22434

11920

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: **10**

a) Differentiate between microprocessor and microcontroller based on following parameters.

(i) Ports

(ii) Applications.

b) State the characteristic of embedded system. (Any two)

c) Draw the pin diagram of 89C51 microcontroller.

d) Write two disadvantages of embedded system.

e) Draw interfacing diagram of 7 seg display with 89C51 microcontroller.

f) Differentiate between synchronous and asynchronous communication (Any two points)

g) Draw interfacing diagram of relay with 89C51 microcontroller.

Marks

2. Attempt any THREE of the following: **12**

a) List the IDE tools. State the function of assembler, linker and editor.

b) Write an 89C51 C program to toggle the bit of $P_{1.0}$ for 250 times.

c) Write four selection factors of microcontroller.

d) Develop 89C51 C program to blink the LED interfaced to pin $P_{1.4}$.

3. Attempt any THREE of the following: **12**

a) Describe 'C' data types in 89C51 microcontroller.

b) Draw interfacing diagram of DAC 0808 with 89C51 microcontroller and write C program to generate triangular wave.

c) Describe the function of following pins of 89C51 microcontroller.

(i) INTO

(ii) RST

(iii) PSEN

(iv) EA

d) Write the following parameters of I2C protocol

(i) Data transfer rate

(ii) Number of fields

(iii) Addressing bits

(iv) Application.

Marks

4. Attempt any THREE of the following: **12**

a) Describe the classification of embedded system.

b) State the arithmetic and logical operator of embedded C and give one example of each.

c) Sate the derivates of 8031, 8051 and 8751.

d) Find the contents of accumulator after execution of following code.

(i) ACC = 0 × 04 | 0 × 68

(ii) ACC = 0 × 9A >> 3

e) State the need of RTOS with the multitasking and intertask communication.

5. Attempt any TWO of the following: **12**

a) Draw the interfacing diagram of ADC 0808/09 with 89C51

b) List wireless communication protocol. Describe IrDA wireless communication.

c) Write the features of RTOS. (any four)

6. Attempt any TWO of the following: **12**

a) Draw interfacing diagram of stepper motor with 89C51 microcontroller and write C program to rotate motor in clockwise direction. Motor has step angle of 0.9°

b) Develop 89C51 C program to toggle all the bits of P0, P1 with 200 ms. Use timer 1, mode 1, to generate the delay. The crystal frequency is 11.095 MHz. Calculate the value of the count which is to be loaded in timer register.

c) Describe the timer modes in 89C51 microcontroller. Find the value of TMOD to operate as timer in Mode 1, timer 1.