

# NPTEL - WEL Summer Workshop on Micro Controller

## QUIZ - I

Time: 10:30 am to 12:30 pm

Saturday 3<sup>rd</sup> July, 2021

Maximum Marks: 25

### Note

Please verify all the questions using the debugger, and once you are satisfied, run them on PT-51 and demonstrate to your TA.

1. You have written a program to generate a delay to toggle LED's P1.4-P1.7 ON and then OFF for 1 second. Modify the program to set the pin P1.4 of Port-1 for about 5 seconds and then clear it off.
2. Demonstrate this to your TA. **(5 Marks)**
3. Use `readNibble` to read two successive 4 bit values which are to be saved in registers R0 and R1 as four bit binary numbers. Note that the upper nibble should be 0H in both the `readNibbble` operations.
4. Write a program which will add these two four bit numbers and display the sum (**Note:** sum will be 5 bit) on the Port Pins P1.4 to P1.7 in the following format : MSB to be displayed for 5 seconds followed by the four least significant bits on P1.4 to P1.7.  
e.g. 9+8 should be displayed as 0001 and after 5 seconds delay, it should display 0001.  
**(10 marks)**
5. Now Interpret the input number as a BCD number (0-9). Display the sum of the two nibbles from `readNibbble` operation in BCD format on the Port Pins P1.4 to P1.7 in the format mentioned above. You need to use the instruction DA to adjust the sum.  
e.g. 9+8 should be displayed as 0001 and after 5 seconds delay, it should display 0111 (It should not be 0001 and then 0001). **(10 marks)**