

NANDHA ENGINEERING COLLEGE (AUTONOMOUS), ERODE-52
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
MICROPROCESSORS AND MICROCONTROLLERS

QUESTION BANK

UNIT-I

PART-A (2 MARKS)

S.NO	QUESTION	TOPIC
1	Outline bit, byte and word.	Microprocessor Introduction
2	Mention any four features of 8085 Microprocessor.	Functional Building Blocks
3	List the control and status signals of 8085 microprocessor and mention its need.	Signals
4	Point out the flags available in 8085? Draw its flag structure.	8085 Register
5	List the register pairs in 8085	Functional Building Blocks
6	The memory capability of 8085 is 64Kb. Justify	Memory Organisation
7	Specify the need of ALE signal in 8085 microprocessor?	Signals
8	How clock signals are generated in 8085 and what is the frequency of the internal clock?	Signals
9	Why data bus is bidirectional?	Signals
10	List the function of stack pointer and program counter?	Functional Building Blocks
11	Write the function of accumulator?	8085 Register
12	What are the special purpose registers available in 8085	8085 Register
13	Bring out the different data transfer schemes in 8085	Data transfer concept
14	Define (a) instruction cycle, (b) machine cycle, (c) T-state	Timing diagram
15	Delineate the hardware and software interrupts of 8085	Interrupts

PART-B (16 Marks)

1	Draw the block diagram of 8085 microprocessor and illustrate its	Functional Building Blocks
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	operation.	
2	Classify and explicate the interrupt structure of 8085 microprocessor	Interrupts
3	With neat pin diagram explain the signals associated with 8085 microprocessor	Signals
4	Expound the different data transfer concepts in 8085 Microprocessor.	I/O & data transfer concepts
5	Sketch the timing diagram of STA 4500.	Timing diagram
6	Draw the timing diagram for op-code fetch machine cycle and memory read, I/O read machine cycle with clear allocation of signals.	Timing diagram

UNIT-II

PART-A (2 MARKS)

S.NO	QUESTION	TOPIC
1	How are the 8085 instructions classified according to the functional categories?	Instruction Set
2	What is register indirect addressing? Give an example.	Addressing modes
3	Interpret stack and list stack related instructions.	Instruction Set
4	Clarify Subroutine.	Instruction Set
5	Write the difference between op-code and operand.	Instruction Format
6	Mention the advantage of assembly language compared to high level language	Need for assembly language
7	Mention the instruction format of 8085.	Instruction Format
8	What is the difference between ADD and ADC instruction?	Instruction Set
9	Explain three byte instruction with an example.	Instruction Format
10	What is the arithmetic instruction that do not affect the flag?	Instruction Set
11	List the types of addressing mode in 8085 microprocessor	Addressing modes

12	How many times the two JNZ instruction be executed in the following sequence? LXI H, 0503H LOOP DCR L JNZ LOOP DCR H JNZ LOOP HLT	Development of assembly language program
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PART-B(16 Marks)

1	Discuss various addressing modes of 8085 stating two examples for each mode.	Addressing modes
2	AFH is stored in accumulator, HL register pair is loaded with 4200H and 3EH is stored in 4200H. Carry flag is set to 1. Give the results on executing ADC M b. ANI 3FH C.XRA M D.RRC	Assembly language program
3	Write an ALP to add two 16 bit numbers using 8085.	Assembly language program
4	With suitable example, discuss about 8085 microprocessor instructions.	Instruction Set
5	Write a program to find the number of negative, zero and positive numbers	Assembly language program

UNIT-III

PART-A (2 Marks)

S.NO	QUESTION	TOPIC
1	Point out the need for interfacing	Interfacing
2	Give the control word format for 8255 for I/O mode.	8255- Interfacing with 8085
3	Draw the bit set/reset mode of 8255.	8255- Interfacing with 8085
4	Mention the advantages of using 8259 for keyboard and display interfacing.	8259- Interfacing with 8085
5	Mention the different operating modes of 8253 timer.	8253- Interfacing with 8085
6	Outline the use of handshake signals.	8255- Interfacing with 8085
7	Give the components of programmable interrupt controller.	8259- Interfacing with 8085
8	Inscribe the use of USART.	8251- Interfacing with 8085

9	Demarcate serial and parallel communication.	8251- Interfacing with 8085
10	What do you mean by simplex and duplex transmission?	8251- Interfacing with 8085
11	Delineate A/D converter.	A/D converters
12	Delineate D/A converter.	D/A converters
13	Pin point resolution and conversion time in ADC.	A/D and D/A converters

PART-B (16 Marks)

1	With neat diagram elucidate different blocks and control register format for various modes of 8255	8255- Interfacing with 8085
2	With functional block diagram, explicate the operation and programming of 8253 timer in detail	8253- Interfacing with 8085
3	List the major components of 8259 A interrupt controller and explain their functions	8259- Interfacing with 8085
4	With functional block diagram, elucidate the operation and programming of 8251 USART in detail.	8251- Interfacing with 8085
5	Explicate with a neat diagram the interfacing of 8251 to 8085 microprocessor.	8251- Interfacing with 8085
6	Discuss about the features of 8251 and how it is used for serial communication of data.	8251- Interfacing with 8085
7	With neat schematic, explain the ADC interfacing with 8085 microprocessor.	A/D and D/A converters
8	Make clear the need of A/D converter and D/A converters and draw the block diagram to interface 8085 microprocessor with A/D converter and D/A converter.	A/D and D/A converters

UNIT-IV

PART-A (2 MARKS)

S.NO	QUESTION	TOPIC
1	Could you recall microcontroller? List the basic units of a	Architecture of 8051

	microcontroller.	Microcontroller
2	Point out the size of DPTR and stack pointer in 8051.	Architecture of 8051 Microcontroller
3	Roll out the features of 8051 microcontroller.	Architecture of 8051 Microcontroller
4	Give the features of ROM & RAM in 8051 controller.	Architecture of 8051 Microcontroller
5	Differentiate microprocessor & microcontroller.	Architecture of 8051 Microcontroller
6	Draw the format of PSW of 8051.	Architecture of 8051 Microcontroller
7	List the register banks and SFR of 8051.	Memory Organization
8	State the function of RS0 and RS1 bits of PSW.	Memory Organization
9	List the alternative functions assigned to port 3 pins of 8051 microcontroller.	I/O ports
10	Make clear the difference between timer and counter operation in 8051.	I/O ports
11	List the addressing modes of 8051.	Addressing modes
12	Roll out the types of instructions set in 8051 microcontroller.	Instruction set
13	Differentiate RRA & RRC A instruction in 8051 microcontroller.	Instruction set
14	Give the different operations performed by Boolean variable instructions of 8051.	Instruction set
15	List the interrupts in 8051 along with its priority.	Interrupt structure

PART-B (16 Marks)

1	Explicate with a neat block diagram the architecture of 8051 microcontroller.	Architecture of 8051 Microcontroller
2	Elucidate the functional pin diagram of 8051 Microcontroller with	Architecture of 8051

	neat sketch.	Microcontroller
3	Expose the program memory and data memory structure of 8051 microcontroller with appropriate sketch.	Memory Organization
4	Illustrate the I/O port structure of 8051 and list out its functions.	I/O ports
5	Give explanation about different serial communication modes in 8051.	I/O ports
6	Expound the addressing modes of 8051 microcontroller with an example.	Addressing modes
7	Explicate the instruction set of 8051 with example for each instruction.	Instruction set
8	Reveal the interrupt structure of 8051 microcontroller and illuminate how interrupts are prioritized.	Interrupt structure

UNIT-V

PART-A (2 MARKS)

S.NO	QUESTION	TOPIC
1	Write an 8051 assembly language program to clear the accumulator and add 3 to the accumulator 10 times.	Simple programming exercises
2	Outline key bounce. How it is achieved?	Key board and display interface
3	Outline key debounce.	Key board and display interface
4	Draw the matrix keyboard connection to ports.	Key board and display interface
5	Indicate the steps to detect the key press.	Key board and display interface
6	Write the applications of servo motor.	Closed loop control of servo motor
7	Delineate step angle and step per seconds.	Stepper motor control

8	Clarify the way to make a stepper motor to go faster.	Stepper motor control
9	List the operations performed by washing machine.	Washing Machine Control.

PART-B (16 Marks)

1	Write an assembly language program based on 8051 microcontroller instruction set to perform four arithmetic operations on two 8 bit data.	Simple programming exercises
2	Write an assembly language program to add two 8-bit numbers using 8051 microcontroller.	Simple programming exercises
3	Write an assembly language program to multiply two 8-bit numbers using 8051 microcontroller.	Simple programming exercises
4	Write an 8051 assembly language program to find the average of given N numbers.	Simple programming exercises
5	Expound the interfacing of 7 segment display with 8051 microcontroller.	Key board and display interface
6	With a neat circuit diagram explain how a 4 x 4 keypad is interfaced with 8051 microcontroller and write 8051 assembly language program for keypad scanning.	Key board and display interface
7	Draw the schematic for interfacing a servo motor with 8051 microcontroller and write 8051 assembly language program for servo motor control.	Closed loop control of servo motor
8	Explain with an assembly language program to rotate the stepper motor in both clockwise and anti-clockwise direction using 8051 microcontroller.	Stepper motor control
9	Illustrate the concept of interfacing the washing machine with 8051 microcontroller.	Washing Machine Control