

314331

24225

3 Hours / 70 Marks

Seat No.

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- 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) Use of Non-programmable Electronic Pocket Calculator is permissible.
(6) 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) State any two applications of embedded system.
 - b) Draw pin out diagram of RS232.
 - c) Give any two commands used for LCD with 89C51.
 - d) State different serial communication modes of 89C51.
 - e) Draw interfacing diagram of 4×4 matrix keyboard with 89C51.
 - f) List any four features of AVR microcontroller.
 - g) Draw the PSW format of 89C51.

P.T.O.

2. Attempt any THREE of the following : 12

- a) State and explain the concept of intertask communication with sketches.
- b) Draw the interfacing diagram of 89C51 with DAC 0808/09.
- c) Describe the function of Compiler and Assembler.
- d) Compare microprocessor and microcontroller (four points).

3. Attempt any THREE of the following : 12

- a) Differentiate between general OS and RTOS.
- b) State the function of –
 - i) Setup()
 - ii) Loop()
 - iii) Pinmode() and
 - iv) delay() used in arduino
- c) Enlist the alternate functions of PORT-3 of 89C51.
- d) If the content of ACC = 0×04 and P2 = 0×11 , write down the value of result after the execution of following statement independently.
 - i) result = ACC & P₂
 - ii) result = ACC | P₂
 - iii) result = ACC ^ P₂
 - iv) result = ~ ACC

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

- a) List different characteristics of embedded system. Explain any one.
- b) State the different power pins and Arduino uno board (any four)
- c) Write an embedded C program to toggle port pin P_{2.2} continuously with some delay.
- d) Draw the interfacing diagram of 89C51 with ADC 0808.
- e) Compare I²C and USB protocol on the basis of –
 - i) Data transfer rate
 - ii) Number of fields
 - iii) Addressing bits
 - iv) Application

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

- a) Develop 89C51 'C' program to generate a square wave of 2 KHz on P1.1. use timer 0 and mode 1 to generate the delay.
- b) Draw the interfacing diagram of common Anode 7 - segment display with 89C51. Write a 'C' program to display "8" on 7-segment display.
- c) State any three features of following wireless communication protocol –
 - i) IrDA and
 - ii) Bluetooth

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

- a) Develop an embedded 'C' program to rotate stepper motor 90° in clockwise direction. Also draw the interfacing diagram.
 - b) Illustrate an embedded 'C' program to read number 1 from port 1, number 2 from port 2, Perform logical and arithmetic operations and store the result in port 3.
 - c) Compare 8031, 8051 and 8052 on the basis of –
 - i) RAM
 - ii) ROM (on-chip)
 - iii) Number of timers
 - iv) Number of I/O ports
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