2023-24 Competitive Events Guidelines
Foundations of Technology

Foundations of Technology provides members with the opportunity to demonstrate knowledge around competencies in technology. This competitive event consists of an objective test.

Event Overview

Division: Collegiate
Event Type: Individual
Event Category: Objective Test, 100-multiple choice questions (breakdown of question by competencies below)
Objective Test Time: 50 minutes
**NACE Connections:** Career & Self-Development, Technology

Equipment Competitor Must Provide: Pencil, Computer
Equipment FBLA Provides: One piece of scratch paper per competitor

Only for members who have had no more than six credit hours on a semester schedule, or the equivalent of quarter hours, of technology instruction at the collegiate level by May 1 of the current year.

Competencies

- Basic Computer Principles
- Ethics
- Hardware
- Networking Systems and Procedures
- Programming Concepts
- Software Concepts
- Terminology
- Troubleshooting

Test Composition
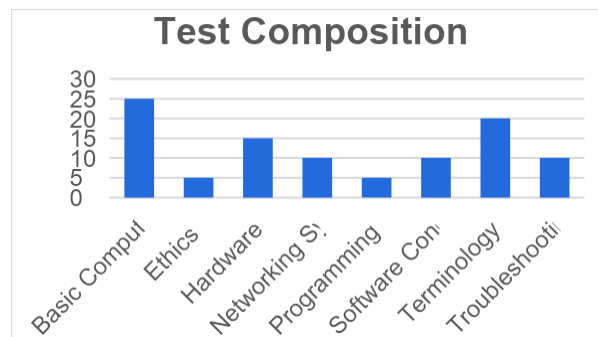
State

The State Leadership Conference has limitations on the number of competitive events a member may enter and compete in. Limited to a maximum of three (3) competitive events in total which may include:
- Limited to a maximum of two (2) National Qualifying Events
- Limited to a maximum of three (3) Objective Test Events

In order to be eligible to register for the State Leadership Conference, members must be registered and paid in FBLA Connect. Members will auto-populate in the chapter list of eligible attendees. Paid membership records auto-sync from FBLA Connect to the Blue Panda Conference Management System within 5 minutes.

Chapter advisers, parents, alumni, local administrators, teacher educators or other interested individuals are eligible to attend the State Leadership Conference. Every event attendee at the State Leadership Conference MUST be registered and paid by the registration deadline.

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Online objective testing is completed on the first day of the State Leadership Conference in person. Chapters are asked to bring their own computers for online testing of all objective tests. Objective testing will be conducted on a web browser like Chrome or Firefox. Iowa FBLA does not provide technical support during the conference for school or personal devices.

Iowa FBLA follows National FBLA rules for Event Administration (see below) unless a change is noted, otherwise.

National

Policy and Procedures Manual
- Competitors should be familiar with the Competitive Events Policy & Procedures Manual, found on the Competitive Events page on www.fbla.org.

Eligibility
- FBLA membership dues are paid by 11:59 pm Eastern Time on April 15th of the current program year.
- Members must be registered for the NLC and pay the national conference registration fee in order to participate in competitive events.
- Members must stay in an official FBLA hotel to be eligible to compete.
- Each state may submit four entries per event.
- Each member can compete in up to two individual/team events and one chapter event (Community Service Project or State of Chapter Presentation).
- If competitors are late for an objective test, they will be allowed to compete until such time that results are finalized, or the accommodation would impact the fairness and integrity of the event. Competitive event schedules cannot be changed. Competitive events start in the morning before the Opening Session of the NLC.
- Picture identification (physical or digital driver's license, passport, state-issued identification, or school-issued identification) is required when checking in for competitive events.

Recognition
- The number of competitors will determine the number of winners. The maximum number of winners for each competitive event is 10.

Event Administration
- This event is an objective test administered online at the NLC.
- No reference or study materials may be brought to the testing site.
- No calculators may be brought into the testing site; online calculators will be provided through the testing software.

Tie Breaker
- Ties are broken by comparing the correct number of answers to 10 pre-determined questions on the test. If a tie remains, answers to 20 pre-determined questions on the

test will be reviewed to determine the winner. If a tie remains, the competitor who completed the test in a shorter amount of time will place higher.

Americans with Disabilities Act (ADA)

- FBLA meets the criteria specified in the Americans with Disabilities Act for all competitors with accommodations submitted through the conference registration system by the registration deadline.

Penalty Points

- Competitors may be disqualified if they violate the Competitive Event Guidelines or the Honor Code.
- Five points are deducted if competitors do not follow the Dress Code or are late to the testing site.

Electronic Devices

- All electronic devices such as cell phones and smart watches must be turned off before competition begins.

Study Guide: Competencies and Tasks

A. Basic Computer Principles
   1. Define and discuss the core concepts of technology (e.g., systems, resources, requirements, optimization and trade-offs, processes, and controls).
   2. Identity the basic parts of a computer system and describe the functions and relationships among components.
   3. Describe mainframe generations and PC hardware development.
   4. Describe memory concepts.
   5. User system utilities and explain system utility software and cite examples.
   6. Identify file formats and extensions.
   7. Recognize file sizes in terms of kilobytes, megabytes, and gigabytes.
   8. Select and utilize the appropriate technology to solve a problem or to complete a task.
   9. Identify how computers share data, files, hardware, and software (networking).
   10. Identify how hardware and software work together to perform computing tasks and how software is developed and upgraded.
   11. Identify resources to obtain assistance (e.g., HELP menu, software manual, website) and demonstrate basic diagnostic skills.
   12. Describe the impact of information technology on business and society and the relationships among technologies.
   13. Describe the cultural, social, economic, political, and environmental effects of technology (e.g., rapid or gradual change, trade-offs and effects, and ethical implications).
   14. Describe data storage concepts (e.g., magnetic media, optical media, and sold state media).
   15. Compare different options of backing up and securing data and restoring a system.
   16. Identify how hardware components interact and work with software to perform computing tasks.

B. Ethics
   1. Define the various virus types, potential sources, and their potential effects.
   2. Identify basic security risks and issues to computer hardware, software, data, and options in dealing with virus attacks.
   3. Explain the consequences of illegal, social, and unethical uses of information technologies (e.g., piracy, illegal downloading, licensing infringement, inappropriate uses of software, hardware, and mobile devices).
   4. Demonstrate appropriate legal and responsible electronic communications and internet use for business (e.g., includes copyright, netiquette, privacy issues, ethics, etc.).
   5. Identify cybercrime.
   6. Define the difference between legal and ethical.

C. Hardware
   1. Describe the characteristics and functions of CPUs, motherboards, random access memory (RAM), expansion connection floppy drives, hard drives.

2. Explain the functions and characteristics of system expansion devices (e.g., graphics cards, sound cards, and modems).
3. Demonstrate the use of connectivity devices and peripheral equipment (e.g., portable storage devices, printers, cable modems, and wireless technologies).
4. Identify issues affecting system purchase and upgrade decisions.
5. Compare categories of computers based on their size, power, and purpose.
6. Identify the various types of computer storage devices and compare the advantages and disadvantages of certain storage devices.
7. Create a list of output devices and their functions and install, configure, and test various output devices.
8. Evaluate the performance of core computer systems components (e.g., RAM, CMOS settings, and CPUs).
9. Create and use a list of input devices and their functions.
10. Install, configure, optimize, and upgrade computer components.
11. Identify and apply common preventative maintenance techniques for computer components.
12. Identify and distinguish between mobile and desktop motherboards and processors including throttling, power management, and Wi-Fi.
13. Identify the major components of the LCD including inverter, screen, and video card.
14. Describe how video sharing affects memory upgrades.
15. Identify differences between types of printers and scanners including laser, ink dispersion, thermal, solid ink, and impact printers and scanners.
16. Identify names, purposes, and characteristics of printer and scanner components (e.g., memory, driver, and firmware) and consumables (e.g., toner, ink cartridge, and paper).
17. Identify the names, purposes, and characteristics on interfaces used by printers and scanners including port and cable types.
18. Install and configure printers/scanners and upgrades including memory and firmware.
19. Optimize scanner performance including resolution, file format, and default settings.
20. Optimize printer performance for example, printer settings such as tray switching, print spool settings, device calibration, media types, and paper orientation.
21. Perform scheduled maintenance on printers according to vendor guidelines (e.g., install maintenance kits and reset page counts).

D. Networking Systems and Procedures
1. Define networking and describe the purpose, benefits, and risks of a network.
2. Identify the types (e.g., LAN, WAN, and MAN), features, advantages, and disadvantages of different networks.
3. Identify names, purposes, and characteristics of basic network protocols and terminologies.
4. Identify names, purposes, and characteristics of technologies for establishing connectivity.

5. Identify the purposes and interrelationships among the major components of networks (e.g., servers, clients, transmission media, network operating system, and network boards).
6. Understand the differences between various network environments (e.g., peer-to-peer, client-server, thin client, n-tier, internetworks, intranets, and extranets).
7. Analyze the advantages and the disadvantages of the client/server model.
8. Install, configure, optimize, and upgrade networks.
9. Describe standard topologies, such as bus, star, ring, and broadband.
10. Demonstrate knowledge of IP addressing schemes.
11. Identify the types of wireless network media and the uses, advantages, and disadvantages of each.
12. Install, identify, and obtain wired and wireless connection.
13. Configure protocols such as TCP/IP (e.g., gateway, subnet masks, DNS, WINS, and static and automatic address assignment) and IPX/SPX (NWLink).
14. Perform preventative maintenance of networks including securing and protecting network cabling.
15. Install and configure e-mail applications.
16. Differentiate areas of responsibilities between the telecommunications providers' responsibilities and their clients' responsibilities.
17. Identify fundamental principles of security on a network including authorization, authentication, and wireless security issues.

E. Programming Concepts
1. Explain the purpose and functions of computer programming.
2. Describe types of computer programs: business applications, web applications, gaming, and systems software.
3. Define programming structures.
4. Define purpose and use of flowcharting.
5. Identify the types of programming languages.
6. Explain the steps in a program life cycle.
7. List the steps in writing a computer program.
8. Explain the human interface layer: HTML, Dreamweaver, Photoshop, GUI, CLI, etc.
9. Explain the programming layer: PHP, VB, Java, C++ COBOL, etc.
10. Explain the database layer: database types (e.g., My SQL, Oracle, DB II, SQL Server, etc.) and query languages (SQL).

F. Software Concepts (Applications and Operating Systems)
1. Compare and contrast the functionality of various operating systems.
2. Explain what an operating system is, describe its purpose, and cite examples of different operating systems including DOS, Windows, and Macintosh.
3. Identify the fundamentals of using operating systems (e.g., Mac, Windows, and Linux) and describe operating system revision levels including GIU system requirements, application, and hardware compatibility.
4. Identify names, purposes, and characteristics of the primary operating system components including registry, virtual memory, and file system.

5. Install, configure, optimize, and upgrade operating systems using appropriate procedures and utilities.
6. Describe the difference between an operating system and application software.
7. Identify concepts and procedures for creating, viewing, and managing directories and files on operating systems.
8. Demonstrate proficiency with file management and structure (e.g., folder creation, format, file creation, backup, copy rename, delete, move, open, and save).
9. Demonstrate file management skills and perform basic software configuration operations (e.g., install new software, compress and expand files as needed, and download files as appropriate).
10. Demonstrate the ability to recover operating systems (e.g., boot methods, recovery console, ASR, and ERD).
11. Use system management tools (e.g., device and task manager and MSCONFIG>EXE) and file management tools (e.g., Windows Explorer) to enhance optimization of operating system.
12. Demonstrate the ability to perform preventative maintenance on operating systems including software and Windows updates (e.g., service packs), scheduled backups/restore, and restore points.
13. Document computer system malfunction and software malfunction.
14. Describe Unix vs. Windows vs. Mac vs. Cloud.
15. Identify the capabilities and limitations imposed by the operating system including levels of user rights (e.g., administrative rights, etc.).

G. Terminology
1. Identify terminology associated with new and emerging on-screen writing technologies (e.g., electronic whiteboard, graphics tablet, and tablet PC).
2. Define spreadsheet terminology (e.g., cell, row, column, range, label, value, formula, function, worksheet, relative, absolute, and legend).
3. Define database terminology.
4. Identify terminology associated with new and emerging PDA technologies.
5. Explain the difference between memory and storage including RAM, ROM, and other storage devices.
6. Describe the differences between analog and digital technology.
7. Describe the concept of TCP/IP and the Domain New System (DNS).
8. Define bits, bytes, and words.
9. Describe ASCII, EBCDIC, and UNICODE.
10. Explain the concept of cloud computing.
11. Explain binary number system, decimal number system, and hexadecimal number system and convert between the three systems.

H. Troubleshooting
1. Discuss the objectives for diagnosing and troubleshooting.
2. Describe the problems that commonly occur with hardware and their symptoms.
3. Explain how the boot sequence can be used to troubleshoot a hardware problem.
4. Discuss the symptoms of software conflicts and the solutions.
5. Describe common problems that occur with peripheral devices.

6. Discuss the techniques that are used to troubleshoot a peripheral device.
7. Identify and demonstrate resolutions to simple hardware and software problems as they occur (e.g., frozen screen and printing problems).
8. Differentiate between software and hardware problems.
9. Practice proper handling procedures for components including assembling and dismantling a computer.
10. Identify tools, diagnostic procedures, and troubleshooting techniques for computer components.
11. Recognize and isolate issues with multimedia, specialty input devices, internal and external storage, memory utilization, and CPUs.
12. Identify the steps used to troubleshoot components (e.g., installation, appropriate components, error codes, connections, compatibility, functionality, settings, and drivers).
13. Isolate and resolve identified printer/scanner problems including defining the cause, applying the fix, and verifying functionality.
14. Recognize and resolve common operational problems, such as blue screens, system lock-up, input/output device, application install, etc.
15. Recognize, explain, and resolve common error messages and codes.