

CG1112 Engineering Principle and Practice II
Semester 2 2018/2019

Week of 28th January 2019
Tutorial 1 Suggested Solutions

Part 2 – Understanding Micro-controller

Objectives:

- Get familiarized with the Atmel AT328p Microcontroller
- Learn how to extract useful information from the datasheet

Introduction

The datasheet is a very integral and useful document that gives us a lot of information with regards to the device we are using. Without the datasheet, we will effectively be trying to connect and use a device “blindly”.

Task 1:

Download the complete Atmega328p datasheet from IVLE. **Memorize all 442 pages of it.** You will be asked questions from any of the pages during your mid-term.

☺ Ok. Just kidding.

Actual Task 1:

Download the datasheet and answer the following questions by just **referring to the first 2 pages:**

1. How many bit microcontroller is this device? What can you deduce from your answer?
2. What is the fastest speed at which this device can operate?
Can it be clocked even faster than that?

Task 2: Understanding the Block Diagram

Go to Section 4 of the datasheet and answer the following questions:

3. How many I/O ports are there and what are their bus widths?
4. Note down the mapping of PortB pins to the actual Microcontroller Pins.

Task 3: Understanding Multiplexing

Due to the limited number of pins, it is common for pins to have multiple functionalities. Refer to Section 6 on I/O Multiplexing.

5. What are PB7 and PB6 already used for in the Uno board? (Refer to the Arduino Uno Schematic)