I. Long-answer Questions (Points as indicated)

Directions: Read each question completely and carefully and be sure you provide a clear and complete answer. Answer in essay form using complete sentences. Use specific details and examples to support your arguments.

1. (15 points) Discuss the roles that the CPU and primary memory fulfill and explain how they interact to accomplish the task of processing data. Then name and explain the three factors that most directly influence the speed of a typical CPU.

2. (15 points) Microsoft Access databases are constructed from various objects. Name and discuss the four types of object we’ve used in this course. For each, explain the role(s) it plays, its underlying structure, and how it relates to the others. Of these four, which is the most important and why?
3. **(15 points)** Explain why formulas are essential to the usefulness of a spreadsheet. Be sure to describe the components that may be used to build a formula and explain why each type of component would be used. Which component is the most important and why?

4. **(10 points)** Access is an example of a relational DBMS. Explain what this means, discuss how this fact impacts both the database designer and the database user, and compare it to a flat-file DBMS.
5. **(5 points)** In Excel, assume that cell **E5** contains the formula:

\[ \text{=F3 + D8} \]

and that cell **F3** contains the formula:

\[ \text{=D3 \times G2} \]

Show the formula that would result if:

a) you copied the contents of cell **E5** into cell **F5**: ________________________________ 

b) you copied the contents of cell **E5** into cell **E7**: ________________________________ 

c) you copied the contents of cell **F3** into cell **H3**: ________________________________ 

d) you copied the contents of cell **F3** into cell **F6**: ________________________________ 

e) after doing part d, you copied the contents of cell **F6** into cell **I9**: ___________________
II. Fill-in-the-blank Questions (20 blanks worth 2 points each unless otherwise noted)

Directions: The following questions are based upon lectures and the textbook. Read each question carefully and fill in the blank with the word, phrase or term that best completes the sentence. Partial credit may be awarded. The size of the blank does not necessarily indicate the length of the answer.

1. A network that connects many computers over relatively short distances is known as a(n) ______________________.

2. An application that is used to translate an entire program written in a programming language into the equivalent machine language before executing it would be called a(n) ________________________, and an application that is used to translate the lines of the program into equivalent machine language one line at a time as the program executes would be called a(n) ________________________.

3. [1 point each] One of the control structures used in structured programming is the sequence control. Name the other two: _______________________________ and ________________________________.

4. A modem is a device that converts between the _________________________ waves (or signals) computers use to communicate and the __________________ waves (or signals) the phone network was originally designed to carry.

5. When Excel displays the contents of a cell beginning with a number sign (#), this indicates ________________________.

6. Most databases use _________________________ as a means of rearranging data into various sorted orders without having to actually move the data itself.

7. The term used to describe user-friendly devices that are designed to be more comfortable and less physically stressful for people to use is ____________________________.

8. The most common type of impact printer in use today is the ________________________; name a type of printer that uses a non-impact technology: ________________________.

9. In Excel, one can put into a given cell information that comes from a table in another worksheet by using the built-in function ________________________; one can put a value in a cell based on the evaluation of a logical test using the built-in function _________________.

10. Scrambling information mathematically to protect that information from unauthorized use is known as ________________.

11. The main circuit board inside a computer that connects all the internal and external components together is called the ______________________________________________________________________. To allow airflow to carry the heat away from its attached components, this board is built using ________________ instead of wires, as conductors for electricity.

12. Windows recognizes the type of a file based on its filename extension. The standard filename extension used for Excel workbooks is _______________ and the standard filename extension used for Access databases is ______________.

13. To temporarily control which records from a given table appear in that table’s datasheet view (without creating a new object), one can define and/or apply a(n) ________________________.

14. A tool in an application program designed to walk you through the steps of a complex operation such as making a chart or creating a form is known as a(n) _________________________.
