23124

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) 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) Compare address bus and data bus used in 8051.

(b) Define assembler and linker.

(c) Write a C language program to turn ON LED after pressing switch.

(d) Draw the interfacing diagram of IR sensor with microcontroller 8051.

(e) List different processors available in ARM7 processor.

(f) Calculate the number of address lines required to access 16 kB ROM.

(g) List applications of ARM7/TDMI processor.

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

(a) Differentiate Harvard and von-neumann architecture.

(b) What are different logical operators in C for 8051. Give one examples each. (any four)

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

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

3. Attempt any THREE of the following : 12

(a) Write C language program to interface temperature sensor LM35 with microcontroller.

(b) Differentiate between different processors available in ARM7.

(c) Draw and label the architecture diagram of 8051.

(d) Write C language program to read P1 and store the one's complement of P1 to P2.

(e) Write a C language program to generate square wave using DAC 0808.

4. Attempt any THREE of the following : 12

(a) Write C language program to rotate servo motor clockwise and anticlockwise.

(b) List the advanced processors available under ARM7/TDMI processor family and explain any one.

(c) Write C language program to transfer 10 bytes from array A to array B.

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

(e) Write a C language program to convert analog signal into digital using ADC 0808.

5. Attempt any TWO of the following : 12

(a) Differentiate between embedded C language programming and assembly language programming.

(b) Write a C language program to transfer "YES" serially at baud rate 9600 continuously. Use 8 bit data and 1 stop bit. Assume crystal frequency 11.0592 MHz.

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

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

(a) Describe with neat suitable diagram the serial communication modes of 8051 microcontroller.

(b) Write C language program to read IR sensor value and put it on port P2 of 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 in ascending order.

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