1138

April 2025

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 microcontroller.
2. What is machine cycle?
3. List out the addressing modes in 8051.
4. State any three bit manipulation instructions.
5. Write a note on I/O ports of 8051.
6. Define interrupt.
7. List out the modes of IC 8255.
8. Mention any three devices that can be interfaced with 8051.
9. List out the applications of Arduino.
10. Define Internet of Things (IoT).

PART – B

11. (a) Draw the architecture diagram of 8051 microcontroller. Explain.

(Or)

(b) (i) Discuss the functions of program counter and stack pointer. (10)
(ii) Compare microprocessor and microcontroller. (4)

12. (a) Explain the data transfer and arithmetic instructions with examples.

(Or)

(b) (i) Write an assembly language program for addition of two 8 bit numbers. (7)
(ii) Write an assembly language program for BCD to HEX conversion. (7)

13. (a) Describe the modes of timers/counters in 8051.

(Or)

(b) Write about the following:
(i) RS232 standard (ii) 8051 connection to RS232

14. (a) Draw the block diagram of IC 8255. Explain.

(Or)

(b) Discuss about the interfacing of seven segment LED display with microcontroller 8051.

15. (a) Draw and explain the block diagram of raspberry pi with its features.

(Or)

(b) Write a note on the home automation using IoT with block diagram.
