22471

12425

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) 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. Solve any FIVE :   **10**

(a) List features of 8051 microcontroller.

(b) State any two data types used in C with their range.

(c) State features of ADC 0808.

(d) Draw neat labelled diagram to interface IR sensor with microcontroller 8051.

(e) List different processors available in ARM 7 processor.

(f) Compare Von-Neumann & Harvard architecture. (any two points)

(g) Describe applications of ARM7/TDMI processor.

2. Solve any THREE :   **12**

(a) State the alternate pin functions of port 3 of 8051 microcontroller.

(b) Write a 'C' language program to mask the upper four bits of the data given in port 0 and write the answer in port 1. Use logical operator.

(c) List various interrupts of 8051 microcontroller along with their priorities and vector locations.

(d) Write C language program for generation of triangular waveform using DAC.

3. **Solve any THREE :** 12

(a) Explain with suitable sketch interfacing of stepper motor with 8051 microcontroller and also write C language program to rotate the motor in clockwise direction.

(b) Differentiate between different processors available in ARM7.

(c) Describe power down mode and ideal mode of 8051 with circuit diagram. Which SFR is used to set these modes ? Draw the same.

(d) Write C program to add the contents of port P0 and port P1 and store the result to port P2.

(e) Write C language program to display "WELCOME" on 16×2 LCD.

4. **Solve any THREE :** 12

(a) Draw labelled diagram to interface DC motor with 8051 microcontroller.

(b) Explain any two advanced processors available under ARM7/TDMI processorfamily.

(c) Develop a C language program to get a byte of data from port P0. If it is less than 50, send it to P1 otherwise send it to P2.

(d) Draw labelled interfacing diagram to interface relay with 8051 microcontroller.

(e) Write C language program to read voltage through ADC and display it on 16 × 2 LCD display.

5. **Solve any TWO :** 12

   (a) Explain following software development tools related to 8051 :

   (i) Compiler

   (ii) Cross-compiler

   (iii) Editor

   (iv) Debugger

   (v) Assembler

   (vi) Emulator

   (b) Write C language program to transmit message "MSBTE" serially at baud rate 9600, 8 bit data, 1 stop bit. Assume crystal frequency of 11.0592 MHz.

   (c) Write C language program to read temperature from LM 35 sensor. Also draw the interfacing diagram with 8051 microcontroller.

6. **Solve any TWO :** 12

   (a) Explain function of each pin of RS-232 with neat diagram, also draw the bit format of SCON register and explain function of each bit.

   (b) Write C language program to read ultrasonic sensor value and put it on port P0 or microcontroller 8051, also draw the interfacing diagram of it.

   (c) Explain with suitable sketch the interfacing of LED 7-Segment Display with 8051, also write the C language program to display number from 0 to 9.

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