587

October 2023

Time – Three hours
(Maximum Marks: 100)

[N.B.   1.   Answer all questions under Part-A. Each question carries 3 marks.

2.   Answer all the questions either (A) or (B) in Part-B. Each question carries 14 marks.]

PART – A

1. Define clock cycle, machine cycle and instruction cycle.

2. Compare Microprocessors and Microcontrollers.

3. Write the instructions used to perform multiplication and division in 8051.

4. What is meant by assembler directives?

5. Write down the bit addresses of I/O ports.

6. Write short notes on RS 232 standard.

7. What is PWM?

8. Draw the diagram of interfacing a relay with 8051 microcontroller.

9. List out the applications of Arduino microcontroller.

10. What is IoT? How does it work?

PART – B

11. (a) Draw the Architecture diagram of 8051 microcontroller. Also explain the following blocks present in 8051: Latch, PSW, Special function registers, RAM and ROM.

(Or)

(b) (i) With the neat diagrams explain operation of I/O ports. (7)
(ii) Explain instruction fetching and executing. (7)

[Turn over......

12. (a) (i) Write the assembly language program to perform subtraction of 16 bit numbers and store the result in 4500H memory location. (10)

(ii) Write the assembly language for 8 bit division. (4)

(Or)

(b) (i) Write any five arithmetic instructions and explain with example. (10)

(ii) What is an assembler? State its features. (4)

13. (a) (i) Write about each bit of TMOD and also specify the modes of timer. (4)

(ii) Explain the modes of operation of Timer/ counter with neat diagrams. (10)

(Or)

(b) (i) Explain the interfacing of RS232 with Microcontroller. (10)

(ii) List out the SFRs used for serial communication. (4)

14. (a) (i) Draw the block diagram of 8255 and explain it. (10)

(ii) With the interfacing diagram, state the operation of relay. (4)

(Or)

(b) (i) Draw the interfacing diagram of LCD with 8051 and explain its operation. (10)

(ii) State the need for ADC in interfacing sensor with microcontroller 8051. (4)

15. (a) Draw the general block diagram of raspberry pi and explain the blocks. List its advantages and disadvantages.

(Or)

(b) Draw the block diagram of home automation using IoT and explain. Write down the applications of IoT.