

M.Sc. ELECTRONICS
Third Semester
MICROPROCESSOR AND MICROCONTROLLER
(MSE - 301)

Duration: 3Hrs.

Full Marks: 70

Part-A (Objective) =20
Part-B (Descriptive) =50

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

Answer any four from Question no. 2 to 8
Question no. 1 is compulsory.

1. Explain the function of various flags of 8086 microprocessor. (10)
2. (a) What are the different ways of operand addressing in 8051? Explain with suitable examples.
(b) Explain the Interrupt Enable register. (5+5=10)
3. (a) Write an 8085 assembly language program to transfer 100 numbers from locations 2000H to locations starting from 2020H.
(b) Write an 8085 assembly language program to find the largest element from a given unordered array of twenty 8-bit numbers. (4+6=10)
4. Explain the architecture of 8051 microcontroller with neat diagram. (10)
5. (a) Describe any five addressing modes of 8086 with suitable examples.
(b) Describe the functional units present in BIU and EU of 8086, with a neat diagram of 8086 microprocessor architecture. (5+5=10)

(5+5=10)

6. (a) Write an 8085 program to generate an accurate time delay of 100 ms with a clock period of 320 ns.
- (b) Explain the requirement of a program counter, a stack pointer and status flags in the architecture of 8085.

(3+7=10)

7. (a) Specify the size of the memory system architecture used in 8051 microcontroller.

- (b) Write a program based on 8051 instruction set to find larger of two number
- (c) How the priority is determined among the different interrupt sources of 8051?

(2+4+4=10)

8. (a) Draw and explain the timing diagram of memory read cycle with an example.
- (b) What is meant by interrupt?
- (c) How many interrupts does 8085 have? Mention them.
- (d) What is the use of ALE?

(6+1+1+2=10)

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Duration: 20 minutes

Marks – 20

(PART A - Objective Type)

I. Answer the following:

1×20=20

1. When trap flag is set, the 8086 executes the _____ interrupt.
2. The software used to drive microprocessor based systems is called
 - a) Assembly language
 - b) Firmware
 - c) Machine language code
 - d) BASIC
3. Single-bit indicators that may be set or cleared to show the results of logical or arithmetic operations are the
 - a) Flags
 - b) Registers
 - c) Monitors
 - d) Decisions
4. When referring to instruction words, a mnemonic is
 - a) A short abbreviation for the operand address.
 - b) A short abbreviation for the operation to be performed.
 - c) A short abbreviation for the data word stored at operand address.
 - d) Shorthand for machine language.
5. The register in 8085 that is used to keep track of the memory address of the next op-code to be run in the program is
 - a) Stack Pointer
 - b) Program Counter
 - c) Instruction Pointer
 - d) Accumulator
6. A microprocessor with the necessary support circuits will include at least two memory ICs ROM or EPROM, and a RAM. (True/False) _____
7. The instruction MOV AX, 0005H belongs to the address mode
 - a) Register
 - b) Register relative
 - c) Direct
 - d) Immediate
8. A microcontroller integrates multichip systems with RAM, ROM and I/O. (True/False) _____
9. If the offset of the operand is stored in one of the index registers, then it is
 - a) Base plus index register addressing mode
 - b) Relative addressing mode
 - c) Register indirect addressing mode
 - d) None of the above

10. If an interrupt is generated from outside the processor then it is an
a) Internal interrupt b) External interrupt
c) Interrupt d) Software interrupt
11. The Intel 8086 is _____ processor.
a) 8-bit b) 16-bit c) 32-bit d) 4-bit
12. The BIU contains FIFO register of size _____ bytes.
a) 8 b) 6 c) 4 d) 12
13. In 8086, the overflow flag is set when
a) Sum is more than 16 bits.
b) Signed numbers go out of their range after an arithmetic operation.
c) Carry and sign flags are set.
d) Subtraction.
14. Status register is also called as _____.
15. A 20-bit address bus allows access to a memory of capacity _____.
16. How many bytes of bit addressable memory is present in 8051 microcontroller?
a) 8 bytes b) 32 bytes c) 16 bytes d) 28 bytes
17. If data is pushed onto stack, then the Stack Pointer _____ (Increases/Decreases) with every push.
18. Device pins XTAL1 and XTAL2 for 8051 are used for connections to an external oscillator. (True/False) _____
19. An alternate function of Port P3.4 in the 8051 is _____.
20. The I/O ports that are used as address and data for external memory are
a) Ports 1 & 2 b) Ports 1 & 3 c) Ports 0 & 2 d) Ports 0 & 3
