

[4]

- (b) Explain Booth Algorithm for multiplication of two 8-bit number.

10101110 x 01001101

4. (a) What is pipeline processing. Show and illustrate using the example for computing $A_i * B_i + C_i$ for $i=1, 2 \dots 8$ show how throughput is increased here.

- (b) Explain RISC and CISC architecture with their comparison.

5. What is stack organization using memory stack. Write the set of instruction to evaluate $X = A * (B+C) * D$

Assuming X, A, B, C, D are reference to memory locations and ADD, MUL opcodes are available

- (b) Discuss instruction pipeline in detail taking interrupt into consideration.

Section-C

(Long Answer Type Questions)

Note: Attempt any Two Question. Each question carries 12 marks.

6. Draw the detail pin diagram of 8085 microprocessor with role of each pin. What pin

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B.C.A. (Third Semester)

EXAMINATION, March-2021

(New Course)

Paper Third

COMPUTER ARCHITECTURE AND ASSEMBLY LANGUAGE

Time : Three Hours]

[Maximum Marks : 75

Note: Attempt questions from all Sections as directed.

Inst.: The candidates are required to answer only in serial order. If there are many parts of a question, answer them in continuation.

Section-A

(Short Answer Type Questions)

Note : Attempt all questions. Each question carries 3 marks.

- 1 (A) What is computer Instruction? Describe different parts of an instruction and its role.

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- (b) For a digital computer with a common bus system with 16 registers of 32 bit each.

Answer the following (Constructed with multiplexers)

- (i) No. of selection input and size of each MUX
- (iii) No. of MUX
- (iii) Size of BUS.
- (c) What is microoperation. Write the types of microoperations, any digital system implements.
- (d) What are different types of number representation for integers in digital computer.
- (e) What is low level programming languages? Name and discuss various types of it with comparison.
- (f) What are the major categories of instructions in 8085 microprocessor with example?
- (g) What is flag register and write all the flags with its purpose in 8085 micro processor.

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- (h) What are the instructions used for subroutine call and return? Discuss the instructions with illustration (8085 microprocessor)

- (i) Discuss the control pins in 8085 microprocessor with meaning.

Section-B

(Short Answer Type Questions)

Note: Attempt any **Two** Questions. Each question carries **12** marks.

2. (a) Write all steps of instruction cycle. Also discuss the purpose of program counter, instruction register and stack pointer in detail.
- (b) What is addressing mode? Discuss the following addressing modes.
(I) Direct (ii) Indirect (iii) relative
(iv) implied (v) Auto increment
3. (a) What is shift micro operation? Discuss types of shift micro operations with example. What is the use of shift micro operations.

combination is used for memory read, memory write, I/O read I/O write. Show the digital combination to achieve it schematically.

7.
 - (a) Explain the need for asynchronous data transfer. Explain hand shaking in detail.
 - (b) Explain the following 8085 instructions with format, meaning and example.
LXI, MOV, LDAX, INR, RLC, CMP
Also indicate flag status info.
8. What are different instruction formats and addressing modes used in 8085 Micro processor assembly language set? Illustrate with example.
9.
 - (a) What is the cause of interrupt. Discuss the types. What is interrupt driven I/O.
 - (b) What is DMA. Discuss the process in detail giving emphasis on the steps occurring in the process in sequence.