22471

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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 : **5 × 2 = 10**

(a) List features of ARM 7 TDMI processor.

(b) List features of 8051 Microcontroller.

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

(d) State features of ADC 0808.

(e) Draw diagram to interface temperature sensor LM-35 with microcontroller 8051.

(f) Compare embedded 'C' programming & assembly language programming.

(g) Draw the format of SCON register.

2. Attempt any THREE of the following : **3 × 4 = 12**

(a) Sketch the Internal memory organization in 8051 microcontroller.

(b) Write 'C' language program to toggle only bit P2.4 continuously without disturbing the rest of the bits of P2.

(c) Compare features of different versions of ARM processor.

(d) Write 'C' language program for turning ON/OFF LED by a switch.

3. Attempt any THREE of the following : **3 × 4 = 12**

(a) List various interrupts in 8051 microcontroller along with their priorities & vector location.

(b) Write an 8051 'C' program to send values 00-FF to Port 2 ?

(c) Explain 8051 as a Boolean processor.

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

4. Attempt any THREE of the following : **3 × 4 = 12**

(a) Write the alternative function of port 3 pin.

(b) Draw the format of TCON register of 8051 & describe the function of each bit.

(c) Write 'C'-language program to rotate DC motor clockwise and anticlockwise.

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

(e) Write 'C'-language program to receive bytes of data serially and put them on P1. Set the baud rate at 9600, 8-bit data & 1 stop bit.

5. Attempt any TWO of the following : **2 × 6 = 12**

(a) Write 'C' language program to transfer the message "WELCOME" serially at baud rate 9600, 8-bit data, 1-stop bit, do this continuously. Assume crystal frequency 11.0592 MHz.

(b) Write 'C' language program for interfacing of PIR motion sensor with 8051. Draw interfacing diagram.

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

(1) Compiler

(2) Cross-compiler

(3) Editor

(4) Debugger

(5) Assembler

(6) Emulator

6. Attempt any TWO of the following : **2 × 6 = 12**

(a) Write 'C' language program to display message "HELLO" on 16 × 2 LCD. Draw interfacing diagram with 8051.

(b) Write 'C' language program to generate square wave using DAC 0808, at baud rate 4800, 8-bit data & 1-stop bit.

(c) Write 'C' language program to rotate stepper motor in clockwise & anti clock-wise direction. Draw interfacing diagram for the same.

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