



SHRI ANGALAMMAN COLLEGE OF ENGINEERING AND TECHNOLOGY
(An ISO 9001-2008 CERTIFIED INSTITUTION)
SIRUGANOOR, TRICHY



DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGG.

EC1301- MICROPROCESSOR AND MICROCONTROLLER

Unit I

Part A

1. Define registers of 8085 Microprocessor.
2. List out the logical operations in 8085 Microprocessor.
3. Write the size of data bus and address bus of 8085 Microprocessor.
4. What are the processor control instructions? Give an example.
5. What are the instructions that affect the sequence flow an 8085 assembly language program?
6. What is interrupt vectoring?
7. What are the classifications of instruction set according to word size?
8. Name the modes available in 8255A control word format.

Part B

1. (i) With neat diagram, explain the memory interfacing with 8085.
(ii) Explain the functions performed by 8085 signals.
2. (i) With suitable examples, explain the logical and program control instructions of 8085.
(ii) What is a timing diagram? Explain with an example.
3. (i) Draw the timing diagram for the instruction MVIA,FF.
(ii) Write an assembly language program using 8085 instructions to sort an array of numbers in ascending order.
4. (i) Explain the interrupt mechanism of 8085 microprocessor.
(ii) Write an assembly language program using 8085 instruction to find the smallest and biggest element in an array.

5. List out the various types of instruction set in 8085 microprocessor with their operation.
6. Explain the memory mapped I/O operation in detail. Give an example for such an instruction using timing diagram.
7. Draw and explain the pin details of 8085 A briefly.
8. (i) What are the flags affected by ALU in 8085? Explain briefly.
(ii) Draw the schematic diagram of memory interfacing in 8085?

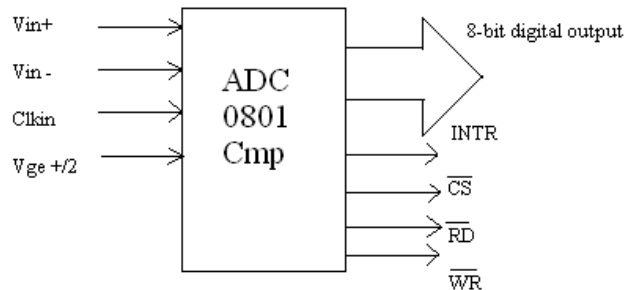
Unit II

Part A

1. Write a control word to set 8255 port A input and port B as output and port C as control output in model configuration.
2. When DSR signal will be deactivated?
3. Enlist the various flags in the PSW register.
4. List the interrupts of 8051 microcontroller.
5. How many addresses are required to interface ADC with 8085 Microprocessor?
6. Draw the schematic of 8279 keyboard and display controller with pin details.
7. What are the methods used for communication in 8085?
8. List the control words of RS-232 C.

Part B

1. (i) Draw and explain the architecture of 8051.
(ii) Explain the function and programming of timer and counter of 8051.
2. Explain the serial communication in 8051 microcontroller.
3. Explain the internal architecture of 8251 USART.
4. Explain the model input and output configuration of 8255 programmable peripheral interface.
5. (i) Interface an 8-bit ADC0801 converter (vide Figure 1) with the 8085 Microprocessor using Memory-mapped I/O and the interrupt RST6.5.
(ii) Write an interrupt routine to read the output data of converter, store it in memory, and continue to collect data for specified number of times.



Elaborately explain the RS232C interface.

6. (i) Draw and explain the control word format of 8255 A for ADC operation.
- (ii) Give a brief on the following
 1. 8251 I/O device
 2. GPIB Bus
7. Draw and explain the logic block diagram of 8279.

Unit III

Part A

1. What is the use MN/MX signal in 8086?
2. What are the differences between fetching 2 byte data starting at even address and odd address in 8086 system?
3. What are the signals used in 8086 maximum mode operation?
4. Write the size of physical memory and virtual memory of 8086 Microprocessor.
5. Define Register index addressing modes of 8086 Microprocessor.
6. List out memory operand addressing modes of 8086 Microprocessor.
7. What are the segments registers of 8086?
8. Name any four flags of 8086.

Part B

1. Explain the 8086 Microprocessor architecture in detail.
2. (i) Explain the interrupts in 8086 microprocessor.
(ii) List out the types of addressing modes in 8086 microprocessor give an example for each case.
3. Discuss the instruction set and various addressing modes of 8086 microprocessor.
4. (i) Explain briefly the two modes of operation of 8086 microprocessor.
(ii) Discuss about 80486, 80486 and Pentium processors.
5. (i) Explain the different addressing modes of 8086 microprocessor.
(ii) Write an assembly language program using 8086 instructions to find the square of the number.
6. (i) Explain the internal architecture of 8086 microprocessor.
(ii) Write an assembly language program using 8086 instructions to convert upper case letter into lower case letter.
7. (i) Draw the pin diagram of 8086 CPU with its control signals.
(ii) Explain how an interrupt is responded by 8086 CPU.
8. (i) Write a program in 8086 to find an average between two temperatures.
(ii) Describe data transfer instructions of 8086 CPU.

Unit IV

Part A

1. What are the differences between a microcontroller and a microprocessor?
2. What are the usage of TIMER and COUNTER?
3. Mention the function of TXC, RXC, DSR and DTR signals of 8051 USART.
4. What are the various display modes of 8279 Keyboard/Display controller?
5. Note on the following code
XCHD A,@R0
6. Define 8051 interrupt control system.
7. What are the addressing modes of 8051?
8. List the interrupts in 8051.

Part B

1. Explain the 8051 Architecture in detail.
2. (i) Explain the Input and Output Ports of the 8051 Microcontroller in detail.
(ii) Elaborately discuss the timer operations of 8051 in detail.
3. Explain in detail the internal architecture, operating modes and programming of 8255 PPI.
4. (i) Explain the function of 8259 programmable interrupt controller.
(ii) Explain the function of I² c bus standard.
5. Explain the internal architecture of 8051 microprocessor.
6. (i) Explain the different modes of operations of microcontroller 805 timer.
(ii) Explain the different serial communication modes of operation of 8051 microcontroller.
7. (i) Explain the features of 8051 micro controller.
(ii) Draw and explain the connection diagrams of 8051 external ROM.
8. (i) Explain the basic structure of assembly language program of 8051.
(ii) Explain the memory organization of 8051.

Unit V

Part A

1. What is the significance of GATE bit in TMOD control register?
2. What is interrupt latency?
3. Why must the square wave signal be given to drive segment lines of LCD display?
4. Define embedded control.
5. List out the interrupts and their vector locations of 8051 Microcontroller.
6. Differentiate the 8085 μ P and 8051 μ C in the aspect of their memory structure.
7. What are the functions of assembler and linker in 8051?
8. What are the commonly used ADC's and DAC's?

Part B

1. (i) Explain how to interface LCD module to 8051 microprocessor.

- (ii) Write an 8051 assembly language program for the following scenario. A timer is of 8 bits. It is programmed to receive internal pulses at the rate of 4 micro seconds.
- What should be the value X pre-loaded so that it times out and generates overflow interrupt after 100 micro seconds?
 - If internal clock inputs are at the rate 1 micro second, what should be the pre-scaling factor, p?
2. (i) Explain how to interface a stepper motor with 8051 microcontroller.
(ii) Write an 8051 assembly language program for the following scenario. A spindle rotates as per the wind speed. On each rotation, it generates an output that can be used as the count input. A microcontroller timer mode is programmed for the 8-bit timer. The timer is programmed to receive count inputs from an external source. The timer initial value is 00H. It is expected to overflow in about 20 s. at
- What is the average revolution per minute (rpm)?
 - If wind speed is 1 Km/h at 25 rpm, then what is the observed wind speed?
3. (i) With neat diagram, explain the microprocessor based stepper motor control.
(ii) Write a note on optical type motor shaft encoders.
4. Discuss about microcomputer based smart scale and industrial process control system.
5. Write a program to control stepper motor by giving 0.1 μ s pulse using 8051 microcontroller.
6. (i) Write a digital to analog conversion program in 8051 microcontroller to convert digital data into analog.
(ii) List out the Logical operations present in 8051 microcontroller.
7. (i) List and explain conditional jump instructions of 8051.
(ii) Draw and explain briefly the connection diagram of ADC with peripheral device with one example.
8. (i) What are the features of LCD? How it is interfaced with 8051?
(ii) Write a program in 8051 to transfer letter 'A' serially at 4800 baud rate, continuously.