



Association Connecting Electronics Industries

THE SEVEN SINS OF LEAD FREE SOLDERING TRAINING CERTIFICATION TEST (DVD-70C) v.2

This test consists of twenty multiple-choice questions. All questions are from the video: *The Seven Sins of Lead Free Soldering (DVD-70C)*.

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!



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Name _____ Date _____

1. **Cross contamination can occur when**
 - a. an operator sneezes on an assembly
 - b. oils from ungloved hands get on the assembly
 - c. different solder alloys are mixed
 - d. both a and b

2. **The biggest issue with cross contamination is**
 - a. non-compliance with European Union standards
 - b. ESD damage
 - c. defective solder joints
 - d. solder joint evaluation

3. **Cross contamination may occur during**
 - a. solder paste application
 - b. reflow and wave soldering
 - c. rework and repair
 - d. all of the above

4. **Components most difficult to identify being lead free or containing tin-lead are**
 - a. PLCCs
 - b. SOICs and QFPs
 - c. small chip components
 - d. MSDs

5. **A moisture sensitive label will specify**
 - a. moisture classification
 - b. storage time
 - c. floor life
 - d. all of the above

6. **Moisture sensitive means there is**
 - a. a factory operating with high humidity
 - b. an imperfect seal between the internal circuitry and the package that surrounds it
 - c. a component that needs moisture to operate properly
 - d. an increased sensitivity to electrostatic discharges



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- 7. Moisture accumulation is a problem during wave and reflow soldering because**
 - a. vapor pressure increases when the device is exposed to high temperatures
 - b. the component weight increases
 - c. the moisture inhibits solder wetting
 - d. the component is more at risk for an ESD event

- 8. An important solution to moisture accumulation is the use of**
 - a. an active desiccant
 - b. a humidity indicator card
 - c. a moisture barrier bag
 - d. all of the above

- 9. If exposure to the factory environment exceeds the specified time, MSDs should be**
 - a. returned to the manufacturer
 - b. returned to the stockroom
 - c. baked
 - d. scrapped

- 10. Lead free touch up and/or rework is required for**
 - a. fillet lifting
 - b. solder tears
 - c. cooling lines
 - d. none of the above

- 11. Unnecessary touch up and rework will weaken the solder joint because**
 - a. it is more prone to bridging
 - b. it increases the growth of the intermetallic layer
 - c. of the potential for excessive solder
 - d. all of the above

- 12. Preheating the assembly during hot air rework operations**
 - a. protects the assembly from thermal damage
 - b. allows soldering to be accomplished at much lower temperatures
 - c. creates excessive intermetallics
 - d. all of the above

- 13. Preheating the assembly during lead free drag soldering operations**
 - a. protects the assembly from thermal damage
 - b. prevents a grainy lead free appearance
 - c. prevents multiple solder bridges
 - d. prevents brittle solder joints



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- 14. Increasing tip temperature to overcome slow connection area heating can result in**
- a. board damage
 - b. overheated solder
 - c. lifted lands
 - d. all of the above
- 15. The best solution to transferring heat to complete the connection is**
- a. pressing the soldering iron harder
 - b. selecting a tip with an increased contact area
 - c. increasing the heat to the soldering iron tip
 - d. all of the above
- 16. A less robust flux is a problem in lead free soldering because**
- a. the flux can burn up due to the higher soldering temperature
 - b. excessive flux residue is left on the assembly
 - c. it cannot be easily cleaned
 - d. it spreads unevenly
- 17. Electromigration is the**
- a. movement of electrons through a passive component
 - b. growth of metal dendrites in the presence of flux residues
 - c. fancy name for the copper plating on circuit board assemblies
 - d. migration of electrons along the path electronic circuitry
- 18. The more robust fluxes**
- a. clean surfaces more aggressively
 - b. assist in heat transfer
 - c. are harder to clean after soldering
 - d. all of the above
- 19. Board sagging and warping may occur when**
- a. assemblies are not handled gently
 - b. large PLCCs and QFPs are placed on the assembly
 - c. higher soldering temperatures are used during the lead free process
 - d. extra cleaning is required for lead free assemblies
- 20. In order to control sagging and warping**
- a. board supports, pallets or stiffeners should be used
 - b. shorter cleaning times should be scheduled
 - c. the assembly should be handled by the edges only
 - d. all of the above