

~~Set 1~~

S.No - 10277

Roll No.._____

Unique Paper Code : 2223510034
Name of the Paper : Microprocessor- DSE Paper
Name of Course : B.Sc. Prog.-(Physics) NEP-UGCF-2022
Semester : VII-Semester
Duration : 2 Hours
Maximum Marks : 60

Instructions for Candidates

1. Write your Roll no. on the top immediately on receipt of this question paper.
2. Attempt Four questions in all.
3. Question No. 1 is compulsory. Attempt three questions from the rest of the paper.
4. Use of non-programmable scientific calculator is allowed.

- Q.1 Attempt any five of the following (5x3=15)
- (a) Explain the difference between machine language and the assembly language of the 8085 microprocessor.
 - (b) Classify the instructions in terms of their word size, with example.
 - (c) What are general-purpose registers in 8085 microprocessor.
 - (d) Write instructions to load the two hexadecimal numbers 32H and 48H in registers A and B respectively. Add the numbers, and display the sum at the output port PORT1.
 - (e) How does a Microprocessor differentiate between data and instruction code?
 - (f) What are machine control instructions? Give two examples.

- Q.2 (a) Identify the opcodes and operands in the following instructions.
Show order of entering the codes in memory.
- (i) MVI H, 47H (4)
 - (ii) SUB C
 - (iii) STA 2050
 - (iv) JNZ 3051
- (b) What is memory map? How many memory locations can be addressed by a microprocessor with 14 address lines? (5)
- (c) Briefly explain all the control and status signals in 8085 microprocessor. (6)
- Q.3 (a) Tabulate the status and control signals (Truth table for IO/M, S1, S0 and control signals) for the machine cycles: Opcode fetch, Memory Read, Memory Write, I/O Read, I/O write Interrupt Acknowledge, Halt, Hold and Reset (9)
- (b) Illustrate the steps and timing diagram when the instruction code 4FH- MOV C,A) stored in location 2005H is being fetched. (6)
- Q.4 (a) Explain demultiplexing of the bus AD7-AD0, with a schematic diagram. Explain the function of latch and ALE signal in demultiplexing. (6)
- (b) If the clock frequency is 5 MHz, how much time is required to execute an instruction of 18 T-states? (3)
- (c) The memory location 2050H holds the data byte F7H. Write instructions to transfer the data byte to the accumulator using three different opcodes: MOV, LDAX and LDA. Specify the addressing mode and briefly explain the execution of these in terms of registers used. (6)
- Q.5 (a) Explain the function of machine control instructions HLT and NOP (3)
- (b) Recognize the addressing modes of the following instructions and briefly explain their function. (4)
- (i) MVI A, 30H
 - (ii) MOV B, A
 - (iii) IN 01H
 - (iv) LDAX B
- (c) Sixteen bytes of data are stored in memory locations at 2050H to 205FH. Transfer the entire block of data to new memory locations starting at 2070H. (8)