22426

11920

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: **10**

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

b) Calculate the number of address lines required to access 16 Kb ROM.

c) State features of ADC 0808.

d) List specifications of 8051 microcontroller.

e) List any two instructions which makes accumulator zero individually.

f) Compare Data memory and program memory.

g) List SFR in 8051. (any four)

Marks

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

a) Compare any three derivatives of 8051 microcontroller on the basis of RAM, ROM, Timer and Interrupts.

b) Draw and explain the interfacing of DAC to 8051.

c) Describe 8051 microcontroller as boolean processor.

d) Explain function of following pins of 8051

(i) pin no 31

(ii) pin 29

(iii) pin 21-28

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

a) Develope Assembly Language program (ALP) to find the largest number in a block of 10 numbers stored at location 40 H onwards in internal RAM.

b) Sketch the internal memory organization in 8051

c) Explain processes of interrupt enabling and disabling in 8051.

d) Explain following instructions of 8051.

(i) ADDC

(ii) L CALL

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

a) Draw the format of TCON register of 8051 and describe the function of each bit of it.

b) Describe serial communication in 8051. Explain the use of SCON register.

c) Draw interfacing of 16 × 2 LCD with 8051 and state the function of EN and RS pin of LCD.

d) Explain the use of following assembler directives.

i) EQU

ii) ORG

e) State the alternate pin functions of port 3 of 8051.

Marks

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

a) Explain with sketch the interfacing of 4 × 4 matrix keypad with 8051 microcontroller.

b) Differentiate between

(i) Harvard and Von-neuman architecture

(ii) Microprocessor and Microcontroller

c) Develop an ALP to generate square wave of 3 KHz using 8051 microcontroller on port pin P2.3. (Assume X_{tal} $freq^n$ = 12 MHz)

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

a) Draw interfacing of stepper motor with 8051 and write an ALP to rotate it in clockwise direction.

b) Describe with sketches the procedure to troubleshoot the traffic light controller.

c) Draw and explain Internal Port structure of Port 0 and Port 1 of 8051 microcontroller.