# Test 4 Study Guide

1. Serial communication via the RS232 standard
    a. Formatting (start, stop, parity, data bits)
    b. NRZ format - be able to draw a waveform for a data value sent in NRZ serial format
    c. Clock synchronization issues between two sending and receiving computers.
    d. Definition of a UART
2. Serial communication via USB
    a. Electrical characteristics of signals, signaling speeds
    b. Data formatting via NRZI format
    c. Why is Bit stuffing used with USB?
    d. Physical and logical topologies of a USB network.\
    e. Reasoning behind differential signaling for USB network
    f. Definition of half duplex, full duplex
3. Serial Communication via IEEE Firewire
    a. Signaling speeds
    b. Electrical characteristics of signals
    c. Data formatting via Data Strobe signaling
4. DMA - definition, what it is used for
5. System busses
    a. What constitutes a system bus
    b. Data bandwidth calculation on a system bus
    c. Bus mastering definition
    d. Definition of split transaction
    e. Typical control lines found on a system bus
6. Advanced Graphics Port - what is it used for, why was it invented
7. System Chipsets
    a. What typical functions do they provide?
    b. What differences might be found between chipsets for high end PCs versus low-end PCs?
8. Fixed Disks
    a. Definitions of sector, rotational latency, track, cylinder, access time, transfer time
    b. Calculation of disk capacity based on sectors, tracks, cylinders
9. Video Displays
    a. Definitions of horizontal sync, vertical sync, refresh rate, frame rate, dot clock frequency
    b. Calculation of memory requirements for video display based on resolution, and number of colors
10. X86 Extensions
    a. Base capabilities of SIMD extensions and MMX extensions
    b. Saturated arithmetic
11. IEEE 754 floating point format
    a. Convert decimal floating number to single precision format and vice versa
    b. Know what 'special' numbers are and encodings

***WARNING: THIS IS NOT AN EXHAUSTIVE LIST OF TOPICS. You are responsible for everything we have covered since last test.***