

Troubleshooting Electronic Circuits and Systems

1. A primary function of any electronic technician is to
 - a. Design electronic systems
 - b. Draw the electronic schematics
 - c. Identify equipment faults and repair them
 - d. Write equipment software
2. Most electronic equipment fail easily and require extensive troubleshooting
 - a. True
 - b. False
3. Which is NOT a common cause of electronic equipment failure?
 - a. Circuit overload
 - b. Equipment incompatibility
 - c. Excessive Heat
 - d. Incorrect use
4. What can cause the cockpit problem?
 - a. Excessive hands on use
 - b. Lack of training
 - c. Overtraining
 - d. Use of operators manual
5. Which of the following will fail less often?
 - a. Fuses
 - b. Light bulbs
 - c. Semiconductors
 - d. Wires and cables
6. High density memory IC chips are very sensitive to _____.
 - a. Electrostatic discharge
 - b. Heat
 - c. Overload
 - d. Stress
7. The most common problem found in portable devices is
 - a. IC failure
 - b. Overload
 - c. Power amplifier failure
 - d. Power supply failure



8. Which is NOT one of the four basic approaches to troubleshooting?
 - a. Component level
 - b. Module level
 - c. System level
 - d. Transistor level
9. When troubleshooting a cell phone at system level, you would probably
 - a. Check the battery pack
 - b. Replace the cell phone
 - c. Test the IC
 - d. All of the above
10. Which level of troubleshooting is the fastest and most expensive?
 - a. Component level
 - b. Equipment level
 - c. Module level
 - d. PC board level
11. When is equipment level troubleshooting cost effective?
 - a. When it takes more than 30 minutes to fix
 - b. When the components are difficult to remove
 - c. When the loss of production exceed repair cost
 - d. When the management is upset
12. A good balance between cost and time is achieved through _____ level troubleshooting.
 - a. Component
 - b. Equipment
 - c. Module
 - d. System
13. An example of module level troubleshooting and repair is replacing a/an
 - a. Cell phone
 - b. Integrated circuit
 - c. PC power supply
 - d. Printer
14. Why is component level troubleshooting not always the least expensive?
 - a. Because component parts are usually expensive
 - b. Because components are very hard to locate
 - c. Because it takes a technician a lot of time to trace a fault
 - d. All of the above



15. Which is the least common method of troubleshooting?
 - a. Component level
 - b. Equipment level
 - c. Module level
 - d. System level
16. Which of the following may undergo component level troubleshooting?
 - a. Computer systems
 - b. DVD players
 - c. One of a kind systems
 - d. Portable communication equipment
17. Which of the following is NOT a basic technique used in troubleshooting?
 - a. Disconnect the equipment
 - b. Perform a visual inspection
 - c. Test the unit after repair
 - d. Validate the problem
18. Validating the problem means to
 - a. Determine that it is cost effective
 - b. Ensure that the user is trained
 - c. Provide operator manuals
 - d. Recreate the problem
19. Which of the following is NOT used to observe the symptoms of a failure?
 - a. LEDs
 - b. Liquid crystal displays
 - c. Meters
 - d. Power supplies
20. In order to ensure that the equipment is receiving AC power, you could
 - a. Check for blown fuses
 - b. Check the circuit breaker
 - c. Make sure the AC plug is properly connected
 - d. All of the above
21. When checking a DC power supply, you will need
 - a. A voltmeter
 - b. An amplifier
 - c. An ohmmeter
 - d. Resistors



22. Which of the following is NOT usually checked during a visual inspection?
- a. All connections are properly made
 - b. Burnt components
 - c. Correct part numbers
 - d. Unusual noises
23. If your equipment manuals are lost, where can you find important information?
- a. Equipment software
 - b. Library
 - c. Local community college
 - d. Manufacturers website
24. Using the equipment documentation during troubleshooting
- a. Is never necessary
 - b. Is useful for expensive equipment only
 - c. May occasionally help
 - d. Will typically reduce your troubleshooting time
25. Another option when troubleshooting equipment is to
- a. Call the manufacturer directly
 - b. Check a competitors websites
 - c. Search internet chat rooms
 - d. Use the help lines or call centers
26. The best resource for troubleshooting today's equipment will be
- a. Call centers
 - b. Equipment training
 - c. Operator manuals
 - d. Self help sites
27. Signal tracing is
- a. A flow chart of the system
 - b. A schematic of the electronic equipment
 - c. Documenting how the signal travels through the system
 - d. Following a signal through the system to find the problem
28. When signal tracing, how do you determine what the input signal should be?
- a. You always start with a 5 volt digital input
 - b. You decide based on the signals available
 - c. You find it in the manufacturers documentation
 - d. You try various ones until the desired output is achieved



29. What tool should you use to check a circuit's output signal?
- Function generator
 - Ohmmeter
 - Oscilloscope
 - Voltmeter
30. Once the circuit's output is checked, you should also check the
- Current through the circuit
 - Resistor values in the circuit
 - Supply voltages to the circuit
 - Tolerance of the components
31. When signal tracing equipment with multiple stages, you
- Need to check the output of each circuit from start to finish
 - Only need to check the output of the first and last circuit
 - Only need to check the output of the first circuit
 - Only need to check the output of the last circuit
32. Signal injection is like signal tracing except that
- It works from the output back to the input
 - You only need to validate one circuit's output
 - You use a larger input signal
 - You use an external signal to apply to the circuit
33. What is the main disadvantage of signal injection?
- It is difficult to define each circuit
 - You will need an oscilloscope
 - You will need many different types of signals
 - You will need many power supplies
34. When troubleshooting digital circuits, a starting check point should be the
- Input resistance
 - Output signal
 - Software
 - Supply voltages
35. How is an oscilloscope helpful when checking a DC supply?
- It displays the DC value
 - It displays the frequency
 - It will show any excessive noise in the DC value
 - All of the above



36. A common problem found in digital circuits is caused by defective
- IC's
 - Interface circuits
 - MOSFETs
 - Power supplies
37. Which is NOT one of the most common internal IC problems?
- Open input
 - Open output
 - Shorted input
 - Shorted MOSFET
38. If a problem is found with the IC, you should
- Modify it so it works
 - Repair it
 - Replace it
 - Send it back to the manufacturer for repair
39. The first thing you should do before troubleshooting digital equipment is
- Read the equipment documentation
 - Reset the software
 - Turn on all power supplies
 - Wash your hands
40. When is a logic analyzer used?
- When troubleshooting analog equipment
 - When troubleshooting digital equipment
 - When troubleshooting individual IC's
 - When troubleshooting power supplies
41. Circuits with embedded microcontrollers require special test equipment.
- True
 - False
42. When a digital circuit with a microcontroller fails, the most likely problem is the
- Bypass capacitor
 - Embedded controller
 - Input or output
 - Software
43. When testing a circuit with a microcontroller, you should start with the
- Clock signal
 - Input power supply
 - Sensors
 - Solenoids



44. Which are NOT typical microcontroller outputs?
- a. Clock signals
 - b. Motors
 - c. Relays
 - d. Solenoids
45. If the microcontroller is defective, you should replace the
- a. Entire module
 - b. Entire piece of equipment
 - c. Microcontroller only
 - d. Software