IET WINTER 2016
Embedded Systems Design
LAB 9

Objective:

At completion of the lab, student will be able to:

1. Get basic understanding of Analog to Digital Converters.
2. Understand ADC programming with Atmega32.

Components Required for the Lab:

1. EasyAvr7 from MikroElectronika
2. USB cable for programming Atmega 32
3. Power Supply
4. Connectors

LAB - 9 Resources:

1. Example Program
2. Datasheet Atmega32 (Page: 201 -218)

Some useful Registers for this lab:

ADMUX – ADC Multiplexer Selection Register
ADCSRA – ADC Control and Status Register A
ADCL/ADCH – ADC Data Register
SFIOR – Special function I/O Register

Caution:

Don't give voltage more than 5 volts to any pins of microcontroller.

Lab Assignment:

Write and test following programs:

0. Test the sample program.

1. Voltmeter

Write and test program that continuously reads voltage (**0-5V**) at Pin A.0 and displays the voltage with 3 decimal points at LCD.

2. 2 Channel Read

Write and test a program that reads voltage levels at PinA.0 and PinA.1 and displays the voltage level of Ch 0 and Ch 1 at LCD.

3. Supply Error calculation

Connect same voltage to Pins PinA.0 and PinA.1 from different source and calculate and display the difference at LCD.