1657

April 2025

Time – Three hours
(Maximum Marks: 100)

(N.B. Answer all the questions, choosing any two subdivision from each question. Each subdivision carries 10 marks.)

1. (a) Explain the architecture of 8051 microcontroller with neat diagram.

    (b) Write a note on the special function registers of 8051 microcontroller.

    (c) Discuss about the pin details of 8051 microcontroller.

    (d) (i) Compare microprocessor and microcontroller. (7)
         (ii) What is an ALU ? (3)

2. (a) Explain about the data transfer and arithmetic instructions of 8051.

    (b) Write an assembly language program for 16 bit addition.

    (c) Discuss about the different addressing modes of 8051.

    (d) Explain about the logical and bit manipulation instructions of 8051.

3. (a) Write a note on the 8051 interrupts with its registers.

    (b) Explain about the 8051 serial port programming.

    (c) Write a note on the timer/counter of 8051 with its registers.

    (d) (i) Write about the I/O Ports of 8051. (7)
         (ii) Write short note on RS232. (3)

[Turn over......

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

   (b) Describe the interfacing of seven segment LED display with 8051.

   (c) Discuss about the modes of IC 8255.

   (d) Explain about the interfacing of stepper motor with 8051 using neat sketch.

5. (a) Draw the block diagram of Arduino. Explain.

   (b) Write a note on the IoT services and its applications.

   (c) Explain the architecture of IoT with neat sketch.

   (d) (i) Mention any five applications of Arduino. (5)
      (ii) Write a note on IoT ethics. (5)