UNIT-I – ARCHITECTURE & INSTRUCTION SET OF 8051

PART-A & PART-B QUESTIONS

1. Define microcontroller.
2. What is the use of DPTR?
3. List the flags available in 8051.
4. How many bytes are bit addressable in internal RAM of 8051?
5. Name the registers used for timer operation in 8051 microcontroller.
6. Define machine cycle in 8051.
7. Write the instruction used to copy the data from external memory to 'A' register.
8. What is stack pointer?
9. Where is stack memory placed in 8051?
10. What is program counter?
11. Define instruction cycle and machine cycle.
12. Write the multiplication and division instructions of 8051.
13. List out the different types of interrupts.
14. State clock and clock cycle.
15. State machine cycle, instruction cycle, and state.
16. Short notes on reset and power on reset.
17. Explain the overview of 8051 family.

PART-C QUESTIONS

1. Draw the architecture of 8051 and explain the functions of each block.
2. Draw the pin diagram of 8051 and explain the functions of each pin.
3. Compare microcontroller and microprocessor.
4. Explain the following instructions: 1.MOVX A, @DPTR 2. XCH A,@Ri 3.CLR A 4. CPL bit 5. RLA
5. Classify the 8051 instructions based on their functions. Explain them with examples.
6. Explain the internal memory organization of 8051, both RAM and ROM.

UNIT-II – PROGRAMMING EXAMPLES

PART-A & PART-B QUESTIONS

1. List the different assembler directives.
2. List the addressing modes in 8051.
3. What is the use of label in assembly language programming?
4. What are the instructions that use 'B' register directly?
5. Write an ALP to multiply two 8 bit numbers and to store the result in external memory.
6. What is the significance of '@' symbol in 8051?
7. What is the use of ORG and WQU directives?
8. What is an assembler?
9. How can you perform multiplication using 8051 microcontroller?
10. What are the instructions used to access external RAM in 8051?
11. Mention the timers of 8051.
12. Write the multiplication and division instructions of 8051.
13. What are the unconditional jump instructions in 8051?
14. Write short notes on assembly language, machine language, and assembler.
15. Write the I/O ports with its internal RAM address of 8051.

PART-C QUESTIONS

1. Write an assembly language program to find the maximum of given array of 10 data.
2. Write an assembly language program to convert the given BCD no into its equivalent hex no.
3. (i) Explain the following assembler directives: DATA, CODE, DB, DW.
   (ii) Write an ALP to multiply the given two numbers and to store the result.
4. Explain the addressing modes of 8051 with examples.
5. Write an assembly language program to arrange the given set of 'n' numbers in ascending order.
6. Write an ALP to find the biggest number in a given array of ten numbers.
7. Write an ALP to find the biggest number in a given array of ten numbers.
8. Write an ALP to find the largest number in the array of 10 data.

UNIT-III- I/O AND TIMER

PART-A & PART-B QUESTIONS

1. Write the difference between timer and counter.
2. How many ports are in 8051? Mention them.
3. Write the alternate function of port 3.0 pin.
4. List the different modes of timer in 8051.
5. Write an instruction to set timer o in mode 1 operation.
6. How will you set a timer to be operated as an event counter?
7. What is mode 0 timer operation in 8051?
8. List any two bit addressable registers of 8051.
9. How will you set and reset bit p1.0 of 8051 microcontroller?
10. What is the alternate function of pin P3.1?
11. State the functions of M1 and M0 bits in TMOD register.
12. Write about TMOD register.
13. State the features of RS 232 interface.
14. Write about TCON register.
15. What is TF0?
16. Write the I/O ports with internal RAM address of 8051.
17. Explain briefly about SETB 90H, CLR 91H, and CPL 92H.
18. Write a program in 8051 to toggle bit P1.3 continuously.(producing a square wave)

PART-C QUESTIONS

1. Explain the different modes of counter.
2. Explain the programming of I/O ports in 8051.
3. Explain the steps in programming the timer 0 in mode 0 and mode 1.
4. Explain in detail about counter programming in 8051.
5. Explain the programming of 8051 timers in detail.
6. Explain the programming of I/O ports in 8051.
7. Write about the operating modes of timer/counter with a neat diagram.
8. Explain timer 1 mode 2 operation with a program.

UNIT- IV – INTERRUPT

PART-A & PART-B QUESTIONS

1. What is called power down mode?
2. What are the functions of RxD anf TxD pins?
3. Define full duplex transmission.
4. List the interrupts in 8051.
5. What are the registers used for interrupt processing in 8051?
6. Name the pins used for serial communication in 8051.
7. What is the purpose of SBUF register?
8. How will you double the baud rate in 8051 microcontroller?
9. List the interrupts of 8051 microcontroller.
10. List the modes of serial communication.
11. What is the purpose of RS232 serial interface?
12. What is meant by interrupt priority in 8051?
13. State the features of RS 232 interface.
14. Mention the two ways to increase the baud rate of serial data transfer.
15. Explain RI flag.

PART-C QUESTIONS

1. Explain SCON and PCON register.
2. Explain the following in details: (i) to execute the interrupts (ii) operation of IE registers (iii) priority of interrupts.
3. (i) Explain the programming of external hardware interrupts. (ii)explain the use of IP and IE registers
4. Explain in detail about serial port programming of 8051.
5. Explain in detail about the programming to transmit and receive data serially using 8051.
6. Explain in detail about interrupt structure and its priority in 8051.
7. Explain 8051 serial data transmission with its program.
8. List the priority of 8051 interrupts with its vector location and also program timer o mode 1 for its interrupt operation.

UNIT- V – INTERFACING TECHNIQUES

PART-A & PART-B QUESTIONS

1. What is the purpose of 8255?
2. State the use of BSR mode in 8255.
3. Define DAC.
4. Define PWM.
5. What is interfacing?
6. What is relay?
7. List the different modes of operation of 8255.
8. What is the use of DAC?
9. Define a stepper motor.
10. State the address for selecting ports and control word register in 8255.
11. Write the control word format of 8255.
12. Draw a schematic diagram to interface a relay with 8051 and give a brief explanation.
13. What is meant by ADC and DAC?
14. In 8051, if parallel ports are insufficient, how will you enhance it?
15. Write short notes on DC motor control using PWM.

PART-C QUESTIONS

1. Draw the block diagram of 8255 and explain the different modes of operation.
2. Explain in detail about keyboard interfacing with 8051.
3. Explain how an external memory is interfaced to 8051.
4. Explain the interfacing of seven segments LED displayed with 8051.
5. Explain in detail about stepper motor interfacing.
6. Draw the block diagram of 8255 and give its control register format.