22532

12425

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

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

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

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

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) 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) Define RISC and CISC.

b) Draw the formats of IE and IP registers.

c) State the Pin connections of RS 232 to configure it as a null modem.

d) State driver IC's used to interface stepper motor and DC motor to 8051 Microcontroller.

e) State reason of occurrance of deadlock. List methods to avoid it.

f) List any four applications of embedded system.

g) Sketch Pin-out of LM35 with proper lables. List any two temperature sensors used in industry.

P.T.O.

Marks

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

a) Compare features of AVR and ARM Microcontroller.

b) List different logical operators in "C" for 8051. Give one example of each.

c) Draw and explain CAN bus frame format.

d) Draw an interfacing diagram of DAC to 89C51 and write C language program to generate square wave using DAC.

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

a) State the meaning of following terms:

i) Multitasking

ii) Scheduling of tasks.

b) Compare assembly language programming with embedded C programming.

c) Explain parallel communication protocols PCI and PCI-X.

d) Describe the following characteristics of embedded system:

i) NRE Cost

ii) Unit Cost

iii) Flexibility

iv) Maintainability.

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

a) List out standard baud rates used in 89C51 serial communication along with hexadecimal values.

b) Draw an interfacing of RS232 with 89C51 Microcontroller and state the significance of DTR and DSR signals.

c) Compare general purpose operating system and real time operating system.

d) Draw interfacing diagram of 3 × 3 matrix keyboard with 89C51 Microcontroller.

Marks

e) State any two features of following protocols:

i) IRDA

ii) Bluetooth

iii) Zigbee

iv) IEEE 802.11 (wi-fi).

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

a) Draw block diagram of embedded system and explain its hardware components.

b) What is intertask communication? Describe different methods of intertask communication.

c) Draw interfacing diagram of temperature measurement system using LM35, ADC 0808 with 89C51 Microcontroller.

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

a) Draw the interfacing diagram of 7-segment LED display and write a 89C51 C language program to display digits 0 to 9 continuously.

b) Write 89C51 C language program to transfer the message "WELCOME" serially at baud rate 4800, 8-bit data, 1 stop bit.

c) Draw the interfacing diagram to interface LED to Pin P1.7 of 89C51. Write C language program to blink LED continuously.

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