

September 2021

MICROPROCESSOR & MICROCONTROLLER

Time Allowed: 1.5 Hours

Full Marks: 70

Answer to Question No.1 is compulsory and Answer any two questions from the rest.

1. Answer the following questions (any twenty): 20×2
- i) Addressing mode of instruction HLT is – a) immediate, b) direct, c) indirect, d) Implied.
 - ii) How is the status of auxiliary carry and parity flag affected if write instruction?
MVI A,18_H
ADD A,19_H
a) AC=0, P=0, b) AC=0, P=1, c) AC=1, P=0, d) AC=1, P=1
 - iii) 8088 is – a) 8 bit microprocessor, b) 16 bit microprocessor, c) 32 bit microprocessor, d) 64 bit microprocessor.
 - iv) Result of 'MUL AB' stores in – a) B (Higher Byte) and A (Lower Byte), b) A, c) A (Higher Byte) and B (Lower Byte), d) B.
 - v) How many clock cycles are required to complete an opcode fetch operation in 8085? – a) Five, b) Two, c) Three, d) Four.
 - vi) If we push data onto the stack then the stack pointer – a) increases with every push, b) decreases with every push, c) none of the mentioned, d) both of the mentioned.
 - vii) Instructions JZ, JNZ, JC and JNC monitor the bits of which register? – a) A, b) B, c) C, d) Flag.
 - viii) Which instructions have no effect on the Flag registers? – a) ANA, b) ORA, c) XRA, d) all of the mentioned. <https://www.wbscteonline.com>
 - ix) When the micro controller executes some arithmetic operations, then the flag bits of which register are affected? – a) PSW, b) SP, c) DPTR, d) PC.
 - x) To initialize any port of 8051 as an output port what value is to be given to it? – a) 0xFF, b) 0x00, c) 0x01, d) A port is by default an output port.
 - xi) Which one is the Special Function Register? – a) R0, b) TMOD, c) R1, d) None.
 - xii) In case of 'I/O mapped I/O', accessing of I/O devices is done by – a) LDA and STA instructions, b) IN and OUT instructions, c) PUSH and POP instructions, d) None of these.
 - xiii) DMA controller is used to – a) data transfer between memory and I/O devices, b) data transfer between memory and microprocessor, c) data transfer between microprocessor and I/O devices, d) All of these.
 - xiv) When _____ numbers are added or subtracted, an overflow may occur – a) odd, b) unsigned, c) even, d) signed.
 - xv) Length of the instruction queue in 8086 is – a) six bytes long, b) seven bytes long, c) eight bytes long, d) ten bytes long.
 - xvi) PC in 8085 is similar to – a) PSW in 8051, b) SP in 8051, c) IP in 8051, d) DPTR in 8051.

- xvii) The pin $\overline{MN}/\overline{MX}$ of 8086 is grounded for – a) minimum mode operation, b) maximum mode operation, c) min-max mode operation, d) max-min mode operation.
- xviii) How many 16 bit register does 8086 have? – a) 8, b) 9, c) 14, d) 13.
- xix) Which one is more accurate answer for Program Counter (PC)? – a) PC holds address of Instruction, b) PC is incremented by one after execution of instruction, c) PC is decremented by one after execution of instruction, d) (a) and (b).
- xx) Data and Address bus are de-multiplexed by – a) ALE signal, b) READY signal, c) RESET signal, d) None of these.
- xxi) Direction of signal flow for Address bus and data bus are – a) Unidirectional and Bidirectional respectively, b) Bidirectional and Unidirectional respectively, c) Unidirectional for both, d) Bidirectional for both.
- xxii) In which case, status signals become $S_0 = 1$ and $S_1 = 1$? – a) opcode fetch, b) memory read, c) memory write, d) halt.
- xxiii) Microprocessor is used in – a) Desktop, b) Laptop, c) Server Computer, d) All of these.
- xxiv) Is this possible to write a program of two 64 bit numbers addition in 8 bit microprocessor? – a) No, b) Yes, c) Possible, if and only if memory space is increased, d) Possible, if and only if clock frequency is increased.
2. a) Draw timing diagram for I/O read operation.
b) What are the various registers of 8085? 10+5
3. a) Write an assembly language program add two 8-bit numbers, the sum may be of 16 bits.
b) Discuss the addressing mode of 8086. 7+8
4. Write short notes on the followings: 7.5x2
a) DMA controller
b) Interrupts
5. a) Draw pin diagram of 8085 and explain each pin.
b) Compare between 8085 and 8086. 10+5
6. a) What is memory mapped I/O? How it differs from I/O mapped I/O?
b) Describe programming model of 8251. 7+8
7. a) Draw the block diagram of Intel 8086 And discuss different blocks.
b) What is m/c cycle? How it is related with instruction cycle? 8+7
8. a) Write some application of microcontroller?
b) Describe programming of 8051. 5+10

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