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SB-3783

M. Sc. (Tech.) (Part - II) (Instru.) Examination

March / April – 2011

Paper - III : Programming In C & Instrumentation System Design Using μPS & μCS

Time : **3** Hours] [Total Marks : **53**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **M. Sc. (Tech.) (Part - 2) (Instru.)**

Name of the Subject :

☛ **3 : Programming In C & Instrumentation System Design Using μ PS & μ CS**

☛ Subject Code No. : **3 7 8 3** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Attempt all questions.
(3) Figures to the right indicate full marks.
(4) Assume appropriate data if required.
(5) Draw flow chart showing program logic.
(6) Scientific calculator is permitted.

1 (a) Fill in the following blanks : **5**

(1) _____ port of 8051 does not have internal Pull-up.
(2) While loop is _____ control loop.
(3) The AJMP target address is limited to _____ bytes from the present content of PC.
(4) The maximum stack size is limited by the size of _____ .
(5) _____ Interrupt of 8051 has highest priority and its vector address is _____ .

(b) Write advantages of embedded 'C' Programming. **3**

(c) How many times the following for loop will be executed ? Also write output. **3**

```
for (i+0; i<=10; i++)
{
    if (i==2 || i==4)
        continue;
    printf ("*");
}
```

(d) Explain reentrant function. **2**

2 (a) Draw internal architecture of timer/counter and explain mode-2 operation of timer-1. **5**

(b) Explain following instructions of 8051. **5**

(1) MOVC A, @A+DPTR

(2) DA A

(3) DIV AB

(4) JBC bit, radd

(5) SWAP A.

OR

2 (a) A push button switch is connected with pin P2.0 that normally pulls the pin high and when pressed the pin level will go low. Write a program that makes an alarm connected with pin P1.0 ON when the switch is pressed . The alarm should be automatically OFF 20 second after it is made ON. **5**

(b) Explain in brief the interrupt priority in 8051 architecture. Is it possible to change priority ? If yes, explain how ? **5**

3 Write an embedded 'C' program that rotates stepper motor in clockwise direction if S1 is pressed and in counter-clockwise direction if S2 is pressed. Draw the hardware scheme. **10**

OR

3 (a) Explain Synchronous and Asynchronous serial data transfer. **3**

(b) Write a program that receives 20 character message from a terminal and stores in internal RAM of 8051 using serial mode-1 at 2400 baud rate. **7**

4 (a) Compare LCD with Seven segment display. **2**

(b) Write an embedded 'C' program that updates and displays the real time second data on LCD display. **8**

OR

4 (a) Write a 'C' program to check whether the string given by user is palindrome or not and display the corresponding message. **4**

(b) Write a program to generate triangular wave using DAC. Draw Interfacing scheme to connect DAC with 8051. **6**

5 Write an embedded 'C' program for a digital frequency meter designed using 8051 μC that continuosly measure the frequency of the square wave and displays the measured frequency in decimal on LCD display. What is the maximum frequency that can be measured by the meter ? **10**

OR

5 Draw an interfacing scheme to interface ADC with 8051 and using that interfacing scheme write and embedded 'C' program that takes 25 samples per sec from ADC and stores the digital count in memory. **10**