Exam. Code: 0928
Sub. Code: 33651

2015

B.E. (Electronics and Communication Engineering)

Fourth Semester

EC-402: Microcontrollers and Interfacing

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: ***Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.***

x-x-x

I. Answer the following:-

a) Diagrammatically differentiate Microcontroller and Microprocessor.

b) Differentiate RISC and CISC architecture.

c) What is ULN2003A?

d) List important features of PIC18.

e) Draw all the SFR's related to 8051 interrupts showing different bits.

f) Write about all the multifunctional pins of 8051 port 3.

g) Write single instruction to mask Timer 1 and external interrupt 0 and serial interrupt while unmasks all others.

h) Discuss briefly ORG and DW.

i) What is EOC signal in A/D converter?

j) How instruction INCFSNZ 01,1,0 works? (10x1)

UNIT - I

II. a) Draw internal memory organization of 8051. (3)

b) Suppose data 20H is stored in RAM location FFH. What are the contents of register A and flag register at the end of program. Also, allocate address to each instruction if the starting address is 2035H

```
2035H        MOV R0, #20H
MOVA,@R0
                          MOV B,#02H
                          DIV AB
CPL A
                          SETB C
SUBB A,R0
```

(4)

c) Suppose some number is stored in RAM Location 01H, if its D0 and D7 bits are both 0 then store 00H in RAM location 30H otherwise store FFH in RAM location 30H. (3)

III. a) Explain with example, why short jump instruction are encoded as two byte instructions. (3)

b) Write 8051 ALP to make a counter that count from 1 to 5 on common cathode SSD connected to 8051. Show interfacing diagram. (4)

c) Discuss about all the program flow control instructions of 8051 (3)

P.T.O.

IV. a) Write a sub-routine to generate a delay of 4 seconds. Assume that XTAL-15MHz. (4)

b) Write 8051 ALP to generate first ten terms of Fibonacci series. Store the result in RAM location 50H onwards. (6)

UNIT - II

V. a) Draw the File register of PIC18. (2)

b) Write PIC ALP to add first 10 natural numbers (5)

c) Write instructions to load WREG with FFH, then add FFH to it. What are the contents of status register after addition. (3)

VI. a) Write 8051 ALP to transmit "Vande matram" serially at 4800 baud, 8-bit data with one stop bit and at the same time receiving data serially. Assume crystal frequency=11.0592MHz. (5)

b) Write 8051 ALP to display "India is my motherland" on the first line of 16x2 LCD. Show interfacing diagram. (5)

VII. a) A/D converter 0808 is interfaced to 8051. Also, an LED is connected to 8081 and LM35 temperature sensor is connected to analog line of A/D converter. (Show interfacing diagram). Write 8051 ALP to continuously check the temperature and if the temperature falls below 50^0C then ON the LED otherwise keep it OFF. (5)

b) A Stepper motor is interfaced to 8051. (Show interfacing diagram).

Write 8051 ALP to rotate stepper motor with high torque by 360^0 with a delay after every step. Assume that step angle 2^0 and XTAL-15Mhz. (5)

x-x-x