VIT
Vellore Institute of Technology

Final Assessment Test – November 2019

Course: ECE3003 - Microcontroller and its Applications

Class NBR(s): 0954 / 0959 / 0970 /0978 Slot: E2

Time: Three Hours Max. Marks: 100

KEEPING MOBILE PHONE/SMART WATCH, EVEN IN 'OFF' POSITION, IS EXAM MALPRACTICE

General Instructions :

Show calculations at appropriate places and write comments for all the instructions in all the programs.

Answer ALL Questions

1. Explain the Architecture of 8085 Microprocessor with neat diagram. **[10]**

2. Draw the general format of Program Status Word (PSW) register of 8051 and explain. **[5]**

3. Write an 8051 assembly program to solve the equation $Y = x^3 + x^2 + 1$. Assume "x" value varying between 1 and 3 is stored in ROM location 200H and the result Y should be stored in RAM location 30H. **[10]**

4. Develop an assembly code using 8051 to toggle the ports P0, P2 and P3 for 50 times and at the end generate a waveform for 75% duty cycle at P1.2. **[10]**

5. a) Write an 8051 assembly program to generate a wave form of width of 10 µsec of ON time and 5µsec of OFF time using a timer of 8051 Micro controller. **[10]**

[OR]

5. b) Develop an assembly code using 8051 to count external pulses at T1 and if the count is equal to 5 then generate a square wave form of 1KHz at T0.Assume default crystal frequency of 11.0592MHz. **[10]**

6. Write a program to receive a data of string of length of 14D (fourteen characters) at the baud rate of 19200 in 8051 Microcontroller. **[10]**

7. a) Develop an ALP using 8051 Microcontroller to perform the following (i) data transfer between P0 to P1 (ii) generation of delay of 272 µsec at P2.1 using Timer 0 and (iii) Receive the data serially at the baud rate of 4800. **[10]**

[OR]

7. b) Develop an ALP using 8051 Microcontroller to perform the following (i) Data transfer from P2.1 to P2.2 (ii) generation of a square of 72Hz at P1.0 using Timer 0 and (iii) Transfer a data serially at 9600 baud rate. **[10]**

8. Assume that pin 3.3 (INT1) of 8051 microcontroller is connected to a pulse generator, write a program in which the falling edge of the pulse will send a high to P1.3, which is connected to an LED (or buzzer). In other words, the LED is turned on and off at the same rate as the pulses are applied to the INT1 pin. **[10]**

9. Write an 8051 assembly program for the below LCD display [2 rows, 16 characters]. Assume "632014" is stored in ROM starting from 300H. Bring the digits that to be displayed in LCD from ROM location starting at 300H as per the following: **[10]**

									6	3	2	0	1	4	

Reference:

01 – Clear display

38 – 2 lines 5X7 matrix

0E – Display ON cursor blinking

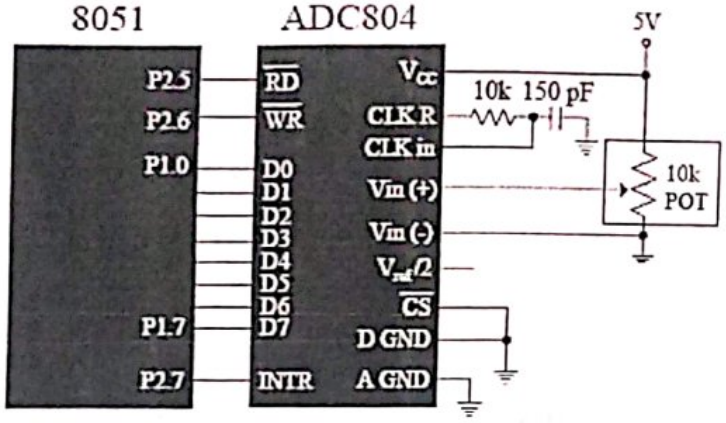
06 – Increment cursor

04 – Decrement cursor

80 – Force cursor to beginning of first line.

C0 - Force cursor to beginning of Second line

16. [10]



The above figure shows an ADC0804 connection to the 8051 Microcontroller. Write a program to Monitor the INTR pin and bring an Analog input into register A. Then write a subroutine to do Hex-to ACSII conversion of the converted digital data. Do this continuously.

17. List the features of ARM Processors. [5]

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