22434

24225

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

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

(2) Answer each next main Question on a new page.

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

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(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) List any four SFR's of microcontroller.

b) Define multitasking in embedded system.

c) Compare microprocessor and microcontroller (any two point).

d) State need of RTOS in embedded system.

e) Draw interfacing diagram of 4×4 matrix keyboard.

f) List any four features of USB.

g) Draw interfacing diagram of ADC0808/9 with 89C51 microcontroller.

Marks

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

a) State the function of any two IDE tools.

b) Develop AT89C51 C-language program to input data 51H from port 1 and display on port 2.

c) Draw the architecture of AT89C51.

d) Draw interfacing diagram of DAC0808 and develop C-language program to generate square wave.

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

a) List any four operations used in programming with embedded 'C'. Give examples.

b) Draw interfacing of relay with AT89C51 microcontroller. Develop 'C' language program to make relay ON/OFF after certain delay.

c) Explain, alternate pin functions of port 3 in AT89C51 microcontroller.

d) Distinguish between serial and parallel communication (any four point).

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

a) List characteristic of embedded system.

b) Compare assembly language and embedded C-language (any four point).

c) List features of MCS-51 microcontroller (any eight point)

d) Develop C language program to read the number 1 from port 1, number 2 from port 2 and then add them. Store the result and send it to port 3.

e) Compare OS and RTOS. (Any four points)

Marks

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

a) List features of arduino board. Also wirte the components of arduino board with microcontroller.

b) Classify communication protocol. List serial communication protocol. Also explain serial peripheral interface communication protocol.

c) List applications, advantages and disadvantages of embedded system. (Any two points per point)

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

a) Draw interfacing diagram of stepper motor with AT89C51. Also develop embedded C-program to rotate stepper motor in clockwise direction. Assume motor step angle of 1.8 degree and motor of four step pulse sequence.

b) State the logical operators of embedded C and give one example of each. Also develop embedded C program for logical AND and OR operations.

c) Explain in detail, derivatives of MCS-51.

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