General Static Awareness Test:

1. Static electricity is really nothing more than:

a) Basic chemistry
b) A very simple form of electricity
c) A subject which very little is known about
d) Something that we in electronics should not worry about

2. Static electricity will always be:

a) A negative charge
b) A positive charge
c) Either a positive or a negative charge
d) Very difficult to control in a factory

3. Some of the problems that static can cause are:

a) Attraction of dust and lint (contamination)
b) Damage to electronic products
c) Some materials to stick together
d) All of the above are true

4. Static can damage electronic devices at which level?

a) During field service repairs
b) During printed circuit board assembly
c) A single electronic device
d) All of the above are true

5. Which type of electronic failure is usually the most costly?

a) When a single device fails on a circuit board
b) When a circuit board fails during test
c) When a piece of assembled equipment fails during test
d) When the product fails in the field, usually while a customer is using it.

6. An electronic failure in the field can be very costly because:

a) The customer will be unhappy with the product
b) The failure could affect a piece of equipment that is very important, like medical.
c) It is expensive to replace or repair a product in the field
d) All of the above are true

7. The most common cause of device failure is:

a) Improper component testing
b) ESD/EOS
c) Problems with the die attachment
d) There is no “most common” failure mechanism for devices.

8. Many electronic devices can be damaged at low voltage levels:

a) 1,500 volts
b) 100 volts
c) 1,000 volts
d) 3,000 volts

9. Before you can feel a static discharge, it must be about:

a) 100 volts
b) 10,000 volts
c) 3,000 volts
d) Well over 15,000 volts

10. One of the biggest threats for static damage to electronics is:

a) People
b) Clothing
c) Air movement
d) Dust and dirt

11. As electronic parts get smaller and smaller, they tend to:

a) Become less sensitive to static
b) Become more sensitive to static
c) Become much more expensive
d) Become very hard to find in the market

12. How is it possible to damage electronics without touching it?

a) From heat generated by air movement
b) From the electric field that a charged object has
c) You must touch a part in order to damage it
d) You cannot damage a part without touching it

13. The closer a charged object is brought to an electronic part:

a) The stronger the electric field will be
b) The greater the chance of damaging the part
c) This has no effect on the electronic part
d) Both “a” and “b” are correct answers

14. If you are charged up, the static on you will:

a) Not be a problem if you are handling sensitive electronics
b) Will cause you to feel rather weakened
c) Will be attracted to an electronic part unless it is the exact same potential as you
d) You cannot charge up a person with static

15. Generally, what is a safe distance for charged objects on a bench?

a) At least three feet or more
b) Anything under four inches is OK
c) No distance is safe
d) 12 inches is a generally acceptable distance

16. A conductive object (like people) will:

a) Allow electricity to flow through it
b) Cannot be grounded
c) Cannot generate static electricity
d) All of the above are true

17. These things can be easily grounded:

a) Plastic drinking cups and bottles
b) People
c) Adhesive tapes, like Scotch™ Tape
d) All of the above can be easily grounded with a wrist strap

18. These things cannot be grounded and can generate a lot of static:

a) People
b) Metal case of equipment
c) A metal shelf
d) Clear plastic bags and foam cups

19. If there is no ground attachment available, then attach to:

a) Unpainted metal on the equipment that you will be working on
b) A very large, insulated section of plastic
c) Do not attach, but work very quickly to lessen any possible damage
d) A ground attachment will always be available, in all cases

20. When two conductors (a person and a metal case) are connected:

a) It is called grounding
b) It is called bonding
c) It is called static neutralization
d) It is called equal potential static elimination

21. Which of these statements is true?

a) A conductor will allow electricity to flow through it
b) A non-conductor will allow electricity to flow through it
c) People can be considered as being non-conductive
d) In general, plastic boxes are a very good conductor

22. Which is a true statement about ionized air?

a) It is used primarily to neutralize static on non-conductors
b) It is a group of both positive and negative ions
c) It should not be used to neutralize people
d) These are all true statements

23. Which of these would be a good application for ionized air?

a) Control static on people who are walking
b) Control static on plastic adhesive tapes and their dispenser
c) Control static build-up on people working at a bench
d) All of these are good applications for ionized air

24. Which is the best description of ionized air:

a) A dense cloud of positive ions only
b) A dense cloud of negative ions only
c) A dense cloud of both positive and negative ions
d) A dense cloud of neutralized air blowing from a fan

25. Which of these materials could be called “insulators”?

a) A clear plastic bag
b) A roll of Scotch™ Tape
c) A metal bench top
d) “a” and “b” are correct answers

26. The best method to remove static from an insulator would be:

a) To ground it
b) To use ionized air
c) To bond it to something made out of metal
d) An insulator cannot generate static electricity

27. If using an ionized air blower, the best way to use it would be:

a) Position it so that it blows across the work surface area
b) Position it so that it blows on you
c) Position it to blow upwards to neutralize all the air in the work area
d) Position it so that it does not blow across the work surface area

28. What does “ESD” stand for?

a) “Devices Sensitive to Electricity”
b) “Electrostatic Discharge”
c) “Electricity Should Discharge”
d) “Electrical Overstress”

29. Static electricity can cause different types of damage to electronics:

a) A device can be completely damaged where it will no longer operate
b) A device can be weakened so that it will fail in the field while being used
c) A device can fail intermittently: one minute it works, the next minute it will not
d) All of the above are true statements

30. This can be a major problem with ESD in an electronics facility:

a) It is sometimes difficult to detect it without the proper measuring instruments
b) Because it is seldom felt, many people don’t believe it’s a problem
c) Both “a” and “b” are correct answers
d) Static only affects a few different types of electronic parts and/or assemblies

31. Which of these can cause static damage to electronics?

a) An ungrounded person touching sensitive electronics
b) A charged object (such as a plastic cup) brought very close to electronics
c) Handling a circuit board by the edges and not touching any parts
d) All of the above can damage electronics

32. This would be similar to a “static field.”

a) The heat you feel from a very warm object
b) The rainbow that you sometimes see after a storm
c) Touching a doorknob and receiving a static shock
d) Touching a doorknob and not feeling any shock

33. If you touch an electronic device and do not feel any “zap”:

a) Then no static damage was done
b) The device may have been damaged
c) You do not have to feel static in order to cause damage
d) Both “b” and “c” are correct answers

34. Which level would most likely be the most expensive failure?

a) A single device
b) A printed circuit board
c) A system failure, such as during final test of a piece of equipment
d) A failure in the field

35. Which of these is NOT a good idea?

a) Whenever you handle electronics, make certain that you are grounded
b) A static bag can be used like a “potholder” to carry a circuit board
c) You should test the static control equipment to make certain it is working
d) Make certain that others entering your area are aware of ESD control

36. Which is NOT a true statement?

a) As long as the wrist band touches bare skin, it will work properly
b) Almost all wrist bands can be washed to clean them
c) It does not matter which arm the wrist band is worn on
d) A properly grounded person cannot generate much static

37. If a person wears heel straps for grounding, they should:

a) Only wear one strap
b) Always wear two straps
c) Test the straps on a regular basis to make certain they are working properly
d) Both “b” and “c” are correct answers

38. Which of the following statements are true?

a) Pink colored static bags do not generate much static electricity
b) Pink colored static bags protect electronics from static fields
c) Pink colored static bags can never wear out
d) All of the above statements are true

39. Which of these statements represents a BAD application?

a) Using pink colored static bags to package non-electronic parts (hardware).
b) Using a pink static bag to package a circuit board with Styrofoam “peanuts”.
c) Using a pink static bag as a work order or diagram holder
d) These are all good applications for pink static bags

40. Which of these statements represents a GOOD application?

a) Using a metalized static bag as a tray to carry electronic parts
b) Using a metalized static bag as a “potholder” to carry electronic parts
c) Using a metalized static bag to store electronic parts in
d) These are all good applications for metalized static bags

41. When using metalized static bags for packaging electronics:

a) The bag should be sealed
b) The bag should be large enough to completely contain the contents
c) The bag should never be sealed with a label
d) Both “a” and “b” are correct answers

42. Which of these is a true statement regarding metalized static bags?

a) These bags can never wear out – they will always protect parts
b) Small holes in the bag do not affect its ability to protect parts
c) These bags cannot shield out static electricity
d) Using a staple to seal these bags cannot cause any problems

43. Where should static control be used within an electronics company?

a) Throughout the entire company
b) Wherever electronic parts and assemblies are handled
c) Only in the test department
d) Only in the receiving and shipping areas

44. Which of these statements is true?

a) Everyone who handles electronics must be grounded
b) Managers who handle electronics do not have to be grounded
c) Engineers who handle electronics do not have to be grounded
d) All of the above are true statements

45. What is a goal for controlling static electricity?

a) To reduce product failures in the factory
b) To reduce product failures in the field
c) To increase the reliability of the products we handle and build
d) All of the above are goals for controlling static

46. One way to describe static electricity would be:

a) It is a stationary electrical charge (it doesn't move around all the time)
b) A very simple form of electricity that is fairly easy to control
c) An electrical charge that can be either plus or minus
d) All of the above

47. The trend in the electronics industry is for parts to become:

a) Less sensitive to static electricity
b) More sensitive to static electricity
c) Much larger and less sensitive to static
d) None of the above

48. When humidity increases, static electricity will tend to:

a) Decrease
b) Increase
c) Stay about the same
d) Really cause a lot more problems

49. If you walk across a carpet and receive a pretty good shock:

a) You have discharged probably around 100 volts
b) You have discharged probably around 1,000 volts
c) You have discharged probably around 10,000 volts
d) You have discharged probably around one million volts

50. Static damages an electronic part by:

a) Actually melting through one of the layers within it causing a short
b) Actually causing the device to catch fire
c) Actually causing the device to shrink in size
d) Actually causing the device work more efficiently

Answer Key
(Static Awareness 101)

1. B
2. C
3. D
4. D
5. D
6. D
7. B
8. B
9. C
10. A
11. B
12. B
13. D
14. C
15. D
16. A
17. B
18. D
19. A
20. B
21. A
22. D
23. B
24. C
25. D
26. B
27. A
28. B
29. D
30. C
31. D
32. A
33. D
34. D
35. B
36. A
37. D
38. A
39. B
40. C
41. D
42. B
43. B
44. A
45. D
46. D
47. B
48. A
49. C
50. A