Total number of printed pages = 4

19/4th Sem/DECE 401

2022

MICROCONTROLLER AND APPLICATIONS

Full Marks – 100

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions from the following.

1. (a) PSW.6 and PSW.7, respectively are respectively used for selecting the ____ and _____ flag. 2

   (b) If A =D6H and CY=0, the contents of A after execution of instruction RL A will be ____. 2

   (c) Name two SFRs which are bit-addressable. 2

   (d) If the contents P0 is 55H, what would be the port contents after execution of instruction: CPL P0 and CPL P0.7 ? 2

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(e) The contents of the accumulator after execution of following instructions will be, MOV A, #55H ORL A, 01H. 2

(f) Give at least two examples of bit level jump instruction. 2

(g) Mention two distinct features of Von-Neuman Architecture. 2

(h) Write an instruction to configure pin P1.0 as an input. 2

(i) Mention how many bytes are necessary for storage of short jump and absolute jump. 2

(j) Find the content of accumulator after the execution of following instructions MOV A, #0A4H XRL A, #71H. 2

2. (a) Write a comparison in between RISC and CISC processors. 10

(b) Write a program to add 02H 10 times and send the result to the port 1. 4

(c) Write instruction for each of the following operation :

(i) Clear bits 0,2,3,6 of the A,

(ii) Set bits 0,1,5 of the contents of A. 6

3. (a) Write a short note on the different sections and their usages in the Internal ROM. 5

(b) (i) Mention the various addressing modes available in Intel 8051 with 2 examples of each. 10

(ii) Describe the mode 1 operation of the timer. 5

4. (a) Write a program to transmit the content of the Accumulator into bit port 1.4 serially with LSB going first. 4

(b) Write an assembly code to send 55H to ports P1 and P2, with finite delay in between the two write operations. 6

(c) Give a detailed comparison between different types of Programming Languages used for microcontrollers. 10

5. (a) Mention the different mode of serial communication and give detail description of Standard UART mode. 2+8 =10

(b) List the interrupts available in the Intel 8051 and mention the sequence of execution of the interrupts. 5

(c) Write an assembly program to generate a square wave at the bit port 1.3. 5

6. (a) Write a program to find the square of a number stored at internal RAM address 50H. Store the result at address 60H (LSByte) and 61H (MSByte). 10

(b) Write a program in Assembly. Assume that 8 switches are connected to port 1 pin and 8 LEDs are connected to port 2 pins, write instructions to read status of all switches and send it to LEDs continuously. 5

(c) Draw a simplified architecture of Intel 8051. 5