ROLL NO.	

PRESIDENCY UNIVERSITY, BENGALURU
SCHOOL OF ENGINEERING

Max Marks: 40 | Max Time: 120 Mins | Weightage: 40 %

ENDTERM FINAL EXAMINATION

I Semester AY 2017-18 | Course: **ECE/EEE301 Microcontroller Applications** | 22 DEC 2017

Instructions:

i. Write legibly
ii. Scientific and non programmable calculators are permitted
iii. Assume suitable data where needed
iv. Answers should be written according to the weightage of marks and time constraint of 2 hours

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Part A

[4 Q x 3 M= 12 Marks]

1. Differentiate (i) Microcontroller and Microprocessor (ii) TR0 and TF0 bit of TCON register
2. Draw the interrupt vector table of 8051 and explain the vector locations and priorities
3. Draw TMOD register and explain all bits. Calculate the value of TMOD to put both timers into **timer** mode 2.
4. Show the calculation for (A) the value to be loaded to TH1 to get a baud rate of 9600 Bauds (B) Value for IE to enable (Timer0) and (External1) interrupts and disable others (C) Value for IP register to put external 0 and timer 0 to high priority group and others to low priority.

Part B

[4 Q x 4 M= 16 Marks]

5. Draw SCON Register and explain the bits. Derive the standard value to be loaded for standard mode
6. Write a program to create a square wave of 10 KHz at pin P2.3 using timer 0. Assume 12 MH clock
7. Write a note of the features of 8051 with a block diagram
8. Write a note on addressing modes of 8051 and identify both source and destination addressing mode for the instruction MOV R0, #50h

Part C

[2 Q x 6 M= 12 Marks]

9. (a) Explain Timer modes with a table. (b) Calculate initial value of TH0 and TL0 and TMOD for a single delay of 10ms and (c) write a subroutine for timer 0 to generate this delay
10. Write detailed algorithm to send / receive serial data and (A) write a program to send data from internal location 30h serially out at 2400 baud (B) write a program to Receive serial data at 4800 baud and store to 60h

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Max Marks: 20 | Max Time: 60 Mins | Weightage: 20 %

TEST 2

I Semester AY 2017-2018 | Course: **ECE/EEE301 Microcontroller Applications** | 28 OCT 2017

Instructions:

i. Write legibly
ii. Scientific and non programmable calculators are permitted
iii. Assume suitable values where needed

Part A

(3Q x 2 M= 06 Marks)

1. What does the abbreviation "ARM" represent? Till which series of ARM is it Von Neumon and from where is Harward architecture?
2. What are the alternate jobs done by the pins of ports P0, P1, P2 and P3 respectively? How can a port be declared as an input port or an output port?
3. For a generating a square wave of 1KHz, calculate and design appropriate delay? WALP for the square wave generation. (Assume Frequency = 12 MHz)

Part B

(2Q x 3 M= 06 Marks)

4. For ARM system, show the register structure and explain in detail (all registers and also CPSR and SPSR registers).
5. Show the ADC interface in detail and explain the working. Write the algorithm / flowchart to convert analog input signal line number 5 and read it to the microcontroller and save to location 40h.

Part C

(2Q x 04 M= 08 Marks)

6. Draw the diagram to connect 8 switches as input at Port 1 and send the same status to 8 LEDs at Port 2. Write the algorithm/ flowchart and WALP to read the switches, store the status at internal location 30h and also send same status to LEDs. Use appropriate de-bouncing delay.
7. Explain the working of stepper motor interface with relevant diagrams and explain the working of the same. Write an ALP for rotating full step motor clockwise continuously. Use suitable delay.

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Max Marks: 20 | Max Time: 60 Mins | Weightage: 20 %

TEST 1

V Semester 2017-2018 | Course: **ECE/EEE301 Microcontroller Applications** | 22 SEPT 2017

Instructions:

i. Write legibly
ii. Scientific and non programmable calculators are permitted
iii. Assume suitable values where needed

Part A

(3Q x 2 M= 06 Marks)

1. Draw the Diagrams indicating Von Neumon and Harward architectures
2. (a) Draw the PSW / Flag register of 8051 and
   (b) Name the 6 SFRs related to Timers
3. Explain and Compare the instructions SWAP and XCH

Part B

(2 Q x 3 M= 06 Marks)

4. Draw and explain the detailed structure of 256 bytes of internal RAM, and indicate clearly where registers R0 to R7 of bank 0 are located
5. If frequency of crystal is 12 MHz, Write an Assembly Language Program for generating a delay of 10 Milli-seconds (=10,000 μS) with loop in loop. [GIVEN : NOP = 1 machine cycle, DJNZ = 2 Machine cycles]

Part C

(2 Q x 04 M= 08 Marks)

6. Write a note on all addressing modes of 8051
7. Write a detailed note on features of 8051 with the help of a block diagram