**Chapter 2: Performance Issues**

**TRUE OR FALSE**

T F 1. Year by year the cost of computer systems continues to rise.

T F 2. Processors are so inexpensive that we now have microprocessors we throw away.

T F 3. Workstation systems cannot support highly sophisticated engineering and scientific applications.

T F 4. The IAS is the prototype of all subsequent general-purpose

computers.

T F 5. Cloud service providers use massive high-performance banks of servers to satisfy high-volume, high-transaction-rate applications for a broad spectrum of clients.

T F 6. The raw speed of the microprocessor will not achieve its potential unless it is fed a constant stream of work to do in the form of computer instructions.

T F 7. Superscalar execution is the same principle as seen in an assembly line.

T F 8. Branch prediction potentially increases the amount of work available for the processor to execute.

T F 9. Raw speed is far more important than how a processor performs when executing a given application.

T F 10. The cache holds recently accessed data.

**MULTIPLE CHOICE**

1. Multiple parallel pipelines are used in \_\_\_\_\_\_\_\_\_\_ .

A. speculative execution B. data flow analysis

C. superscalar execution D. branch prediction

1. The desktop application(s) that require the great power of today’s microprocessor-based systems include\_\_\_\_\_\_\_\_\_\_\_.

A. image processing B. speech recognition

C. videoconferencing D. all of the above

1. \_\_\_\_\_\_\_\_\_\_\_ potentially increases the amount of work available for the processor to execute.

A. Branch prediction B. Performance balance

C. Pipelining D. BIPS

1. The interface between processor and \_\_\_\_\_\_\_\_\_\_\_ is the most crucial pathway in the entire computer because it is responsible for carrying a constant flow of program instructions and data between memory chips and the processor.

A. main memory B. pipeline

C. clock speed D. control unit

1. The \_\_\_\_\_\_\_\_\_\_ is a relatively small fast memory interposed between a larger, slower memory and the logic that accesses the larger memory.

A. peripheral B. cache

C. processor D. arithmetic and logic unit

1. An increase in clock rate means that individual operations are executed \_\_\_\_\_.

A. the same B. slower

C. with very little change D. more rapidly

1. A \_\_\_\_\_\_\_\_\_\_ is a core designed to perform parallel operations on graphics data.

A. MIC B. ALU

C. GPU D. PGD

1. A(n) \_\_\_\_\_\_\_\_\_\_ Mean is a good candidate for comparing the execution time performance of several systems.

A. Composite B. Arithmetic

C. Harmonic D. Evaluation

1. \_\_\_\_\_\_\_\_\_\_ law deals with the potential speedup of a program using multiple processors compared to a single processor.

A. Moore’s B. Amdahl’s

C. Little’s D. Murphy’s

1. One increment, or pulse, of a clock is referred to as a \_\_\_\_\_\_\_\_\_\_ .

A. clock cycle B. clock rate

C. clock speed D. cycle time

**SHORT ANSWER**

1. \_\_\_\_\_\_\_\_\_\_ enables a processor to work simultaneously on multiple instructions by performing a different phase for each of the multiple instructions at the same time.
2. \_\_\_\_\_\_\_\_\_\_\_ is the ability to issue more than one instruction in every processor clock cycle.
3. With \_\_\_\_\_\_\_\_\_\_ the processor looks ahead in the instruction code fetched from memory and predicts which branches, or groups of instructions, are likely to be processed next.
4. \_\_\_\_\_\_\_\_\_\_ enables the processor to keep its execution engines as busy as possible by executing instructions that are likely to be needed.
5. Traditionally found on a plug-in graphics card, a \_\_\_\_\_\_\_\_\_ is used to encode and render 2D and 3D graphics as well as process video.
6. \_\_\_\_\_\_\_\_\_\_ Law applies to a queuing system.
7. The three common formulas used for calculating a mean are arithmetic, harmonic, and \_\_\_\_\_\_\_\_\_\_ .
8. The \_\_\_\_\_\_\_\_\_\_ Mean used for a time-based variable, such as program execution time, has the important property that it is directly proportional to the total time.
9. The \_\_\_\_\_\_\_\_\_ Mean is preferred when calculating rates.
10. The \_\_\_\_\_\_\_\_\_\_ Mean gives consistent results regardless of which system is used as a reference.