Ex. 1

Names of different types of computers: a: Mainframe

b Supercomputer

c Server

d Desktop computer

e Laptop

f Personal Digital Assistant (PDA)

g Handheld computer

1. Marketing research person collecting data from the general public – g

2. Large company processing payroll data – a

3. Travelling salesperson giving marketing presentations – e

4. Large scientific organization processing work on nuclear research – b

5. Businessperson keeping track of appointments while traveling – f

6. Graphic designer – d

7. Secretary doing general office work – c

Ex. 2

· CD-ROM – Compact Disc Read-Only Memory

· RDRAM – Rambus Dynamic Random Access Memory

· MB – Megabyte

· GHz – Gigahertz

· AGP – Accelerated Graphics Port

· SDRAM – Synchronous Dynamic Random Access Memory

· SVGA – Super Video Graphics Array

Ex. 3

1. **What is the memory size of this PC?**
   * 1GB dual channel DDR2 SDRAM
2. **What storage devices are supplied?**
   * 400GB Serial ATA hard drive (7200 r.p.m.)
   * 48X CD-RW drive
3. **What size is the display screen?**
   * 19" TFT flat panel XGA (1024 x 768)
4. **How fast is the processor?**
   * Intel Pentium 4 processor (3GHz, 800MHz FSB)
5. **What is the capacity of the hard drive?**
   * 400GB
6. **Which operating system does it use?**
   * Microsoft Windows XP Professional
7. **What multimedia features does the computer have?**
   * 128MB PCI-Express video card
   * Integrated audio
   * 48X CD-RW drive

Ex. 4

RAM - holds data read or written to it by the processor.

Processor - controls all the operations in a computer.

Mouse - controls the cursor.

Clock - controls the timing of signals in the computer.

3.5" floppy drive - reads and writes to removable magnetic disks.

Monitor - displays the output from a computer on a screen.

Keyboard - inputs data through keys like a typewriter.

DVD-ROM drive - reads DVD-ROMs.

Cache - provides extremely fast access for sections of a program and its data.

ROM - holds instructions which are needed to start up the computer

Ex. 5

 **Scanner**: A device that converts physical documents or images into digital form for storage, processing, or transmission.

 **Printer**: A device that takes digital information from a computer and converts it into physical form, typically by printing it onto paper.

 **ATM (Automated Teller Machine)**: A machine that allows users to perform banking transactions, such as withdrawing cash or checking account balances, without the need for human tellers.

 **PDA (Personal Digital Assistant)**: A handheld device that functions as a personal organizer, often including tools like calendars, task managers, and contact lists. Some PDAs also have internet access and phone functionality.

 **Hard Disk Drive (HDD)**: A storage device that uses magnetic disks to store and retrieve digital data, commonly used in computers and other electronic devices.

 **Supercomputer**: A high-performance computer designed to process extremely large datasets and perform complex calculations at incredibly fast speeds, often used for scientific and engineering tasks.

 **Mainframe Computer**: A powerful computer used primarily by large organizations for bulk data processing, enterprise resource planning, and large-scale transaction processing.

 **Barcodes**: Patterns of lines or bars that represent data and can be scanned to quickly retrieve product information, often used in retail and inventory management.

 **Swipe Cards**: Cards that contain magnetic strips or chips, used for authentication or payment purposes by swiping or inserting them into card readers.

 **Memory**: In computing, memory refers to the storage space where data is held temporarily or permanently. It includes both RAM (temporary memory) and storage devices like hard drives.

Ex. 6

The CPU is a large chip inside the computer.

Data always flows from the CPU to the address bus.

The CPU can be divided into three parts.

Data flows between the CPU and memory.

Peripherals are devices outside the computer but linked to it.

The signal moves across the VDU screen from one side to the other.

The CPU puts the address on the address bus.

The CPU can fetch data from memory via the data bus.

Ex. A

1. One of the main reasons that a PC instantly runs at its highest potential speed is the use of cache. A cache is a high-speed memory that allows you to store frequently used data for quick access, reducing delays when accessing RAM or disk memory.

2. The word used instead of “buffer” is “cache”. A cache, like a buffer, temporarily stores data, but the main difference is that a cache is used to speed up access to frequently requested data.

3. The device that monitors cache coherence is a cache controller or processor. It makes sure that the data in different caches of multicore systems remains consistent and up-to-date.

4. The main alternative to write-through cache is write-back. In this mode, data is first written to the cache and then to the main memory only when it is needed, which reduces the number of memory writes.

5. The cache write hack returns the contents of files back to main memory when the data from the cache is no longer needed or when the cache block is overwritten by new data (i.e. when the cache is full and you need to free up space).

6. Data is labeled as “dirty” in the write-back cache when it has been modified in the cache but not yet written to main memory. Such data must be saved before the cache is updated with new data.

7. What determines what data will be replaced in the disk cache is the cache overwrite policy. The most common override algorithms are LRU (Least Recently Used) and FI

Ex. B

Exercise 1: Match the terms in Table A with the statements in Table B.

• a. Cache hit:

iv - The processor is successful in finding the data in the cache.

• b. Cache controller:

vi - The logic circuits used to control the cache process.

• c. Cache coherency:

v - Ensuring that any changes written to main memory are reflected within the cache and vice versa.

• d. Write-through cache:

iii - The process of writing directly to both the cache and main memory at the same time.

• e. Write-back cache:

i - The process of writing changes only to the cache and not to main memory unless the space is used to cache new data.

• f. Line size:

ii - The amount of data transferred to the cache at any one time.

Exercise 2: Mark the following as True or False

• a. Cache memory is faster than RAM.

True - Cache memory is much faster than RAM.

• b. The processor looks for data in the main memory first.

False - The processor looks for data in the cache first, and only if it's not there, does it check the main memory.

• c. Write-through cache is faster than write-back cache.

False - Write-back cache is typically faster because it doesn't need to immediately write data to main memory.

• d. Write-back cache requires a more intelligent cache controller.

True - Write-back cache needs a more sophisticated controller to manage when data should be written back to main memory.

• e. Most programs use instructions that are stored in sequence in memory.

True - Most programs use sequential instructions, which is why cache often loads data in chunks.

• f. Most cache controllers transfer one item of data at a time.

False - Cache controllers usually transfer data in blocks or lines, not just one item at a time.

• g. Hardware and software disk caches work in much the same way.

True - Both hardware and software caches perform similar functions, aiming to reduce the time to access frequently used data.