



# Technology Proficiency Exam

## Computer Concepts

### A. Hardware

1. Recognize differences in terms of capacity, speed, cost and typical users for different types of computers (mainframe, workstation, desktop, and laptop).
2. Know the main parts of a personal computer: CPU, hard disk, input/output devices, types of memory, removable storage devices (diskette, zip disk, CD-ROM, flash, DVD)
3. Know what the function of the CPU is (calculations, logic control, immediate access memory) and how the speed of a CPU is measured (MHz or GHz)
4. Know some of the main devices for inputting data into a computer: mouse, keyboard, touchscreen, and scanner.
5. Know the most common output devices for displaying the results of processing carried out by the computer: CRT and LCD (monitors), printer, and speakers. Recognize that other output devices (e.g., speech synthesizers) are also available.
6. Compare the main types of memory storage devices (hard disk, CD-ROM, diskette, zip disk, flash, DVD) in terms of speed, cost, and capacity.
7. Understand different types of computer memory (RAM and ROM), and know when each is used. Know that more memory is required as data increases in complexity. Be familiar with the terms commonly employed for memory: bit, byte, kilobyte, megabyte, gigabyte, and terabyte.
8. Know some of the factors that impact a computer's performance, such as CPU brand types, clock speed, bus, instruction set, memory, and cache.
9. Be able to recognize some of the common ports and connectors available on a computer such as USB, VGA, DVI, firewire, and ethernet. What are their purposes?

### B. Software

1. Know the meanings of and differences between operating systems software and applications software.
2. Understand the main functions of an operating system (file management, resource management, interface between user and computer). Be familiar with Graphical User Interface (GUI) systems and know some of their advantages.
3. Know the appropriate uses for some common applications software packages (e.g., word processing, spreadsheet, database, presentation, desktop publishing, multimedia, graphics, and music). Be able to associate common file suffixes such as pdf, pptx, xlsx, docx, tif, rtf, jpg, html, and gif with the file content.
4. Understand the complexity inherent in and the various levels of testing (alpha and beta) required for the development of good software.

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5. Understand the uses of common operating system utilities such as disk compression and disk defragmentation.

### **C. Database Knowledge**

1. Know what a database is.
2. Know the advantages of using databases compared to spreadsheets and word processors.
3. Know typical uses for databases such as library holdings, for checkbooks, maintaining inventory, keeping employee and customer records, searching for information on topics of interest, and World Wide Web search engines.
4. Know what is necessary to have a good database system, including data integrity (valid data and validation of data), data independence (storage of data in a manner accessible to a variety of software programs), data security, data maintenance (adding, deleting, and updating records), and avoidance of data redundancy.

### **D. Information Networks**

1. Know the definitions of Local Area Network (LAN) and Wide Area Network (WAN). Know some advantages of working and sharing resources over a network.
2. Know some of the various ways that computers can be connected to "the outside world": telephone line (modem), cable, satellite, and digital subscriber line (DSL). Know some of the advantages/disadvantages of each type of connection.
3. Know some of the terminology typically associated with computer connectivity: digital, analog, baud, and bandwidth.
4. Understand the term electronic mail and know the uses of e-mail. Know what is needed in terms of both software and hardware to send and receive e-mail. Be aware of common courtesies and college policies regarding e-mail (NO SPAMMING!)
5. Know what the Internet is and some of its common uses. Know what a search engine is and how it works. Be able to use Boolean operators to perform effective internet searches. Understand the distinction between the Internet and the World Wide Web.
6. Know some of the common terminology used with the Internet, such as: home page, hyperlink, URL, browser, search engine, portal, intranet, bookmark, HTTP, and HTML.
7. What is phishing? What are some of the common ways that you can recognize whether or not an email message is a phishing attempt?
8. How can you tell if a web page is using encryption to transmit data back to a server?
9. Understand what a firewall is and how it can be used to filter network traffic.

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## **E. Computers in Everyday Life**

1. Recognize that computers and microprocessors are ubiquitous in everyday life- they are found in microwave ovens, stoves, automatic watering systems, automobiles, audio/video components, checkout registers, libraries, security systems, gas pumps, etc.
2. Know some of the capabilities and uses of a personal computer at home and at a job. Know when a computer may be more appropriate than a person for a specific task and vice-versa.
3. Be familiar with the tenets of "netiquette" or internet etiquette.

## **F. Information Technology and Society**

1. Understand the terms Information Society and Information Superhighway. Understand the concept of electronic commerce and how that is changing society and the way we do business.
2. Understand how modern uses of technology (including but not limited to the Internet) have changed and will continue to change our society.
3. Be aware of safety and health issues and know what constitutes a good working environment when using computers (e.g., be sure all connections, including power, are secure and that cords are not in the way; have sufficient ventilation for the computer; pay attention to ergonomics; take frequent breaks; etc.).

## **G. Security and Legal Issues**

1. Know the value of backing up computer files to removable storage devices. Know how to protect a personal computer against unwanted intrusion. Know about good password policies. Know what happens to your data and files in the event of a power outage.
2. Understand the term "virus" as applied to computing. Be aware of how viruses can enter a computer system. Understand the dangers of downloading files onto your computer. Know about basic anti-virus software.
3. Understand other ways that computers can be attacked, such as denial of services, flooding, Trojan horses, and identity theft.
4. Understand copyright and some of the main security and legal issues associated with copying, sharing, and lending diskettes and information gathered over the Internet. Understand some of the implications of transferring files across a network. Understand the terms shareware, freeware, and user license.
5. Understand legal issues regarding downloading of digital music, especially MP3 files.

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