24225

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

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

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(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. Attempt any FIVE of the following : **5 × 2 = 10**

(a) Draw block diagram of Von-Newman architecture.

(b) State the use of SOC and EOC signal in ADC 0808.

(c) State the difference between RET and RETI instruction. (any two points)

(d) Draw the format of IE SFR. State function of IE.7 bit.

(e) State the functions of following pins of 8051 :

(i) $\overline{EA}$

(ii) $\overline{PSEN}$

(f) Define the function of RS in LCD.

(g) Give any two applications of stepper motor.

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

(a) Draw an interfacing diagram of stepper motor with microcontroller. Develop an ALP to rotate a stepper motor in clockwise direction.

(b) Draw the block diagram of microcontroller and state the function of each block.

(c) Draw the format of TMOD register and explain each bit.

(d) Draw the interfacing diagram of Common Cathode (CC) seven segment display with microcontroller 8051. Develop an ALP to display 5 and 7 digit on seven segment display.

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

(a) Compare between microprocessor and microcontroller on the basis of

(i) Instruction set (ii) Memory organization

(iii) I/O compatibility (iv) Application

(b) Explain register indirect and register direct addressing mode in 8051 microcontroller with one example.

(c) Develop an ALP to add 10 bytes stored in internal memory location 40H onwards. Store the result in 41H.

(d) List alternate functions of port 3 of 8051 microcontroller.

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

(a) Sketch an interfacing diagram of LM35 with microcontroller 8051.

(b) Draw memory organization in 8051 microcontroller. Explain bit addressable RAM.

(c) Draw interfacing diagram of DAC 0808 with microcontroller 8051. Develop an ALP to generate square wave.

(d) Draw interfacing diagram of water level controller using microcontroller 8051 and explain.

(e) Develop an ALP to generate square wave on pin P1.7 using timer 0 in model. Assume count is 7A34H and crystal frequency is 11.0592 MHz.

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

(a) Explain power down and idle mode. Name the SFR from which power down and idle mode is set. Also draw its format.

(b) Write an ALP to find largest number from given array of 10 bytes stored in internal RAM 30H onwards. Store largest number in internal RAM 60H.

(c) Sketch interfacing diagram of 4K byte EPROM and 4K byte of RAM to 8051 microcontroller. Draw the memory map.

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

(a) Draw an interfacing diagram of traffic light controller using microcontroller 8051. Develop an ALP to turn on Red, Green and Yellow signal with some delay.

(b) Develop and ALP to transfer data “MSBTE” serially with baud rate 4800. Assume crystal frequency is 11.0592 MHz.

(c) Describe the function of following instructions :

(i) MOVX A, @ DPTR

(ii) XCH A, RO

(iii) ANL A, B

(iv) MOVC A, @A+DPTR

(v) SWAP A

(vi) SUBB A, 40H
