Enroll. No._____

MARWADI UNIVERSITY

Faculty of Technology

Information and Communication Technology **B.TECH**

SEM: III **MU FINAL EXAM** **DECEMBER:2022**

Subject: - Computer Organization and Architecture(01CT0301) **Date:-6/12/2022**

Total Marks:-100 **Time: -2 to 5 PM**

Instructions:

1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Question: 1.

(a) Objective MCQ (No. of Questions 10) [10]

1. How many flip flops are there in a 8 bit register?
   A. 6 B. 8 C. 10 D. 16
2. Which hardware pin of 8085 is for sensing interrupt?
   A. RST 7.5 B. HOLD C. ALE D. READY
3. Last in first out is the characteristic of
   A. Memory B. Shift register C. Interrupt D. Stack
4. Which of the following instruction loads 16-bit immediate data?
   A. LXI B. MVI C. CPI D. LDA
5. XCHG instruction exchanges the data between
   A. BC pair and DE pair B. HL pair and DE pair C. HL pair and BC pair
   D. HL pair and PSW
6. Which instruction disable all the interrupts except TRAP?
   A. DI B. EI C. CMC D. CMA
7. Total numbers of pins in 8085 microprocessor are
   A. 20 B. 30 C. 40 D. 50
8. Which instruction is a one byte instruction?
   A. RET B. ADI C. LXI D. IN
9. If A= 55H then after executing instruction CMA the value of A is
   A. FFH B. CCH C. 44H D. AAH
10. From the given operations, which operation is logical operation?
    A. JMP B. ADD C. SUB D. ANA

(b) Short Que. (answer in one sentence: No. of Questions 10) [10]

1. How many machine cycles are required in executing the instruction IN 10H for 8085 microprocessor?
2. How many T-states are there in executing MVI B,46H instruction?
3. Why is data bus bidirectional?
4. Which instruction is available in 8085 microprocessor to add two bytes such that one byte is in accumulator and other byte is immediate data?
5. Define the term pipelining.
6. How many memory locations can be addressed by a microprocessor with 16 bit address bus?
7. What is the importance of Control Address Register(CAR) in microprogrammed control unit?

8. For RISC architecture what will you prefer from below to design control unit?
   1. hardwired control 2.logic microprogramming
9. Why SRAM is preferred as a cache memory?
10. What is the meaning of data dependency in instruction pipeline?

Question: 2.

(a) Develop 4 bit arithmetic circuit which can implement various arithmetic microoperations(add,subtract,increment,decrement) with help of multiplexer and full adder.Draw necessary arithmetic circuit function table.Briefly explain. [8]

(b) Write the name of various registers with their symbol and their function for basic computer.Draw the connection of the registers and memory of basic computer to common bus system. [8]

OR

(b) What is instruction cycle? What are the phases of instruction cycle in basic computer? How does it determine the type of instruction? Explain with necessary flow chart of instruction cycle [8]

Question: 3.

(a) Define a subroutine and explain its uses. Explain concepts with CALL and RET instructions [8]

(b) Draw the necessary hardware to demultiplex the lower order address bus with data bus in 8085 microprocessor based system. Briefly explain it. [4]

(c) Briefly explain the characteristics of CISC architecture. [4]

OR

(a) What is stack and stack pointer? Explain the behavior of stack while executing PUSH and POP instruction with necessary figure. [8]

(b) What is the importance of address bus, data bus and control bus in microprocessor based systems? Show with necessary figure. [4]

(c) Briefly explain the characteristics of RISC architecture. [4]

Question: 4.

(a) What is interrupt? Discuss all the interrupts available in 8085 microprocessor. [8]

(b) What is the importance of DMA (Direct Memory Access)? Explain DMA transfer in a computer system with necessary figure. [8]

OR

(a) What is the difference between hardwired control and microprogrammed control to generate control signals in a computer system? Briefly explain the following terms with respect to microprogrammed control unit. 1.Microinstruction 2.Microprogram 3.Control memory [8]

(b) What is instruction pipeline? Explain four segment instruction pipe line and three major pipe line conflicts. [8]

Question: 5.

(a) Explain various data transfer instructions available in 8085 microprocessor. [6]

(b) Give names of four addressing modes in 8085 microprocessor. Explain each addressing mode with one example of instruction. [6]

(c) Give minimum four differences between SRAM and DRAM. [4]

OR

(a) Explain the working of MOV A,B instruction with necessary timing diagram. [6]

(b) Draw the programming model of 8085 microprocessor and explain it in detail. [6]

(c) What is input-output interface? Explain the difference between isolated I/O and memory mapped I/O? [4]

Question: 6.

(a) Write an assembly language program to generate time delay of 50 micro second using a simple register. Assume clock frequency is 1MHz.Show approximate calculations. Write comments for each instruction used. [8]

(b) Write an assembly language program to add two 16 bit number using DAD instruction.Assume suitable 16 bit numbers.Write comments for each instruction used. [4]

(c) Load register B with value 53H and load accumulator with value 24H.Write an assembly language program to logically OR the content of register B with A. Then store the answer in register C. Write comments for each instruction used. [4]

OR

(a) Write an assembly language program to copy an array of 10 bytes. Assume that this array is stored at location C500H and you have to copy it to location D500H. Write comments for each instruction used. [8]

(b) Write an assembly language program to add two 16 bit number without using DAD Instruction. Assume suitable 16 bit numbers. Write comments for each instruction used. [4]

(c) Load accumulator with value 12H. Write the instructions to compare this value with another value in B register and if the value of B register is more store the value of accumulator at location D600H otherwise store the value of accumulator at location D601H. [4]

---Best of Luck---

Enroll. No._____

– Bloom'S Taxonomy Report –

Sub:
Sem.
Branch:

Que. Paper weightage as per Bloom's Taxonomy

LEVEL	% of weightage	Question No.	Marks of Que.
Remember/Knowledge	20	1A and 1B	20
Understand	36	3,4 and 5C	36
Apply	16	2	16
Analyze	28	5A,B and 6	28
Evaluate			
Higher order Thinking/ Creative			

Chart/Graph of Bloom's Taxonomy