USN ☐☐☐☐☐☐☐☐☐☐   **06CS46**

Fourth Semester B.E. Degree Examination, June/July 2011
Computer Organization

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions selecting*
atleast TWO questions from each part.

PART – A

1   a.   Write the basic performance equation. Explain the role of the parameters on the performance of the computer.   **(05 Marks)**

    b.   Mention four types of operations required to be performed by instruction in a computer. What are the basic types of instruction formats? Give an example for each.   **(06 Marks)**

    c.   What is straight line sequencing? Explain with an example.   **(04 Marks)**

    d.   What are condition code flags? Explain the four commonly used flags.   **(05 Marks)**

2   a.   Define an addressing mode. Explain the following addressing modes with example : indirect indexed, relative, and auto increment.   **(05 Marks)**

    b.   Registers R1 and R2 of a computer contain the decimal values 1400 and 5000. What is the effective address of the memory operand in each of the following instructions? Assume that the computer has 32 bit word length.
      i)   Load 20(R1), R5
      ii)   Move # 3000, R5
      iii)   Store 30(R1, R2), R5
      iv)   Add (R2)+, R5
      v)   Subtract – (R1), R5.   **(05 Marks)**

    c.   Explain the operation of stack, with an example. Give any three differences between stacks and queues.   **(10 Marks)**

3   a.   Define memory mapped input/output and input/output mapped input/output, give one advantages of each.   **(05 Marks)**

    b.   In a situation where a number of devices capable of initiating interrupts are connected to the processor.
      i)   How can the processor recognize the device requesting on interrupt?
      ii)   How should two or more simultaneous interrupt requests be handled?   **(10 Marks)**

    c.   Explain a synchronous bus. Also give the timing diagram of an input transfer on a synchronous bus.   **(05 Marks)**

4   a.   Explain with a sketch the read operation performed on a peripheral component interconnect bus. Show the role of IRDY #, and TRDY#.   **(10 Marks)**

    b.   What are the design objectives of the USB?   **(03 Marks)**

    c.   Explain the following with respect to USB.
      i)   USB addressing
      ii)   USB protocols.   **(07 Marks)**

PART – B

5 a. Draw the organization of a 4K × 1 memory cell and explain. (08 Marks)
   b. Explain direct mapping and associative mapping between cache memory and main memory. (10 Marks)
   c. Differentiate between SRAM and DRAM. (02 Marks)

6 a. Explain in detail, the working principle of a magnetic hard disk. (10 Marks)
   b. Draw a block diagram and explain how a virtual address form the processor is translated into physical address in the main memory. (04 Marks)
   c. Draw a figure to illustrate a 16–bit carry look ahead adder using 4–bit adder blocks and explain its working principle. (06 Marks)

7 a. Explain Booth's algorithm, multiply–13 and + 11 using Booth's multiplication. (10 Marks)
   b. Explain the IEEE standard for floating point number representation. (10 Marks)

8 a. Explain the process of fetching a word from memory with the help of a timing diagram. (10 Marks)
   b. List the actions needed to execute the instruction Add R1, (R3). Write the sequence of control steps to perform the actions for a single bus structure. Explain the steps. (10 Marks)

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