2.1.5

1. The central processor unit (CPU) contains registers and what other basic elements?

**Answer:** Control Unit, Arithmetic Logic Unit, and the clock.

2. The central processor unit is connected to the rest of the computer system using what three

buses?

**Answer:** Data Bus, Control Bus, Address Bus

3. Why does memory access take more machine cycles than register access?

**Answer:** The conventional memory is located outside the CPU, which is why it responds more slowly to access requests, while registers are hard-wired inside the CPU itself.

4. What are the three basic steps in the instruction execution cycle?

**Answer:** Fetch, Decode, and Execute

5. Which two additional steps are required in the instruction execution cycle when a memory

operand is used?

**Answer:** Fetching memory operands, and storing memory operands

2.4.3

5. What is the purpose of the 8259A PIC controller?

**Answer:** The 8259A PIC controller handles all the external interrups from the hardware devices, which makes the requests of the hardware devices to be immediately processed.

2.5.2

1. Of the four levels of input/output in a computer system, which is the most universal and portable?

**Answer:** The application program level

3. Why are device drivers necessary, given that the BIOS already has code that communicates

with the computer’s hardware?

**Answer:** Since the BIOS was written, new devices have been invented with capabilities that weren’t anticipated during the creation of BIOS.

4. In the example regarding displaying a string of characters, which level exists between the operating system and the video controller card?

**Answer:** The BIOS level

5. Is it likely that the BIOS for a computer running MS-Windows would be different from that used by a computer running Linux?

**Answer:** No it isn’t. The same BIOS can work for both operating systems.

2.8

7. Which part of the CPU performs floating-point arithmetic?

**Answer:** The part of the CPU that performs decimal arithmetic

8. On a 32-bit processor, how many bits are contained in each floating-point data register?

**Answer:** 80

9. (True/False): The x86-64 instruction set is backward-compatible with the x86 instruction set.

**Answer**: True

10. (True/False): In current 64-bit chip implementations, all 64 bits are used for addressing.

**Answer:**  False

12. (True/False): Static RAM is usually less expensive than dynamic RAM.

**Answer:** False

19. (True/False): A bus is a plastic cable that is attached to the motherboard at both ends, but does not sit directly on the motherboard.

**Answer:** False

20. (True/False): CMOS RAM is the same as static RAM, meaning that it holds its value without any extra power or refresh cycles.

**Answer:** False

25. At which level(s) can an assembly language program manipulate input/output?

**Answer:** The operating system, BIOS, and hardware levels

26. Why do game programs often send their sound output directly to the sound card’s hardware

ports?

**Answer:** It is faster to execute this way