34052 – MICRO CONTROLLER

UNIT – 1 ARCHITECTURE & INSTRUCTION SET OF 8051

PART-A QUESTIONS

1. Define Microcontroller, and state its applications
2. Define Accumulator and B register
3. What is the use of stack memory
4. What do you mean by I/O ports
5. Explain the functions of EA and PSEN pins
6. How is the memory of 8051 classified
7. Specify the capacity of internal data memory and internal program memory
8. How is internal RAM of 8051 classified
9. Specify the names of SFRs accessed only by using byte addressing
10. Specify the uses of PSW register
11. Define SP and specify its uses
12. Define machine cycle and instruction cycle
13. How is the instruction set of 8051 classified according to their operations
14. Define Arithmetic instruction, and explain with one example
15. Specify the various types of compare instructions used in 8051
16. Specify the various types of logical operations performed in microcontroller 8051
17. State the difference between RET and RETI instructions
18. Explain SJMP rel instruction
19. State the difference between JB bit, rel and JBC bit, rel instructions

PART-B QUESTIONS

1. State the advantages of microcontroller
2. Mention the features of microcontroller 8051
3. Compare Microprocessor and Microcontroller
4. Explain PC and SP
5. Explain the alternate functions of port 3 pins
6. Explain program memory of 8051
7. Explain register banks of 8051
8. Explain PSW register
9. Explain state and stack pointer
10. Explain port 0 and port 2 of 8051
11. Explain oscillator and clock of 8051
12. Explain instruction fetching and executing
13. With the diagram, explain power ON reset
14. Explain the overview of 8051 family
15. Explain the instructions for accessing program memory
16. Explain MOVX instructions
17. Explain ACALL and LCALL instructions
18. Explain DJNZ instructions
19. Explain JC rel and JB bit, rel instructions
20. Explain XCH instructions

PART-C QUESTIONS

1. Draw the block diagram of microcontroller 8051 and explain each block
2. Explain the architecture of 8051 microcontroller
3. Draw and explain the pin diagram of 8051
4. Explain the memory organization of 8051
5. Explain the classification of instructions according to the operation with examples
6. With the diagrams, explain the operation of I/O ports used in 8051

UNIT – 2 PROGRAMMING EXAMPLES

PART-A QUESTIONS

1. Mention the various steps used for assembling an ALP
2. State the fields of Assembly language instruction
3. Explain operand field of an instruction
4. Define Assembler and Assembler directives
5. State the various types of assembler
6. Explain the immediate addressing with example
7. Specify the names of various addressing modes
8. What do you mean by Time delay routines
9. Explain any two assembler directives
10. Mention any two examples of Register indirect addressing

PART-B QUESTIONS

1. Explain the assembling of program
2. Explain the structure of assembly language instructions
3. Explain Assembler directives
4. Explain any three psedueo instructions
5. State the features of assembler
6. Explain index addressing with two examples
7. Explain Register addressing with two examples

PART-C QUESTIONS

1. Explain the structure of assembly language
2. Explain assembler directives
3. Explain the different modes of addressing used in 8051
4. Write an ALP for Multibyte addition
5. Write an ALP for Ascending order / Descending order
6. Write an ALP for Odd parity / Even parity

UNIT – 3 I/O AND TIMER

PART-A QUESTIONS

1. Define timers and mention the timers used in MC 8051
2. Define counters and mention the various types of registers used in counters
3. Mention the bit and byte addresses of ports P0 and P1
4. Mention the various types of registers used in timer operation
5. State the various types of operating modes of timer / counter of 8051
6. What are the functions of Gate and C/T bits of 8051
7. Find the timers clock frequency for the crystal frequency of 11.0592 MHz
8. State the functions of M1 and M0 bits used in TMOD register
9. What are the functions of TF0 and TF1 bits used in TCON register
10. State the functions of T0 and T1 pins of 8051

PART-B QUESTIONS

1. Explain the bit address for I/O
2. Explain the bit and byte addresses of ports used in 8051
3. Explain the I/O bit addresses for internal RAM
4. Explain I/O programming with example
5. Explain I/O bit manipulation programming with example
6. Explain Read modify write future
7. Explain TMOD register
8. Explain TCON register
9. Explain mode 2 operation of timer/counter
10. Explain the different modes of timer/counter

PART-C QUESTIONS

1. Explain the bit addresses for I/O ports of 8051 , bit addresses of internal RAM
2. Explain the various modes of timer operation with diagram
3. Explain TMOD and TCON register
4. Explain counter programming
5. Explain timer programming

UNIT – 4 INTERRUPT AND SERIAL COMMUNICATION

PART-A QUESTIONS

1. How will you double the baud rate in 8051
2. What is the function of SMOD in PCON register
3. Define RS232
4. State the different modes of serial data communication
5. Explain the SM0, SM1 and SM2 bits used in SCON register
6. Explain TB8 and RB8 bits used in SCON register
7. Define power down mode, and state the ways to terminate from idle mode
8. Define idle mode and state the ways to terminate from idle mode
9. What will happen in idle mode
10. Specify the various types of SFRS used in serial communication
11. Define multiprocessor communication
12. State the baud rate of mode 0 and mode 2
13. Specify the various types of interrupts used in 8051
14. What is the use of IE register
15. What is the use of IP register
16. Specify the vector address of 8051 interrupts
17. State the priority of interrupts within level
18. What are the SFRs used in interrupt operations

PART-B QUESTIONS

1. Explain SCON register
2. Explain PCON register
3. Explain the various types of SFRs used in serial communications
4. Explain power down mode
5. Explain idle mode of 8051
6. Explain multiprocessor communication
7. State the features and limitations of RS232C
8. Explain the interfacing of RS232 with 8051
9. Explain the importance of TI flag
10. Explain the importance of RI flag
11. Explain IP register
12. Explain IE register
13. Explain how interrupts are handled
14. Explain interrupt destinations
15. Explain the programming of interrupts

PART-C QUESTIONS

1. Explain timer / Counter programming
2. Explain Data Transfer serially / Receive data serially
3. Explain the interrupts of 8051
4. Draw the interfacing diagram of RS232 with 8051 and explain its operation
5. Explain the functions of each bit of SCON and PCON
6. Explain IP and IE registers

UNIT – 5 INTERFACING TECHNIQUES

PART-A QUESTIONS

1. Define peripherals and interfacing
2. What is the use of IC 8255
3. Mention the various blocks placed in IC 8255
4. Mention the ports placed in group A and group B of IC 8255
5. State the modes of operation of IC 8255
6. How is I/O mode of IC 8255 classified
7. Define opto isolator and state its uses
8. How is the output voltages of LM34 and LM35 varied
9. Define ADC and DAC
10. Define stepper motor and mention its uses

PART-B QUESTIONS

1. Draw the functional block diagram of 8255
2. Explain the input configuration of mode 1 of 8255
3. Explain BSR mode of 8255
4. Draw the connection diagram of 8255 interfacing with 8051
5. Explain opto isolator
6. Draw the interfacing diagram of ADC 0808 with microcontroller
7. Draw and explain the interfacing diagram of DC motor with microcontroller

PART-C QUESTIONS

1. Draw the functional diagram of 8255 and explain each block
2. Draw the interfacing diagram of matrix keyboard with microcontroller 8051 and explain its operation
3. Draw the interfacing diagram of stepper motor with 8051 and explain its operation
4. Draw the interfacing diagram of 4 digit seven segment LED display with microcontroller 8051 and explain its operation
5. Draw the interfacing diagram of DC motor with microcontroller 8051 and explain its operation