22426

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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.

(8) Use of Steam tables, and Psychrometric chart is permitted.

Marks

1. Attempt any FIVE of the following : **10**

a) State function of RST and ALE pin of 8051 microcontroller.

b) State the pins on ADC 0808/09 used for handshaking with the microcontroller 8051.

c) Draw the format of PCON register and state the function of SMOD bit.

d) Find out the number of address lines required to access 2 KB of RAM.

e) State the function of OE and EOC pin of ADC 0808.

f) State the size of external memory that can be interfaced with 8051, with reason.

g) List any two logical instruction of 8051 microcontroller.

P.T.O.

Marks

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

a) Explain assembler directives with one example of each.

b) Compare any two derivatives of 8051.

c) Draw the format of IE register and write instruction to enable timer 0 interrupt.

d) Explain boolean processor and write any four instruction of it.

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

a) Sketch interfacing diagram of 3*3 matrix keyboard to 8051 microcontroller.

b) Develop an ALP to generate square wave of 2KHz using timer of 8051 microcontroller on port 0 with crystal frequency 11.0592 MHz.

c) Explain stack pointer and mention instructions related to stack operations with their functions.

d) Develop an ALP to add five 8-bit numbers stored from memory location 37 H to 3B H. Store the result of operation at memory location 47 H.

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

a) Compare RISC and CISC.

b) Draw software development cycle and explain any two software development tools.

c) Write alternate functions of port 0 and port 2.

d) Draw interfacing of seven segment display with 8051 microcontroller. Write an ALP to display count from 0 to 9.

e) With neat labelled interfacing diagram, explain the working of water level controller using 8051 microcontroller.

Marks

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

a) Explain various block of 8051 microcontroller with neat labelled diagram.

b) Develop an ALP to transmit message "MSBTE" serially at baud rate 9600. Assume crystal frequency of 11.0592 MHz.

c) Draw interfacing of 16 × 2 LCD display with 8051 microcontroller and write an ALP to display "HELLO" on it.

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

a) Draw the format and explain TMOD and TCON registers.

b) Explain addressing modes of 8051 microcontroller with two examples of each.

c) Draw interfacing of stepper motor with 8051 microcontroller. Write an ALP to rotate it in clockwise direction.