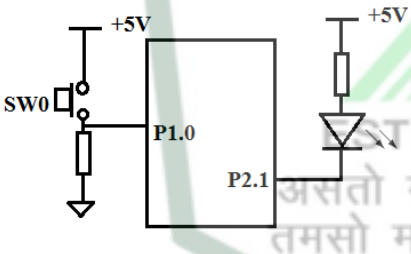
*Printed pages:2* **Programme (Dip)/ 4th Semester/ DECE 401**
**2025**
**Microcontroller and Applications**

*Full Marks : 100*

Time : 3 hours

***The figures in the margin indicate full marks for the questions.***
*Answer **any five** questions.*

| | | | |
|---|---|---|---|
| 1 | a) | Write an assembly program for copying a block of 5 bytes of data available from address 60H to 65H to the location starting from 40H to 45H. | [6] |
| | b) | For a crystal frequency of 11.0592 MHz, find the value to be loaded into TH1 for Baud rates of 600 and 150. | [4] |
| | c) | Write an assembly code to read the content of external RAM locations 10F4H and 10F5H and place the values read in R6 and R7, respectively. | [6] |
| | d) | Write a short note on the register: program counter. | [4] |
| 2 | a) | Write the assembly language instructions to add two 16-bit numbers: 143Ah, A02Fh. | [8] |
| | b) |  Write a program to read the status of the switch, and send it to control the LED as shown in Figure. | [8] |
| | c) | Provide a comparison between the different unconditional jump instructions. | [4] |
| 3 | a) | Write a program using Timer 0 to create a 10 kHz square wave on P1.0 | [8] |
| | b) | Write a program to transmit an ASCII character ‘Z’ continuously with a baud rate of 1200 with a crystal frequency of 11.0592MHz. | [8] |
| | c) | Explain the mode 2 operation for timer T0 with necessary block diagram. | [4] |
| 4 | a) | Store the string “SUMMER2025” in the look up table with starting address 100H. Write a program to read the string, one character at a time and send it to display port P1. | [10] |

b) Write the process of interrupt execution in Intel 8051 MCU [5]

c) Read port P0 and send its value on port P2 hundred times. [5]

5 a) Write a program to add contents of ten memory locations from 20H onwards. Store the final result at 40H in the RAM. [4+6]

b) Draw the diagram of Intel 8051 MCU being connected to an RS 232 port through a DB9 Connector. [5]

c) Mention the addressing modes of the Intel 8051 MCU, give two examples for each mode. [5]

6. a) Two numbers are stored in registers: R0, R1. Verify if their sum is greater than FFh. [5]

b) Write a program to read the port P0. If its value is greater than 50H, then set P1.0 else set P2.0. [5]

c) Write a program to receive the data, which has been sent in serial form and send it to the output port P0 in parallel form. [10]

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