

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
- Relevant registers and configuration options

2. What is the title of the first sub-section in the functional description of timers 2 and 3?

- Time-base unit

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

- Provide the ability to generate very long timer periods or match strange timing requirements that are not multiples of the system clock. Another description is that its primary purpose is to determine the base unit of time that a single "tick" represents. It achieves this by being able to 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 ARR register provides the ability to set a lower top limit in which to reset and begin counting a new period (instead of using the physical hardware size of the timer's counter register as the top limit).

5. What is the purpose of the Capture/Compare (CCR_x) register while the timer is operating in Output Compare mode?

- The purpose of the CCR_x register while the timer is operating in Output Compare mode is to store a value that is compared to the timer's counter. When the timer's counter matches the value stored in the CCR_x register, the output compare channel can then set, clear, or toggle its pin (depending on the configuration).

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

- The duty-cycle of a PWM signal represents 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?

- It allows a GPIO pin to connect directly to internal peripherals of the STM32F0. The GPIO Alternate Function mode affords the user different options when selecting pins for a peripheral.

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

- The documentation for what GPIO pins have which alternate functions is found in the device datasheet (the STM32F072xB Datasheet).