



Association Connecting Electronics Industries

BALL GRID ARRAY REWORK TRAINING CERTIFICATION TEST (DVD-96C) v.2

This test consists of twenty multiple-choice questions. All questions are from the video: *Ball Grid Array Rework (DVD-96C)*.

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. **BGAs attach to lands on a circuit board with**
 - a. flat leads
 - b. pins
 - c. solder balls
 - d. castellations

2. **The main disadvantage to BGAs is**
 - a. inability to visually inspect solder joints
 - b. lead coplanarity
 - c. self centering
 - d. size

3. **An issue during BGA rework is**
 - a. solder paste deposits
 - b. temperature profiles
 - c. moisture sensitivity of plastic components
 - d. all of the above

4. **The heat used by rework stations to remove BGAs is**
 - a. infrared
 - b. convective
 - c. conductive
 - d. steam

5. **If flux is used for BGA removal, it should be**
 - a. a low residue flux
 - b. a high activity flux
 - c. compatible with the flux used during the assembly process
 - d. all of the above

6. **During removal, damage to the BGA can be caused by**
 - a. excessive mechanical stress
 - b. excessive convection air pressure
 - c. excessive heat
 - d. all of the above



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- 7. A vacuum extractor can be used to**
 - a. remove residual solder from the lands
 - b. remove excessive moisture from the BGA
 - c. reball the BGA
 - d. extract the BGA from the circuit board assembly

- 8. A safe technique for using a soldering iron and solder braid for site preparation is to**
 - a. slide the solder braid across the lands
 - b. use a straight up and down motion
 - c. tin the solder braid in a solder pot first
 - d. use a very wide braid to remove the solder all at once

- 9. The iron and solder braid are removed from the lands at the same time to prevent**
 - a. the braid from being soldered to the lands
 - b. circuit board warping
 - c. residual solder removal
 - d. adjacent component damage

- 10. If cleaning is required after site preparation**
 - a. blow the area clean using compressed air
 - b. use a slightly damp sponge to remove any residue
 - c. use an approved solvent and wipe the area dry with a clean cloth
 - d. all of the above

- 11. A thin, level and uniform coating of solder on all the lands indicates that**
 - a. not enough solder has been removed from the site
 - b. too much solder has been removed from the site
 - c. site preparation has not been started
 - d. site preparation has been successfully completed

- 12. It is not necessary to add solder paste to the lands if**
 - a. the lands have a thin coating of solder
 - b. the BGA has eutectic solder balls
 - c. the BGA requires a no-clean process
 - d. there are any alignment issues

- 13. A method that can be used to ensure the replacement BGA will have the proper amount of solder is**
 - a. adding solder paste using a mini-stencil
 - b. adding solder paste with a preprogrammed dispenser
 - c. using a BGA with eutectic solder balls
 - d. all of the above



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- 14. BGA alignment can be accomplished manually using**
- a. good vision and a steady hand
 - b. laser technology
 - c. a template
 - d. all of the above
- 15. Alignment with a vision system uses**
- a. a beam splitter to superimpose the BGA and circuit board
 - b. an advanced reflow technology
 - c. thought projection
 - d. fiducial markings
- 16. Insufficient heat during BGA replacement can cause**
- a. open circuits
 - b. poor wetting
 - c. cold solder joints
 - d. all of the above
- 17. The problem with visual inspection using inspection optics is**
- a. it is limited to the outer perimeter solder balls
 - b. it requires special 3D movie glasses
 - c. it will not verify proper alignment
 - d. it will not verify external wetting
- 18. A limitation of direct transmission x-rays is**
- a. they do not detect solder bridges
 - b. they do not detect misalignment
 - c. only limited wetting data can be obtained
 - d. all of the above
- 19. The difference between direct transmission and laminography is**
- a. only direct transmission x-rays detect missing balls
 - b. laminography provides a more graphical representation of the solder joint
 - c. direct transmission x-rays do not detect excessive solder
 - d. laminography does not detect misalignment
- 20. Laminography can detect**
- a. missing balls
 - b. voids
 - c. opens and shorts
 - d. all of the above