


IT ESSENTIALS V. 4.1
Module 2
Safe Lab Procedures and Tool Usage

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| 2.0 Introduction | | |
| 1. | Why do we have safety guidelines? | To help protect individuals from accidents and injury and to protect equipment from damage |
| 2.1 Explain the purpose of safe working conditions and procedures | | |
| 2. | Describe a safe workplace. | Clean, organized and properly lighted |
| 2.1.1 Identify safety procedures and potential hazards for users and technicians | | |
| 3. | Where should cables be installed to prevent hazards to users? | In conduit or cable trays |
| 4. | What kind of hazard do poorly placed or unsecured cables usually cause? | Tripping |
| 5. | How should you lift heavy objects to avoid injury to your back? | Bend your knees |
| 6. | Should you wear an antistatic wrist strap when repairing power supplies or monitors? | No |
| 7. | What should you do to avoid electrical shock and to prevent damage to a computer when repairing it? | Turn off and unplug it before beginning |
| 8. | What are the safety procedures to follow if there is a fire? | <ol style="list-style-type: none"> 1. Never fight a fire that is out of control or not contained 2. Always have a planned escape route 3. Get out of the building quickly 4. Contact emergency services for help 5. Locate and read instructions for fire extinguishers before you have to use them |
| 9. | How many classifications of fire extinguishers are there? | 4 |
| 10. | Which type of fire extinguisher is used for paper, wood, plastics, and cardboard? | A |
| 11. | Which type of fire extinguisher is used for gasoline, kerosene, and organic solvents? | B |
| 12. | Which type of fire extinguisher is used for electrical equipment? | C |
| 13. | Which type of fire extinguisher is used for combustible metals? | D |

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| 14. | What does the memory aid PASS stand for in the basic rules for fire extinguisher safety? | Pull the pin Aim at the base of the fire Squeeze lever Sweep nozzle from side to side |
| 2.1.2 Identify safety procedures to protect equipment from damage and data from loss | | |
| 15. | What is ESD? | Electrostatic discharge. The buildup of an electric charge resting on a surface |
| 16. | How many volts of static electricity must build up before a person can feel ESD? | 3,000 volts |
| 17. | If the discharge causes pain, or makes a noise, how large was the charge? | Above 10,000 volts |
| 18. | What are the recommendations to help prevent ESD damage? | <ol style="list-style-type: none"> 1. Keep all components in anti-static bags until you are ready to use them 2. Use grounded mats on workbenches 3. Use grounded floor mats in work areas 4. Use anti-static wrist strips when working on computers |
| 19. | What is EMI? | Electromagnetic interference...the intrusion of outside electromagnetic signals on a transmission media |
| 20. | What is RFI? | Radio Frequency Interference.....the interference caused by radio transmitters and other devices transmitting in the same frequency |
| 21. | How does climate affect computer equipment? | <ol style="list-style-type: none"> 1. If the temperature is too high, equipment can overheat 2. If humidity is too low, change of ESD increases 3. If humidity is too high, equipment can suffer from |

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| | | moisture damage |
| 22. | What are unsteady voltages called? | Power fluctuations |
| 23. | What is a blackout? | Complete loss of AC power |
| 24. | What is a brownout? | Reduced voltage level of AC power that lasts for a period of time |
| 25. | What can cause a brownout? | Overloading electrical circuits |
| 26. | What is (electrical) noise? | Interference from generators and lightning |
| 27. | What is a spike? | Sudden increase in voltage that lasts for a very short period and exceeds 100% of the normal voltage on a line |
| 28. | What can cause a spike? | Lightning strike or when an electrical system comes back up after a blackout |
| 29. | What is a power surge? | Dramatic increase in voltage above the normal flow of electrical circuits—lasts for a few nanoseconds |
| 30. | What does a surge suppressor do? | Diverts extra electrical voltage on the line to the ground |
| 31. | Why do you need a UPS? | To help protect against potential electrical power problems by supplying electrical power to a computer or other device |
| 32. | Why would you use a stand by power supply (SPS) | Provides a backup battery to supply power when incurring voltage drops below the normal level |
| 33. | Why should you never plug a printer into a UPS? | Danger of overloading the UPS |
| 2.1.3 Identify safety procedures to protect the environment from contamination | | |
| 34. | What is another name for hazardous materials? | Toxic waste |
| 35. | Who should you contact in your community for information about disposal procedures and services? | Local recycling or waste removal authorities |
| 36. | What is a material safety data sheet (MSDS)? | A fact sheet that summarizes information about material identification, including hazardous ingredients that can affect personal health, fire hazards, and first-aid requirements |

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| 37. | Who requires that all hazardous materials must be accompanied by an MSDS when transferred to a new owner? | Occupational Safety and Health Administration (OSHA) |
| 38. | What is the standard practice for disposing of batteries? | Recycle them |
| 39. | How much lead can be in a CRT? | 4 lbs. |
| 40. | What is the proper disposal technique for toner kits, cartridges, and developers? | Recycle them |
| 2.2.1 Identify tools and software used with personal computer components and their purposes | | |
| 41. | What are the two ESD tools? | Anti-static wrist straps Anti-static mats |
| 42. | What is the anti-static wrist strap grounded to? | Computer chassis |
| 43. | Identify the following tools:  | Flat head screwdriver Phillips head screwdriver Torx head screwdriver |
| 44. | What is a digital multimeter used for? | To test the integrity of circuits and the quality of electricity in computer components |
| 45. | What tool is used to test the basic functionality of computer ports? | Loopback adapter |
| 2.2.2 Identify software tools and their purposes | | |
| 46. | What do disk management tools do? | Help detect and correct disk errors, prepare a disk for data storage and remove unwanted files |
| 47. | What is used to create and delete partitions on a hard drive? | Fdisk |
| 48. | What tool checks the integrity of files and folders on a hard drive by scanning the file storage system and may also check disk surfaces for physical errors? | Scandisk or chkdsk |
| 49. | What does defrag do? | Optimizes space on a hard drive to allow faster access to programs and data |
| 50. | Which tool scans the operating system critical files and replaces any files that are corrupted? | SFC – System File Checker |
| 51. | How do you protect data and the integrity of the operating system and hardware? | Use software designed to guard against attacks and to remove malicious programs |
| Worksheet: Diagnostic Software | | |
| 2.2.3 Identify organization tools and their purpose | | |
| 52. | Why is documentation important? | Can be used as reference material for similar problems in the future |

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| 53. | What kind of documentation should be kept in a journal? | Description of the problem Possible solutions attempted Steps taken to repair problem Any configuration changes Replacement parts used |
| 2.3 Implement proper tool use | | |
| 54. | Who is responsible for safety in the workplace? | everyone |
| 2.3.1 Demonstrate proper use of an anti-static wrist strap | | |
| 55. | What is the purpose of an antistatic wrist strap? | To equalize the electrical charge between you and the equipment |
| 56. | Should you wear an anti-static wrist strap when repairing a monitor or a power supply unit? | No |
| 2.3.2 Demonstrate proper use of an anti-static mat | | |
| 57. | What should you use to ground yourself? | The unpainted portion of the case of the computer on which you are working before touching any components |
| 58. | Why do you want to reduce the potential for ESD? | To reduce the likelihood of damage to delicate circuits or components |
| 2.3.3 Demonstrate proper use of various hand tools | | |
| 59. | Which direction do you turn a screw to tighten it? | Clockwise |
| 60. | What happens to a screw that is over-tightened with a screwdriver? | It becomes stripped and should be thrown away |
| 61. | What should you do if you cannot remove a component? | Check to see if there is a clip or latch that is securing the component in place |
| 62. | Should you use magnetized tools around electronic devices? | No |
| 63. | Why should you not use a pencil inside the computer? | Pencil lead can act as a conductor and may damage the computer components |
| 2.3.4 Demonstrate proper use of cleaning materials | | |
| 64. | What should be done before cleaning any device? | Turn it off and unplug the device from the power source |
| 65. | How should you clean a computer case and the outside of the monitor? | Mild cleaning solution on a damp, lint-free cloth |
| 66. | How do you clean dusty components? | Compressed air |
| 67. | How do you clean the contacts on components? | Isopropyl alcohol |
| 68. | How do you clean a mouse? | Glass cleaner and a soft cloth |