

## Chapter 3

### All About Motherboards

#### Reviewing the Basics

1. What are the three most popular form factors used for motherboards?

ATX, microATX, and Mini-ITX

2. Which type of Intel chipsets was the first to support the graphics controller to be part of the processor?

Sandy Bridge or second generation chipsets

3. How many pins does the Intel Socket B have? What is another name for this socket?

1366 pins, LGA1366

4. What type of memory does the LGA1155 socket work with? Which socket was it designed to replace?

DDR3 memory, LGA1156

5. Does the Sandy Bridge chipset family use two chipset housings on the motherboard or a single chipset housing? The Nehalem chipset?

A single chipset housing, two chipset housings

6. How many pins does the AMD socket AM2 have?

940 pins

7. Which socket by AMD uses a land grid array rather than a pin grid array?

Socket F

8. Which is a better performing Intel chipset, the X58 or the H67?

## H67

9. Which part of a Nehalem chipset connects directly to the processor, the North Bridge or the South Bridge?

## The North Bridge

10. What are the names of the two technologies used to install multiple video cards in the same system?

## SLI and CrossFire

11. What are the two different voltages that a PCI slot can provide?

## 5 volts and 3.3 volts

12. How does the throughput of PCI Express Version 1.1 compare to PCIe Version 1? How does PCIe Version 2 compare to Version 1?

## PCIe Version 1.1 and PCIe Version 1 have the same throughput. PCIe Version 2 doubles the throughput of PCIe Version 1.

13. What is the maximum wattage that a PCIe Version 2.0 expansion card can draw?

## 300 watts

14. What new type of power connector on the motherboard was introduced with PCIe Version 1.0? How much power does this connector provide?

## 6-pin PCIe connector, 75 watts

15. What new type of power connector was introduced with PCIe Version 2.0? How much power does this connector provide?

## 8-pin PCIe connector, 150 watts

16. If you are installing an expansion card into a case that does not have enough clearance above the motherboard for the card, what device can you use to solve the problem?

## A riser card

17. What is the purpose of an AGP slot?

## To hold a video card

18. Which is faster, a PCI Express x16 bus or the latest AGP bus?

PCI Express x16 is about 4 times faster than the latest AGP bus

19. Which chip on the motherboard does Windows Bitlocker Encryption use to secure the hard drive?

TPM chip

20. How can you find out how many memory slots are populated on a motherboard without opening the computer case?

View the information on a BIOS setup screen

21. What are two reasons you might decide to flash BIOS?

To add new features made available by the BIOS manufacturer or to attempt to solve problems with the motherboard

22. What is the easiest way to obtain the latest software to upgrade BIOS?

Go to the Web site of the BIOS or motherboard manufacturer.

23. What can you do if the power-on password and the supervisor password to a system have been forgotten?

Use the jumpers on the motherboard to reset the passwords

24. Where is the boot priority order for devices kept?

In CMOS RAM

25. How is CMOS RAM powered when the system is unplugged?

By the CMOS battery

26. Describe how you can access the BIOS setup program.

By pressing certain keys (depending on the specific computer and BIOS program) during the boot process

27. If a USB port on the motherboard is failing, what is one task you can do that might fix the problem?

Go to the motherboard manufacturer web site, download and install updated drivers.

28. What might the purpose be for a SATA-style power connector on a motherboard?

To provide auxiliary power to PCIe cards

29. What is the purpose of installing standoffs or spacers between the motherboard and the case?

So that components on the back of the motherboard do not touch the case and cause a short

30. When installing a motherboard, suppose you forget to connect the wires from the case to the front panel header. Will you be able to power up the system? Why or why not?

No, because the power button will not work until the power wire is connected to the motherboard.

## Thinking Critically

1. Why does a motherboard sometimes support more than one system bus speed?

So that it can support different processors running at different speeds

2. Why don't all buses on a motherboard operate at the same speed?

Because not all devices to which the buses are connected transmit data at the same speed. The speeds of different hardware components are evolving at different rates.

3. When you turn off the power to a computer at night, it loses the date, and you must reenter it each morning. What is the problem and how do you solve it?

The CMOS battery is dead and needs replacing.

4. Why do you think the trend is to store configuration information on a motherboard in CMOS RAM rather than by using jumpers or switches?

Possible answers:

- Because changing setup using jumpers or switches requires opening the computer case, and BIOS setup is easier to change.
- Because there are many more settings on today's newer motherboards that would require too many jumpers and switches

5. Why do you think the trend is to put more control such as the graphics controller and the memory controller in the processor rather than in the chipset?

Possible answer: Because the processor is faster than the chipset

6. When troubleshooting a motherboard, you discover the network port no longer works. What is the best and least expensive solution to this problem? If this solution does not work, which solution should you try next?
- Replace the motherboard
  - Disable the network port and install a network card in an expansion slot.
  - Use a wireless network device in a USB port to connect to a wireless network.
  - Return the motherboard to the factory for repair.
  - Update the motherboard drivers.

All the above solutions might be possible. The least expensive and simplest solution is e. Update the motherboard drivers. If that doesn't work, you do do b. Disable the network port and install a network card in an expansion slot.

7. A computer freezes at odd times. At first you suspect the power supply or overheating, but you have eliminated overheating and replaced the power supply without solving the problem. What do you do next?
- Replace the processor
  - Replace the motherboard
  - Reinstall Windows
  - Replace the memory modules
  - Flash BIOS

Try the simple and least expensive things first: Flash BIOS