

SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar - 388120

B.Sc. (6th Sem) Examination - March/April 2018 [CBCS]

Monday, 26th March, 2018

10:00 AM - 01:00 PM

US06CINS01 (Instrumentation)

8085 Microprocessor Architecture and Programming - 2

Maximum Marks: 70

[44]

Que 1 Each question below gives a multiple choice of answers. Choose the most [10] appropriate one.

- 1 The 8085 Microprocessor is Designed to Execute ___ Different Instruction Types.
 - a) 74
 - b) 128
 - c) 255
 - d) 256
- 2 The First Operation in Any Instruction is _____.
 - a) Memory Write
 - b) Input Read
 - c) Output Write
 - d) Opcode Fetch
- 3 OUT is ___ Byte Instruction.
 - a) 1
 - b) 2
 - c) 3
 - d) 4
- 4 Unconditional Loop is Set Up By ___ Instruction.
 - a) JC
 - b) JMP
 - c) JNZ
 - d) JM
- 5 ___: Load Register Pair Immediate.
 - a) LXI Rp
 - b) MOV R, M
 - c) LDAX B/D
 - d) STA 16-Bit
- 6 ___: Loading 8 - Bit Data Directly in Memory Register (Location).
 - a) LDA 16-Bit
 - b) STAX B/D
 - c) MVI M, 8-Bit
 - d) LXI Rp
- 7 ___: Each Bit is Shifted to the Adjacent Left Position. Bit D₇ Becomes D₀.
 - a) RLC
 - b) RAL
 - c) RRC
 - d) RAR
- 8 ___: Each Bit is Shifted to the Adjacent Left Position. Bit D₇ Becomes the Carry Bit and the Carry Bit is Shifted into D₀.
 - a) RLC
 - b) RAL
 - c) RRC
 - d) RAR
- 9 ___: Load Stack Pointer.
 - a) PUSH Rp
 - b) POP Rp
 - c) LXI SP, 16-Bit
 - d) PUSH PSW
- 10 ___: Retrieve Register Pair From Stack.
 - a) LXI SP, 16-Bit
 - b) PUSH Rp
 - c) POP Rp
 - d) PUSH PSW

Que 2 Short Questions (Attempt any TEN) [20]

- 1 What Do You Mean By Opcode Fetch?
- 2 If the Clock Frequency is 6 MHz, How Much Time is Required to Execute an Instruction of 7 T - States?
- 3 Write an Assembly Language Program to Load F7H in Register B. Transfer Content of Register B at Output Port 3FH.
- 4 Differentiate: Continuous Loop and Conditional Loop.
- 5 Differentiate: STAX B/D and STA 16-Bit.

- 6 Write Instructions to Load 59_H in Memory Location 2040_H, and Increment the Contents of the Memory Location.
- 7 Explain CMP R/M Instruction.
- 8 Assume the Accumulator Contents are AA_H and CY = 0. Illustrate the Accumulator Contents After the Execution of the Instruction RAL Twice.
- 9 Assume the Accumulator Contents are 81_H and CY = 0. Illustrate the Accumulator Contents After the Execution of the Instruction RRC Twice.
- 10 What is Stack and Subroutine?
- 11 Enlist Conditional CALL and Conditional RET Instructions.
- 12 Give an Account of Restart (RST) Instructions.

- Que 3** [A] Explain IN Instruction With Necessary Timing Diagram. [06]
 [B] Write a Note on 8085 Machine Cycles and Bus Timings. [04]

OR

- [C] Explain OUT Instruction With Necessary Timing Diagram. [06]
 [D] Write an Assembly Language Program to Load B9_H in Register C and 6F_H in Register D. Add Content of Register C and Register D. Transfer the Sum at Output Port 1C_H. [04]

- Que 4** [A] The Following Block of Data is Stored in Memory Locations From C055_H to C05A_H. Transfer the Data to the Locations C080_H to C085_H in the Reverse Order. [06]
Data (H): 22, A5, B2, 99, 7F, 37

- [B] Write Instructions to Load the 16-Bit Number 2050_H in the Register Pair HL Using LXI Opcode and MVI Opcode, and Explain the Difference Between the Two Instructions. [04]

OR

- [C] The Following Block of Data is Stored in Memory Locations From C050_H to C05F_H. Transfer the Entire Block of Data to New Memory Locations Starting at C070_H. [06]
Data (H): 37, A2, F2, 82, 57, 5A, 7F, DA, E5, 8B, A7, C2, B8, 10, 19, 98

- [D] Write the Instruction to Load the Number 2050_H in Register Pair BC. Increment the Number Using the Instruction INX B and Illustrate whether the INX B Instructions is Equivalent to the Instructions INR B and INR C. [04]

- Que 5** [A] Write a Program to Count Continuously in Hexadecimal From 00_H to FF_H in a System With a 0.4 μ s Clock Period. Use Register C to Set Up a One Millisecond Delay Between Each Count and Display the Numbers at Output Port 01_H. [05]

- [B] Write a Program to Generate a Continuous Square Wave With the Period of 500 μ s. Assume the System Clock Period is 325 ns. Use Bit D₀ to Output the Square Wave. [05]

OR

- [C] Write a Program to Count Continuously From 9 to 0 With 1 Sec Delay Between Each Count. Use Register Pair HL to Set Up the Delay. Display Each Count at Output Port F2_H. Assume the Clock Frequency 1 MHz. [05]

- [D] Differentiate: Timer and Counter. [05]
 What are Different Time Delay Techniques? Explain Register Pair Technique. Calculate Count Value (in Hex) For 0.5 Sec Time Delay. Assume Crystal Frequency 6 MHz.

- Que 6** [A] Write an Assembly Language Program to Convert Number From BCD to Binary. [10]

OR

- [B] Write an Assembly Language Program to Convert Number From Binary to ASCII. [10]