Punjab Technical University
Master of Computer Application Examination

MCA 3rd Semester COMPUTER SYSTENM ARCHITECTURE 2006

Time: Three Hours Max Marks:75
Note: Candidates are required to attempt any nine questions from Section B & Section A will be compulsory.

Section – A Marks : (2x15)

a. Convert the following logic function into minterm
A'B'C'D+A'BCD+ABCD'+AB'CD'
b. Define the terms microprogramming & multiprogramming.
c. Give the layered view of a computer system.
d. What is the role of Decoder in digital computers?
e. Perform the subtraction with the following unsigned binary number by taking the 2's compliment of the subtrahend
11010-10000
f. Explain the meaning of the menmory-reference ubstryctuib AND to AC
g. What is the difference between hardwired control and micro programmed control?
h. Give two examples of Data transfer instructions.
i. How Cache Memory is useful in memory hierarchy?
j. What do you mean by isolated I/O?
k. How the RISC Architecture is different from CISC Architecture.
l. Explain the Characteristics table of SR flip-flop.
m. What is the role of memory stack in CPU?
n. Why we need virtual memory?
o. What do you mean by Interrupt-Initiated I/O?

Section –B (5X9)

Q2. A computer employs RAM chips of 256x8 and ROM chips of 1024x8. The computer system needs 2K bytes of RAM, 4K bytes of ROM, and four interface units, each with four registers. A memory-mapped I/O configuration is used. The two highest-order bits of the address bus are assigned 00 for RAM, 01 for ROM, and 10 for interface registers. How many RAM and ROM chips are needed?
Q3. Explain the Relative addressing mode using suitable example?
Q4. How many characters per second can be transmittesd over a 1200-baud line in each of the following modes considering a character code of 8 bits. Synchronous serial transmission Asynchronous serial transmission with 1 stop bit
Q5. Explain in detail the working of Set-Associative Mapping with the help of a suitable example.
Q6. What is the difference between a direct and indirect instruction? How many references to memory are needed for each type of instruction to bring an operand into a processor register?
Q7. Convert the following arithmetic expressions from Reverse Polish Notation to infix notation.
a. A B C D E +*-/ (2)
b. A B C*/D-EF/+ (3)
Q8. Explain the design and working of a Octal-to-Binary Encoder.
Q9. Write a short note on 4-bit synchronous binary counter.

Q10. Explain in detail about Program Control Instructions.
Q11. Discuss the important characteristics of RISC Processor.
Q12. Draw a comparison between Micro programmed and Hardwired control unit.
Q13. Write a detailed note on Priority Interrupts.