

DEC 27 2018

KATHMANDU UNIVERSITY
End Semester Examination [C]
December, 2018

Marks Scored:

Level : B.E.

Year : II

Course : COMP 201

Semester : II

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date :

SECTION "A"

[20 Q × 0.5 = 10 marks]

Tick (✓) the correct answer(s).

1. The access time of memory is the time required for performing any single CPU operation.
 Longer than Shorter than Negligible than Same as
2. What is done at T₃ cycle of RRI instructions
 Instruction is fetched Instruction is decoded
 Instruction is executed No operation
3. If a RAM has size of 32 K * 16 , then the size of address register is
 16 bits 15 bits 14 bits 17 bits
4. Program Counter is used to point the segment of memory whereas address register is used to point segment of memory.
 Program, Data Data, Program Program, Stack Data, Stack
5. If the value V(x) of the target operand is contained in the address field itself, the addressing mode is
 immediate direct indirect implied
6. In Timing and Control Unit of a Basic Computer, the size of decoder for op-code and timing unit are respectively.
 3 * 8 and 3 * 8 4 * 16 and 3 * 8 3 * 8 and 4 * 16 4 * 16 and 4 * 16
7. In ISZ instruction, the timing unit D₆T₅ will
 increment the value of AC increment the value of DR
 load an operand from Memory save modified operand back in memory
8. In Booth's algorithm Q_nQ_{n+1} have value 10, the next step is
 Add and then arithmetic shift right Subtract and then arithmetic shift right
 Arithmetic shift right Add
9. In a vectored interrupt,
 the branch address is assigned to a fixed location in memory.
 the interrupting source supplies the branch information to the processor through an interrupt vector.
 the branch address is obtained from a register in the processor
 the branch address is not available

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F. M. : 40

SECTION "B"

[6Q × 4 = 24 marks]

Attempt *ALL* questions.

1. Discuss the purpose of direct memory access. Show DMA transfer with necessary figures. [1+3]
2. Elaborate the concept of direct addressing and indirect addressing in a "Basic Computer". [2+2]
3. How can you design an arithmetic circuit? Illustrate with necessary figure.
4. Discuss daisy chain arrangement of interrupt handling.
5. Design a 3 * 2 array multiplier. Draw flowchart of Booth's algorithm. [2+2]
6. Discuss the characteristics of signed magnitude, signed 1's complement and signed 2's complement numbers.

OR

Discuss interrupt cycle of any input/output instruction.

SECTION "C"

[2Q × 8 = 16 marks]

Attempt *ALL* questions.

7. Discuss instruction cycle of any two memory reference instructions. Use RTL to support your answer. Briefly discuss stack organization. [5+3]
8. Discuss Booth's algorithm with necessary flowchart. Show the multiplication process of $(+10)_{10} * (-7)_{10}$ using Booth's algorithm and signed magnitude multiplication.

OR

Draw a block diagram of common bus system for 8 registers having four bits each. Discuss logical operations and shifting operations in ALU.

