2.4 STORING AND RETRIEVING – PAGE 61: QUESTIONS 1 TO 3, 7 TO 9, 11 TO 12, 14

1. <u>What is storage and retrieval?</u>

Storing and retrieving data is a two-step process for retaining data. Storing saves data and information for later use; retrieving obtains the data and information that has been previously saved.

2. <u>How is data retrieved from a magnetic disk?</u>

Magnetic disks use random/direct access to retrieve data.

3. <u>Describe some of the information stored by the file allocation table.</u>

FAT stores the filename, file size, time and date when the file was last modified, and the address of the file.

11. <u>How is data written to a CD?</u>

The data is written to the disk by a high-powered laser that burns millions of tiny holes called pits on the surface.

12. <u>Describe a CD-ROM disk.</u>

CD-ROM (compact disc read only memory) disks are 12 centimetres wide and capable of storing 650 Mb. However, once the data has been stored on the CD, is it 'read only'.

13. <u>Outline one of the major advantages of DVD.</u>

One of the major advantages of a DVD is that data, video and audio have the same file structure. This file structure is called UDF (universal disc format). This overcomes problems of incompatibility with multimedia applications. DVDs can store full-length movies.

14. <u>Describe flash memory.</u>

Flash memory is a non-volatile memory chip that retains its data when the power is removed. Flash memory is erased and written in fixed blocks ranging from 512 bytes to 256 Kb.

15. <u>What does formatting a disk involve?</u>

Formatting a disk prepares a disk to accept data by organising it into tracks and sectors.

19. <u>List two issues related to the storing and retrieving of data.</u>

Security of data and information is a major issue. Unauthorised retrieval of data refers to people gaining illegal access to information systems.

2.5 PROCESSING – PAGE 69: QUESTIONS 1 TO 7, 9 TO 11, 13 TO 14

1. <u>Describe the system unit.</u>

The system unit is the collection of hardware components that includes the central processing unit, memory and associated electronics.

2. <u>What is the central processing unit?</u>

The central processing unit (CPU) is a set of electrical circuits responsible for controlling and processing data within the computer.

3. <u>Describe the two components of the CPU.</u>

The control unit directs and coordinates the entire computer system. It is the organiser that directs the flow of data in the computer in the same way as traffic lights control the flow of cars at an intersection. The arithmetic logic unit (ALU) is part of the CPU that carries out all the arithmetical and logical calculations.

4. Describe the four steps of the machine cycle performed by the CPU.
- The control unit fetches the instructions from memory.
- The control unit decodes the instructions (works out what to do) and makes the data available to the arithmetic logic unit. The first two steps are called the instruction time or i-time.
- The arithmetic logic unit performs the operation on the data.
- The control unit places the result of the operation into memory or a register. Steps 3 and 4 are called the execution time or e-time.

5. Why do most processors use pipelining?

In pipelining the CPU fetches a new instruction as soon as the preceding instruction moves onto the next stage. Pipelining speeds up the fetch-execute cycle as several instructions are being processed at the same time.

6. What is the clock speed?

The clock speed is the number of electrical pulses per second and is often measured in megahertz (mHz).

7. What is RAM?

RAM (random access memory) is where data and instructions are held temporarily. It depends on a supply of electricity to maintain data storage.

9. 9 What is the purpose of a cache?

Cache (pronounced 'cash') is a temporary storage area used to store frequently requested data and instructions. It makes the computer operate at a much faster speed. The larger the cache, the faster the computer will operate.

10. List two types of caching.

Cache memory is high-speed memory located between the CPU and RAM. It improves performance by using SRAM and reducing the need for the CPU to access the slower DRAM chips. A disk cache works in a similar way to cache memory. It stores the most recent data from the hard disk in RAM.

11. What is the firmware of a computer?

The instructions stored in ROM are called firmware because they are somewhere between software and hardware. Storage of data within the ROM protects it from being damaged or changed.

14. What is parallel processing?

Parallel processing is the simultaneous processing of instructions using multiple processors or CPUs. It is much faster than using one CPU. Parallel processing divides the processing task between a series of processors.