22537

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

Marks

1.   Attempt any <u>FIVE</u> of the following: **10**

a) Draw neat labelled block diagram of Harvard architecture.

b) Find out the number of address lines which are required to interface 2 KB EPROM.

c) Enlist different Instruction set in 8051µc

d) Draw the Format of TCON register.

e) Compare microprocessor and Microcontroller on the basis of

　　i) Architecture used

　　ii) Memory organization

f) Draw interfacing diagram of 2 × 16 LCD with 8051 microcontroller.

g) Give two applications of Stepper Motor.

Marks

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

a) Draw the Interfacing diagram of Stepper Motor with 8051 Mircocontroller and write an ALP to rotate motor continuously in clockwise direction.

b) Explain 8051 as Boolean Processor with the help of Instructions.

c) List the various Interrupts in 8051 μc along with their priorities and vector locations.

d) Draw interfacing diagram of 4 KB EPROM and 4 KB RAM to 8051 Microcontroller. Draw the memory map.

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

a) Draw the format of PSW register of 8051 μc and explain the function of each bit.

b) Explain any four addressing modes of 8051 μc with suitable example.

c) Describe the Functions of Editor, Assembler, Complier, Linker.

d) State the alternative functions of Port 3 of 8051 Microcontroller.

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

a) Develop traffic light controlling system by using 8051 μc. Draw Interfacing diagram and write an ALP for the same.

b) Compare Von-Nuemana and Harvard Architecture. (Any four points)

c) Explain interfacing diagram of relay with 8051 Microcontroller, write an ALP to turn ON and OFF relay.

d) Explain the Interfacing diagram of DAC to 8051. Write an ALP to generate square wave form using DAC.

e) Develop an ALP to transmit message "HELLO" serially at baud rate 9600 continuously. Assume crystal Frequency = 11.5592 MHz.

Marks

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

   a) Compare the power saving options in 8051 microcontroller. State the need of power saving options in 8051 μc.

   b) Develop an ALP for 8051 for finding the largest number out of ten number stored in internal RAM location starting from 40H. Store the result in 50H location.

   c) Sketch the interfacing diagram of 8 LED's to Port 2 of 8051 Microcontroller. Develop an ALP to make LED ON and OFF offer 100 ms delay. Generate delay by using Timer 1, Mode 1. Assume Cystal Frequency = 12 MHz

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

   a) Develop an ALP to read temperature from LM 35 sensor. Draw Interfacing diagram with 8051.

   b) Write a program to generate a square wave of 50% duty cycle on port P1.5 bit. Timer O is used to generate the time delay. (Assume Crystal Frequency = 11.0592 MHz)

   c) Explain the following instructions:

       i)   MOVX A, DPTR

       ii)   SWAP A

       iii) MUL AB

       iv)   MOV A, Ro

       v)   MOV A, #40H

       vi)   RRA

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