314328

24225

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

Instructions : (1) All Questions are *compulsory.*

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

(3) Figures to the right indicate full marks.

(4) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE out of SEVEN : **5 × 2 = 10**

(a) List the features of 8051 Microcontroller (any four).

(b) Define the term stack. Write size of stack pointer.

(c) List addressing mode of 8051 microcontroller (any four).

(d) Draw interfacing diagram of relay connected to P2.1 of 8051 microcontroller.

(e) State the function of $\overline{\text{PSEN}}$ & $\overline{\text{EA}}$ pins of 8051 microcontroller.

(f) Draw interfacing diagram of 4 * 4 key matrix with 8051 microcontroller.

(g) Draw the format of TCOW register.

2. Attempt any THREE out of FOUR : **3 × 4 = 12**

(a) With the help of ADD instruction, explain :

(i) Direct Addressing Mode

(ii) Indirect Addressing Mode

(iii) Register Addressing Mode

(iv) Immediate Addressing Mode

(b) Explain the interrupt mechanism with the help of suitable example.

(c) Write a program to generate a square wave of 1 kHz at P 1.5 pin of 8051 microcontroller assume 12 MHz crystal frequency.

(d) Draw interfacing diagram of 4K byte EPROM & 4K byte RAM to 8051 microcontroller. Draw memory map.

3. Attempt any THREE out of FOUR : **3 × 4 = 12**

(a) Compare Von-Neuman and Harvard architecture (four points).

(b) With the help of neat diagram, explain the Timer mode 0 of 8051 Microcontroller.

(c) Write a program to display 'g' on seven segment display.

(d) Write a program to find the sum of data stored at five consecutive memory location starting from 40 H.

4. Attempt any THREE out of FIVE : **3 × 4 = 12**

(a) Draw the block diagram of Microcontroller and write functions of each block.

(b) Describe 8051 microcontroller instruction with example :

(i) LJMP addr.

(ii) SETB <bit>

(iii) MOVX A,@DPTR

(iv) XCHDA,<byte>

(c) Draw the format of TMOD time mode register and state the function of each bit.

(d) Compare absolute decoding and linear decoding related to memory interfacing.

(e) Write assembly language program generate triangular wave form DAC 0808.

5. Attempt any TWO out of THREE : **2 × 6 = 12**

(a) (i) List 8051 special function registers.

(ii) Explain and draw PSW register.

(b) Write assembly language program to generate a stair step voltage from DAC 0808 with stair step voltage from 0 V through 5 V, with resolution 0.5 v each step. Using look up table. Assume Vref = 5 v, R1 = 5k and Rf = 5k.

(c) Draw interfacing of 2k byte EPROM and 2K byte RAM to 8051 microcontroller. Draw memory map.

6. Attempt any TWO out of THREE : **2 × 6 = 12**

(a) (i) List various interprets in 8051 microcontroller.

(ii) Draw and explain IE Register.

(b) Draw the interfacing diagram of 7 segment display to 8051 microcontroller.

(c) Draw the interfacing diagram of stepper motor with 8051 microcontroller. Write an assembly language program to rotate motor continuously in clockwise direction.
