Enroll. No._____

MARWADI UNIVERSITY
MU-FOT
ICT-FOT1 (MU)
Semester 3 - Summer

Subject : COMPUTER ORGANIZATION AND ARCHITECTURE (01CT0301)
Date : 30-Apr-2022 **Time : 3 Hours** **Total Marks : 100**

Instructions :

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Que.1 (A) Answer the following objectives **[10]**

(1) Which of the following instructions is an example of immediate addressing mode?
A.MOV A,D
B.CMA
C.RAL
D.MVI A,34H

(2) While executing the instruction OUT 05H with 8085 microprocessor,which control signal will get generated?
A.I/O read
B.I/O write
C.Memory write
D.None of the above

(3) Program counter holds,
A.the address of the instruction
B.instruction code
C.address of memory
D.temporary data

(4) In comparision with dynamic memory(DRAM),the static memory(SRAM)has,
A.more memory access time
B.more power consumption
C.less area requirement
D.less power consumption

(5) From the given instructions,which instruction can affect the carry flag?
A.MOV A,B
B.IN 02H
C.OUT 04H
D.ADD B

(6) Last in first out is the characteristic of,
A.shift register
B.interrupt
C.memory
D.stack

(7) Which of the following instructions need three bytes?
A.MOV

B.ADD
C.ANA
D.CALL

(8) The value of B register is 3EH.After execution of DCR B instruction the value of B register will be,
A.3DH
B.2EH
C.3CH
D.2DH

(9) Which hardware pin 8085 is sensing interrupt?
A.ALE
B.RST 7.5
C.READY
D.HOLD

(10) With respect to microprogrammed control unit what is the full form of CAR?
A.Control Address Register
B.Content Address Register
C.Code Address Register
D.Cache Address Register

Que.1 (B) Answer the following questions. **[10]**

(1) The content of BC pair is C000H.Write the meaning of LDAX B.

(2) Write the instruction to compare the accumulator with B register.

(3) Define the term microprocessor.

(4) Write one benefit of RISC architecture.

(5) Give name of any two hardware interrupts in 8085 microprocessor?

(6) During programming it is required to initialize stack pointer with value D200H.Which instruction will do this task?

(7) What is the meaning of opcode in an instruction?

(8) Which instruction will be useful to transfer program control to specific memory location if zero flag will set?

(9) How many registers are there in 1Kx8 memory if each register is of 8 bit?

(10) The content of accumulator is F0H.What will be the value of accumulator after execution of CMA instruction?

Que.2

(A) How many machine cycles are required to execute instruction STA D200H?Explain all the machine cycles in detail.(Write about what is happening in each machine cycle) [8]

(B) Explain the instruction pipe line with four segment instruction pipe line. Draw necessary flow chart. [8]

OR

(B) Explain the concept of memory hierarchy(memory organization) in a computer system with necessary diagram. [8]

Que.3

(A) Draw the timing diagram for instruction MVI A,25H. [8]

(B) List the basic computer instruction types and their instruction format. Briefly explain the instruction format. [4]

(C) Draw the bus structure of 8085 processor which shows connection with memory, input and output. [4]

OR

(A) Explain the concept of microprogramming in computer system with necessary block diagram. [8]

(B) While checking an assembly language program it shows the error.Following instructions are written.The programmer wants to save accumulator on stack and again wants to load the value from stack to accumulator.Identify the mistake and correct it. [4]

```
LXI H,C000H
MOV A,M
MVI C,05H
PUSH A
DCR C
POP A
```

(C) What is the difference between combinational circuit and sequential circuit?Give example of each and explain its working. [4]

Que.4

(A) While working with 8085 microprocessor it is required to perform various addition and subtraction operations.Write down all the possible instructions with atleast four different types addreessing modes and explain them. [8]

(B) Write an assembly language program to convert a binary number into un-packed BCD number. [8]
Assume any binary number available in memory.

OR

(A) Write an assembly language program to clear all the flag bits in flag register.Use the concept of PUSH and POP instruction to demonstrate this task. Load the accumulator with 00H. Logically OR the accumulator with itself to set zero flag and display flag bits on port 01H. [8]

(B) Which types of memory come under category of main memory?Discuss all the types and their subtypes of memory. [8]

Que.5

(A) Write an assembly language program to do the following tasks.load immediate data 35H in accumulator.Then mask all the bits D0 to D6 except D7.Store this result in register C.Do the logical OR of this value with register D and save the answer in B register. [6]

(B) Classify the 8085 instruction set in five categories. Mention the name of each category and give one example of possible instruction in each category. [6]

(C) Explain the working principle of decoder. Give one example of your choice.What is its application? [4]

OR

(A) Draw the timing diagram for a basic memory read machine cycle and briefly discuss. [6]

(B) Draw the final flow chart for the instruction cycle including interrupt cycle of a basic computer and briefly explain it. [6]

(C) Develop 4x16 decoder using two 3x8 decoders and explain the working. [4]

Que.6

(A) Explain the concepts of I/O interface unit with necessary block diagram. [8]

(B) Explain the four various data transfer instructions with 8085 microprocessor. [4]

(C) Draw the 4 bit shift register and briefly explain the concept. [4]

OR

(A) With necessary block diagram explain the selection of address for control memory. [8]

(B) While checking an assembly language program it shows the error.Following instructions are written.Identify the mistake [4]

and correct it.Also write down the meaning of each instruction after correction.

MVI B,32H
MVI C,B
DCR C
MOV D,C

(C) Write an assembly language program to perform the following task. [4]

1.Load immediate value 05H in C register.
2.Decrement the value of C register by 1
3.Add the value of C register with B register

---Best of Luck---

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Difficulty Level	Weightage Recommended	Actual	No of Question	Total Marks	Question List
High	20	22.09	7	38	1(A), 2(A), 3(A), 5(A), 5(B)
Low	20	13.37	8	23	1(A), 3(B), 3(C), 6(B), 6(C)
Medium	60	64.53	30	111	1(A), 1(B), 2(B), 3(C), 4(A), 4(B), 5(A), 5(B), 5(C), 6(A), 6(B), 6(C)

Module Name	Weightage Recommended	Actual	No of Question	Total Marks	Question List
Introduction to Computer Architecture	10	9.88	5	17	1(A), 3(C), 5(C), 6(C)
Introduction to Computer Organization	20	19.77	7	34	1(A), 2(A), 3(A), 3(B), 5(A), 5(B)
Fundamentals of Micro programmed Control	10	9.88	3	17	1(A), 3(A), 6(A)
Concepts of Central Processing Unit	30	31.40	22	54	1(A), 1(B), 3(B), 3(C), 4(A), 5(A), 5(B), 6(B), 6(C)
Computer Arithmetic	5	4.65	1	8	4(B)
Introduction to Pipeline	5	4.65	1	8	2(B)
Input-Output Organization	10	9.88	3	17	1(A), 4(A), 6(A)
Memory Organization	10	9.88	3	17	1(A), 2(B), 4(B)

Blooms Taxonomy	Weightage Recommended	Actual	No of Question	Total Marks	Question List
Remember / Knowledge	20	2.33	1	4	3(B)
Understand	30	37.21	22	64	1(A), 1(B), 2(B), 3(B), 3(C), 4(B), 5(C), 6(A), 6(B), 6(C)
Apply	25	22.67	7	39	1(B), 3(A), 4(A), 4(B), 5(B), 5(C), 6(C)
Analyze	15	36.05	12	62	1(A), 1(B), 2(A), 2(B), 3(A), 4(A), 5(A), 5(B), 6(A)
Evaluate	10	1.74	3	3	1(B)
Higher order Thinking	0	0.00	0	0