

**School of Information Technology and Engineering**  
**Practice FAT(Fall Semester, 2016-17)**  
**Course Code: ITE 305**  
**Course Name: Embedded Systems**  
**B.Tech, Information Technology**

Faculty Name: Dr. Balaji Raman  
Time: 180 Minutes

Date: 07<sup>th</sup> November  
Max. Marks: 100

**PART-A (8\*5=40 Marks)**  
**Answer all questions**

- Write a program in which the 8051 reads data from P1 and writes it to P2 continuously while giving a copy of it to the serial COM port to be transferred serially. Assume that XTAL = 11.0592. Set the baud rate at 9600.
- Compare and contrast Microprocessors and Microcontrollers.
- Construct the control flow graph for the following program.

```
switch (z)
{
    case (0) :
    {
        P0='0';
        break;
    }
    case (1) :
    {
        P0='1';
        break;
    }
    case (2) :
    {
        P0='2';
        break;
    }
    case (3) :
    {
        P0='3';
        break;
    }
}
```

a. }

- Construct the symbol table for the following 8051 assembly language program.

```
ORG      0
BACK:    MOV    A, #55H
          MOV    P0, A
          MOV    P1, A
          MOV    P2, A
          ACALL  QSDELAY
          MOV    A, #0AAH
          MOV    P0, A
          MOV    P1, A
          MOV    P2, A
          ACALL  QSDELAY
          SJMP   BACK
QSDELAY:
          MOV    R5, #11
H3:       MOV    R4, #248
H2:       MOV    R3, #255
H1:       DJNZ   R3, H1
          DJNZ   R4, H2
          DJNZ   R5, H3
          RET
END
```

- Construct the Control Flow Graph for the following 8051 assembly language program given in Question number 4.

6. Give brief notes of embedded software tools that can be used.
7. Explain static and dynamic power management schemes.
8. Give user level examples of static and dynamic power management schemes.

## **PART-B (6\*10=60 Marks)**

### **Answer any six questions**

1. Write a program using interrupts to do the following: (a) Receive data serially and sent it to P0, (b) Have P1 port read and transmitted serially, and a copy given to P2, (c) Make timer 0 generate a square wave of 5kHz frequency on P0.1. Assume that XTAL=11.0592. Set the baud rate at 4800.
2. Compare and contrast Ethernet and Internet network protocols used in Embedded Systems
3. Write brief notes on CAN bus protocol and the I<sup>2</sup>C protocol.
4. Discuss in detail about the A/D converter and the D/A converter.
5. Write an 8051 assembly language program for the following: Find the sum of the values 79H, F5H, E2H. Put the sum in registers R0 (low byte) and R5 (high byte).
6. Construct the acyclic data flow graph for the following code segment, show the traversal for the whole data flow graph, and generate code for the whole program for 8051 or 8086 or ARM.

a.  $(p+q)*10 + 5*(r-s)$

7. Construct the schedule for the given set of processes below using RMS. Check the sufficient condition for RMS.

Process	Execution Time	Period
P1	1	3
P2	1	4
P3	2	5

8. Construct the schedule for the given set of processes below using RMS. Check the sufficient condition for RMS.

Process	Execution Time	Period
P1	1	4
P2	2	6
P3	3	12

**\*\*\*\*\*ALL THE BEST \*\*\*\*\***