



LEAD-FREE HAND SOLDERING TRAINING CERTIFICATION TEST (DVD-45C)

This test consists of twenty multiple-choice questions. All questions are from the video: *Lead Free Soldering (DVD-45C)*.

Each question has only one *most* correct answer. Circle the letter corresponding to your selection for each test item. If you wish to change an answer, erase your choice completely.

You should read through the questions and answer those you are sure of first. After your first pass through the test, then go back and answer the questions that you were not sure of. If two answers appear to be correct, pick the answer that seems to be the most correct response.

When you are finished, check to make sure you have answered all of the questions. Turn in the test materials to the instructor.

The passing grade for this test is 70% (14 correct answers or better).

Good luck!



LEAD-FREE HAND SOLDERING TRAINING CERTIFICATION TEST (DVD-45C)

Name _____ Date _____

- 1. The reason for the switch to lead-free solder is**
 - a. Europe's legal mandate to change by July 1, 2006
 - b. to keep lead out of the landfills
 - c. reduce manufacturing pollution
 - d. all of the above

- 2. The most common method of absorbing lead into our systems is**
 - a. breathing in airborne fumes or particles
 - b. ingesting lead by touching food or make-up after handling tin-lead solder
 - c. being touched by others who have handled tin-lead solder
 - d. touching circuit boards

- 3. The melting point for lead-free solder is typically**
 - a. 20 degrees C higher than tin-lead
 - b. 30 degrees C higher than tin-lead
 - c. 40 degrees C higher than tin-lead
 - d. 50 degrees C higher than tin-lead

- 4. The most common lead-free alloy for hand soldering is**
 - a. tin-silver-copper
 - b. tin-copper
 - c. tin-silver
 - d. tin-silver-bismuth

- 5. The tin-copper alloy is typically used for**
 - a. hand soldering
 - b. wave soldering
 - c. reflow soldering
 - d. special rework applications

- 6. When selecting a soldering iron tip, always select a**
 - a. heat efficient conical tip
 - b. medium size chisel tip
 - c. a tip that has the greatest contact area without overhanging the joint
 - d. a tip with plenty of oxidation

LEAD-FREE HAND SOLDERING TRAINING CERTIFICATION TEST (DVD-45C)

- 7. Oxidation on the soldering iron tip can**
- a. slow the transfer of heat to the connection
 - b. speed the transfer of heat to the connection
 - c. improve tip reliability
 - d. make tinning the tip much easier
- 8. The reason for tinning the soldering iron tip is to**
- a. keep the solder flowing smoothly
 - b. increase operator satisfaction by having a shiny tip
 - c. avoid burning solder and creating a bad smell
 - d. transfer heat rapidly
- 9. The flux in lead-free solder wire**
- a. may create oxidation
 - b. needs to be more robust due to the high soldering iron temperatures
 - c. causes the solder joints to look grainier than tin-lead joints
 - d. all of the above
- 10. We use solder flux to**
- a. improve heat transfer
 - b. protect cleanliness until the surface is soldered
 - c. remove oxidation
 - d. all of the above
- 11. The visual appearance of the lead-free solder joints is**
- a. smoother than tin-lead
 - b. shinier than tin-lead
 - c. grainier than tin-lead
 - d. wetter than tin-lead
- 12. The purpose of melting a little solder on the tip – before moving the solder wire to the other side results in**
- a. the formation of a heat bridge to transfer heat faster
 - b. cleaning the tip to allow faster heat transfer
 - c. removing any oxidation from the component lead and land
 - d. none of the above

LEAD-FREE HAND SOLDERING TRAINING CERTIFICATION TEST (DVD-45C)

- 13. In terms of cleaning, the general idea is to**
- a. remove the flux residue within five hours of performing the soldering operation
 - b. remove the flux residue immediately after the soldering operation
 - c. remove the flux residue within 24 hours of performing the soldering operation
 - d. remove the flux residue at some point – the timing is not important
- 14. To tin the wire prior to attachment to pierced terminals, you can**
- a. move it across a solder coated iron tip
 - b. move a tinned tip over a stationary wire
 - c. dip it in a solder pot
 - d. all of the above
- 15. The maximum acceptable solder contact angle is**
- a. any angle that doesn't cover the tip of the component lead
 - b. 45 degrees
 - c. 90 degrees or less
 - d. 180 degrees or less
- 16. A disturbed solder joint is caused by**
- a. movement of the solder joint after the soldering iron is removed, but before the solder is cool enough to harden
 - b. movement of the soldering iron during the soldering process
 - c. unknown causes
 - d. a supervisor who disturbs an operator just before performing rework
- 17. Excessive heat and pressure can result in a**
- a. lifted land
 - b. joint with excessive solder
 - c. disturbed solder joint
 - d. cold solder joint
- 18. A solder bridge is**
- a. a crossing within the grain structure of the solder alloy
 - b. a leaching of the solder or flux between two adjacent lands
 - c. an unwanted solder connection between two or more conductive features
 - d. an arched connection between opposite sides of the connection

LEAD-FREE HAND SOLDERING TRAINING CERTIFICATION TEST (DVD-45C)

- 19. A solder projection is also known as a**
- a. solder ball
 - b. blowhole
 - c. bridge
 - d. icicle
- 20. Class 2 requirements in the IPC-A-610 are for**
- a. consumer products
 - b. business and computer products
 - c. high reliability electronics – where failure is not an option
 - d. none of the above