.5 inch (diameter) high-capacity, high-data-rate-disk has the following parameters. There are 20 data-recording surfaces with 15000 tracks per surface. There is an average of 400 sectors per track and each sector contains 512 bytes of data. Calculate the total capacity of formatted disk. **(02 Marks)**

7 a. Discuss Booth algorithm by multiplying the numbers –13 and +11. **(08 Marks)**

b. Explain bit pair recoding technique by multiplying the numbers +13 and –6. **(06 Marks)**

c. Explain restoring division using a 4-bit example. **(06 Marks)**

8 a. Draw the three-bus organization of the data path and describe in detail. **(10 Marks)**

b. With a neat sketch, explain the basic organization of a micro programmed control unit. **(10 Marks)**

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