

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY-2007

**B. TECH DEGREE EXAMINATION
COMPUTER SYSTEM ORGANIZATIONS
(COMPUTER SCIENCE ENGINEERING)**

JUNE-2007

**TIME-3HOUR
MARK-80**

ANSWER ALL THE QUESTIONS

1. What are the main functions of the CPU?
2. How many bits would you need to address a 2M x 32 memory if
 - a. The memory is byte-addressable?
 - b. The memory is word-addressable?
3. How many bits are required to address a 4M x 16 main memory if
 - a. Main memory is byte-addressable?
 - b. Main memory is word-addressable?
4. A digital computer has a memory unit with 24 bits per word. The instruction set consists of 150 different operations. All instructions have an operation code part (opcode) and an address part (allowing for only one address). Each instruction is stored in one word of memory.
 - How many bits are needed for the opcode?
 - How many bits are left for the address part of the instruction?
 - What is the maximum allowable size for memory?
 - What is the largest unsigned binary number that can be accommodated in one word of memory?