

Diploma in hardware and Chiplevel with BGA Technology

Course Content:

Module 1: Computer Hardware Concept.

Module 2: Partition/Formatting and Windows Installation.

Module 3: Windows Settings and Security.

Module 4: Software and Utilities.

Module 5: Workgroup Networking & Internet Concept.

Module 6: Basic Electronics.

1. Basic Electronics Concept, Formation of Current, AC/DC Concept, Rules for Flow of Current.
2. Resistor- Symbol, Function, Denoting Letter, Solid Type Resistor Color Coding, SMD Type Resistor Coding, Value measurement by Multimeter and SMD Tester.
3. Capacitor – Function, Types, Symbol, Identification of Solid Type and SMD Type Capacitor, Testing of Capacitor by Multimeter and SMD Tester, Value measurement by SMD Tester.
4. Coil – Function, Symbol, Denoting Letter, Types of material, Properties of Coil, Identification of Solid and SMD type coil, Pack coil, Testing of Coil.
5. Diode: Function, Symbol, Denoting letter, Identification of Solid and SMD Type Diode, Types of Diode, Testing of Diode, Anode and Cathode Concept.
6. Transistor: Introduction, Types, Symbol, Denoting Letter, PNP and NPN Concept, Testing of Transistor, Function etc.
7. Mosfet: Introduction, Types, 3 leg Mosfet, 8 Leg Mosfet, Identification of N-Channel and P-Channel Mosfet, Testing of Mosfet, Dual Mosfet Concept, Switching Concept Etc.
8. Crystal: Introduction, Concept of Quartz, Clock and Pulse, Measuring unit, Types and Real Shape, Testing of Crystal etc.
9. Transformer and IC.

Module 7: Chip level Practice with Testing & Repairing Tools.

Use of Soldering Iron, Micro Soldering Iron, Desoldering Pump, File, Twiser, SMD Machine and Hot Melt Gun, All types of IC and Chip soldering/ Desoldering, All types of Electronic Component Solid and SMD soldering /Desoldering.

Module 8: Circuit Tracing and Repairing of Motherboard.

1. Motherboard overview and Block Diagram of Motherboard.
2. Identification of all types of chip, ports, socket, slots etc.
3. Working Concept of Motherboard. Concept of RESET, READY, CLOCK Signal.
4. VRM Circuit- Overview, Tracing, Hot Testing, Shorting Problem in VRM Circuit, Troubleshooting,
5. Internal Structure of VRM Chip, Volt Sense Circuit Concept, Programmable circuit, VID Concept.
6. RAM Supply: Identification of all Types of Desktop RAM, RAM Operating Voltage, RAM Supply Pin, All types of possible circuit of RAM Supply. Hot Testing.
7. Clock Generator Circuit: Identification of Clock Generator, Tracing, Use of Frequency Counter to measure Clock, Troubleshooting
8. USB Port Circuit: USB Port Supply Pin Tracing, Data Pin Tracing
9. Sound Circuit: Tracing, Supply Circuit of Sound Chip
10. PS 2 Port Circuit: Pin Details of PS 2 Port, Supply Circuit, DATA and CLOCK Circuit.
11. SATA Port : Data Pin Tracing of Sata Port
12. Sound Circuit – Tracing, Supply, Troubleshooting.
13. Standby Circuit : Standby Mosfet , Circuit tracing
14. PCI Slot: Voltage, Data and Signal Testing
15. Diagnostic Card: LED Status , Coding
16. CRO Machine: Complete Operating of CRO for Voltage, Data and Signal Testing.
17. ROM Circuit: Identification of all Types of ROM, ROM Pin Details and Circuit Tracing.
18. ROM data and RAM Data: Data Testing on ROM and RAM Data Pin
19. South Bride Supply Circuit
20. Repairing of RAM
21. PS ON and Trigger Circuit
22. BIOS Programming by Mini and Universal BIOS Programmer
23. How to Check CPU Socket by CPU Socket Tester.

Module 9: Laptop Hardware Concept.

1. Assembling and Disassembling of Laptop
2. Identification of all parts of Laptop
3. Identification and Function of all Ports and Socket of Laptop.

Module 10: Circuit Tracing and Repairing of Laptop.

1. Volt in Circuit. Tracing and Troubleshooting.
2. VRM Circuit. Tracing and Troubleshooting

3. Ram Supply Circuit. Tracing and Troubleshooting.
4. Step Down Circuit – 5 Volt and 3.3 Volt. Primary and Secondary Step down.
5. Battery Charging and Discharging Circuit. Tracing and Fault Finding
6. Clock Generator Circuit
7. Fan Controller Circuit
8. USB Supply and Data Circuit
9. SATA Supply and Data Circuit
10. HDMI
11. LAN
12. AUDIO – Mike, Headphone and Internal Speaker Circuit Tracing
13. CPU Thermal Circuit
14. ROM – Identification of all types of ROM and Circuit Tracing
15. Schematic Diagram – Laptop Motherboard Circuit Tracing through Schematic Diagram
16. North Bridge
17. South Bridge
18. Graphics Chip
19. Concept of PCH
20. Laptop BIOS Programming
21. BGA Machine Operation, Chip Reballing
22. How to Download BIOS File from Internet
23. Laptop CPU Socket Details
24. Password Removal Tips
25. VGA Port
26. Input Output Controller chip Connection Circuit
27. Use of DC Supply Machine
28. Laptop Display Assembly
29. Concept of RESET
30. Identification of all chip of laptop motherboard
31. Common Faults of Laptop and Troubleshooting.

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