**Module 6: Ahb Vga Peripheral**

1. Which of the following tasks is a function of a VGA peripheral? (There may be more than one correct answer.)

1. Managing the data flow between a system bus (e.g., AHB) and a monitor (e.g., CRT)
2. Generating the electron beam used to display images on the CRT monitor
3. Temporarily storing image data
4. Output of color signals

2. The timing of VGA control signals depends on which of the following parameters?

1. Screen refresh rate
2. The number of pixels that the monitor can display
3. The operation frequency of the system connected to the VGA peripheral
4. All of the above.

3. Why does the VGA protocol use only two bits to represent the color blue, and three bits to represent the colors red and green?

1. To reduce the number of required VGA connector pins, and hence reduce cost
2. To reduce the number of bits to be transmitted to the monitor, hence reducing transmission delay and improving system efficiency
3. The human eye is less sensitive to variations in the color blue compared to red and green
4. All of the above.

4. Which of the following statements is correct?

1. The digital output from a VGA peripheral interface must be converted to analog before it can be connected to the VGA connector.
2. The analog output from a VGA peripheral interface must be converted to digital before it can be connected to the VGA connector.
3. Both VGA peripheral and connector use analog signals, so no conversion is needed.
4. Both VGA peripheral and connector use digital signals, so no conversion is needed.

5. Storing the information of multiple pixels in one memory location is:

1. a design approach to reduce area overhead of the VGA peripheral.
2. a design approach to compensate for insufficient on-chip memory storage space.
3. found to enhance the quality of the displayed images.
4. a design approach to speed up the memory writing process.

6. Which of the statements below is a justification for using separate internal memories for text and images when designing a VGA peripheral?

1. Image and texts have different display requirements, so each needs a unique specification of their respective VGA internal memory.
2. The VGA control signal varies depending on whether image information or text information will be displayed.
3. The memory used to store text information needs to be a non-volatile memory to protect this information from possible loss due to a power cut, whereas image data can be stored on volatile memory, because it is usually predictable and can be easily regenerated.
4. All of the above.

7. Referring to the hardware architecture of the VGA peripheral discussed in the lecture, which of the following statements is incorrect? The image buffer:

1. stores the RGB information for all the pixels to be shown on the screen.
2. is an internal register in the VGA peripheral.
3. implementation utilizes a third-party IP core.
4. receives control signals from the Cortex-M0.

8. Why is dual port RAM used to implement one of the VGA peripheral internal registers?

1. To save power, as dual port memories are typically more power efficient than their single port counterparts.
2. To allow simultaneous read and write operations, and hence improve performance.
3. To speed up the design process by using third-party IP cores.
4. All of the above.

9. Which of the following statements is a characteristic of porch regions?

1. It is a peripheral around the CRT screen monitor that cannot be reached by the electron beam.
2. The pixels in this region are not displayed on the monitor.
3. The width of this region is controlled by the VGA timing control signal.
4. None of the above

10. What is the most likely outcome of increasing the VGA peripheral’s internal memory size?

1. Reducing the cost of the implementation
2. Facilitating a higher resolution display
3. Slowing down VGA access time
4. All of the above.