

3.1 — Prelab 3. Please answer the following questions and hand in as your pre lab for Lab 3.

1. List two things you can learn from a peripheral's functional description in the peripheral reference manual?

- Explanation of the purpose of each operating mode
- Basic theory of operation

2. What is the title of the first subsection in the functional description of timers 2 and 3?

- Not mentioned in the lab manual; look it up!

Time-base unit

3. What is the purpose of the Prescaler (PSC) register?

It divides the input clock frequency to the timer. The PSC can divide the input clock by any integer value that fits in its 16-bit width.

4. What is the purpose of the Auto-Reload (ARR) register?

The value in the ARR register is the trigger point at which the timer resets and begins to count a new period.

5. What is the purpose of the Capture/Compare (CCR<sub>x</sub>) register while the timer is operating in Output Compare mode?

Modifies the output of a GPIO pin whenever the timer's counter matches the value stored in the CCR<sub>x</sub> register.

6. What does the duty-cycle of a PWM signal represent?

An analog voltage ranging between the low and high voltages of the digital signal.

7. What is the purpose of the Alternate Function mode for a GPIO pin?

Allowing a pin to connect directly to internal peripherals of the STM32F0

8. In what document can you find the documentation for what GPIO pins have which alternate Functions?

The STM32F072xB datasheet and navigate to Section 4 Pinouts and Pin Descriptions