**Module 7: AHB UART Peripheral**

1. Which of the following tasks is typically performed by a UART peripheral? (There may be more than one correct answer.)

1. It manages the data flow between a system bus (e.g., AHB) and a monitor.
2. It transforms data from serial to parallel.
3. It provides temporary storage space.
4. It generates the system clocking signal.

2. Which of the following statements is an advantage of serial data transmission over parallel data transmission?

1. Serial transmission provides higher data throughputs.
2. Serial transmission is more vulnerable to noise.
3. Serial transmission requires less wiring overheads.
4. Serial transmission is always more power efficient.

3. Why are synchronous serial links typically considered more reliable than synchronous parallel channels?

1. Because parallel channels are vulnerable to errors caused by crosstalk noise between parallel data lines
2. Because parallel channels are vulnerable to errors caused by variations in power supply
3. Because parallel channels are vulnerable to errors caused by synchronization failures caused by clock jitter
4. All of the above.

4. Which of the following statements is correct?

1. Synchronous communication schemes use a clock signal to coordinate data transmission between sender and receivers; such coordination is not needed in asynchronous communication.
2. Asynchronous communication schemes use a clock signal to coordinate data transmission between a sender and a receiver; such coordination is not needed in synchronous communication.
3. Asynchronous communication schemes use a clock signal to coordinate data transmission between a sender and a receiver, while synchronous communication uses extra bits to synchronize data transmission.
4. Synchronous communication schemes use a clock signal to coordinate data transmission between a sender and a receiver, while asynchronous communication uses extra bits to synchronize data transmission.

5. Which of the following statements is correct?

1. The communication between two UART devices is typically synchronous with a pre-agreed data transmission rate.
2. The communication between two UART devices is typically synchronous, where the data transmission rate is controlled only by the clock frequency of the sender.
3. The communication between two UART devices is asynchronous, where the data transmission rate is fixed.
4. The communication between two UART devices is asynchronous, where the data transmission rate can continuously vary.

6. The frequency baud clock is dependent on which of the following factors?

1. The frequency of the system on-chip clock
2. The target data transmission rate at the output of the UART transmitter
3. The design of the baud generator
4. All of the above.

7. Which of the following is not a task of the UART receiver?

1. Receiving data information at a rate specified by the clock generated from the baud generator
2. Converting data from parallel to serial
3. Writing the received byte to the receiver FIFO
4. Storing data temporarily in a shift register

8. Why does a UART controller typically have a FIFO register connected to its transmitter?

1. To convert between the high frequency of the transmitting system and the low data rate of the communication channel
2. To temporarily store data to be transmitted to improve system efficiency
3. To convert between the low frequency of the transmitting system and the high data rate of the communication channel
4. To give the host system more time to handle an interrupt from the UART

9. Why do some UART controllers have a FIFO buffer connected to their receiver?

1. To convert between the low data rate of the communication channel and the high frequency of the transmitting system
2. To temporarily store data to be transmitted to improve system efficiency
3. To convert between the low frequency of the receiving system and the high data rate of the communication channel
4. To give the host system more time to handle an interrupt from the UART

10. Which of the following would you change to increase the data transmission rate? (There may be more than one correct answer.)

1. The clock frequency of the host system
2. The storage capacity of the transmitter FIFO buffer
3. The design of the baud generator block
4. The character encoding scheme