Question: What is the purpose of the ST-3232 chip used on the Nexys2 board?

* This chip converts the logics from FPGA and RS-232 voltages

Question: What is the purpose of the “start” bit in the serial protocol?

* The start bit signals the start of a character frame but does not contain any data

Question: In what order are the bits sent over the UART? Least signiﬁcant bit (LSB) ﬁrst or Most signiﬁcant bit (MSB) ﬁrst?

* Least significant bit first

Question: For a 19,200 baud system serial communication link, how long does it take to transfer an 8-bit character (including the start and stop bits)?

* 521.0us

Question: At 19200 baud, how many characters per second can be transmitted?

* 1920 per second

Question: What percent of transmission time is overhead (time of the start and stop bits divided by the total frame time)?

* 20%

Question: Suppose a ﬁle of 10,000 bytes is to be sent over a line at 19200 bps. How much time will it take in seconds?

* 4.17 seconds

Question: What is the purpose of the BIT\_TIMER\_COUNT constant used within the bit-timer circuit?

* It will generate a signal tx\_bit to indicate then end of a bit period and requires a signal for clearing the timer.
* To measure the time period for a single bit period.

Question: Why should the “transmit out” signal be registered with a ﬂip-ﬂop?

* To prevent glitches before leaving the chip

Question: What is the purpose of the RETRN state in the state machine?

* To wait the send\_character to go low before starting to send another character.

Question: What value should be asserted on the TX output during the IDLE and RETRN states?

* ‘1’

6072774.996 ns