Innovative Engineering Technologies

Diploma Of Advance Laptop Chip Level Repair Engineering Training Course

TIME TABLE

New Intel Core 2 Duo to Intel 12th Gen Upgraded Syllabus (2024 - 2025)

THEORY		PACTRICAL	
1st Day	**i) SMD BASIC ELECTRONICS** Fundamentals – what is AC/DC ,Current, Ampere, Watts Types Of Circuits. What is **OVP ,OCP ,OTP ,TVC , THERMTRIP & PWM Circuits..** **ii)** What is Comparators & Basic Application Circuits **iii)** What is Convertor Basic Application Circuits (Buck & Boost Converters)	1st Day	**i) SMD Type Of Components** (Identify SMD Type Active & Passive Components) **ii) Capacitors** What is Filter Capacitors What is Coupling Capacitors What is Resonance Capacitors **iii) Resistors** What is Pull-up resistance & Pull-down resistance What is Resistor Dividers & Protection resistors, **iv) What is EIA 96 Resistors** ,Inductors, Zero Ohm Fuses, Diodes Enhanced Transistors, Dual & Enhanced Mode MOSFETS, On board & Offline Testing Using Smart Electronic Tester Tools.
2nd Day	**i) ADVANCE SMD DIGITAL ELECTRONICS.** Type of Digital Numbering Systems Bit, Byte, Binary, Octal, Hexa Conversion of Number systems. Type of SMD Gate ICs . AND,OR,NOT,NAND,NOR. Etc.. **ii)** What is **Schmitt Trigger,** **iii)** What is **Tri state gate,** **iii)** What is **Transitions Pulse.**	2nd Day	**i) Find out 5 pin & 6 pin Gate ICs In Laptop Motherboards** **ii)** HOW TO SOLDERING ,DISOLDERING OF ALL COMPONENTS USING COMPRESSOR TYPE HOT AIR STATIONS WITH **REAIL TEMRATURE PROFILS WITH DEFERENT SKILS .** **iii)** What is **IR PRE HEATER.** How Motherboard All Connectors & Slots Removing & Replacing. **iv)** How Use Micro Tips & Soldering Irons ,Special Bits **v)** What is **Soldering Paste Types . (pb /pb -free / HF)** **vi) How to Solder and How Protect our Health with Chemicals .** **vii) How to Use Smart Microscopes ,Handling Practice Carefully & Tiny Chips Soldering Disordering .** Mono ,Stereo ,TFT Screen Types & High Definition PC Control Types .

3rd Day	***BASIC KNOWLEDGE OF LAPTOP PARTS AND ASSEMBLE DISASSEMBLE HARDWEAR & ELECTRONICS IN DEPTH.***	3rd Day	**i) HOW TO FULL SERVICE ANY LAPTOP STEP BY STEP CHANGING & REPLACING BELOW COMPONENTS.** • Identify Computer Hardware & Parts & Details . • Difference between Laptop and Desktops • **ASSEMBLE & D-ASSEMBLE** Parts Identification **Demo** with Proper Original Specific Tools Sets. • Motherboard: = What is Block Diagram and Schematic • Identify CPU , Types , CPU GEN Identify • KEYBOARD = Types , Working Concept .Replacing • HARD DISK = Types, Storage Concepts, Basic Problems • RAM = Types , Working Concept, Basic Problems • CD/DVD/DL = Types, common fault . • TFT/LCD Panel: = Type of LCD, TFT /TOUCH, size, pins • INVERTER: = Usage of Concept of Inverter ,CCFL ,LED & OLED Panels. • *KEYBOARD / SCIENTIFIC TOUCHPAD REPAIRING.* **ii) <u>LAPTOP POWER ADAPTER REPAIRING</u>** • Laptop Power Adaptor Working Concept , • What is Basic & Smart Pin Adaptors • Advance S.M.P.S Repairing Concept with Cool Mos Topology, • **What is Original Smart Power Adaptor .** • **How Smart Pin Adaptor Programming.** --HP,DELL, APPLE ,LENOVO.--
4th Day	***LAPTOP MOTHERBOARD ADVANCE REPAIRING:-*** **i)** ***BLOCK DIAGRAM OF LAPTOP MOTHERBOARDS*** **ii)** ***BASIC POWER SIGNALS DETALS***	4th Day	**i) IDENTIYFY LAPTOP MOTHHERBORD SCHEMATICS BLOCK DIAGRAMS MANIFATURAL ACHITECTURE WISE GENARATIONS** **INTEL / AMD / NVIDIA / APPLE** **ii) IDENTIYFY LAPTOP MOTHHERBORD REAL FOUNDRY MANIFUCTURES WITH HOW RIGHT WAY FOR SCHEMATIC READINGS...** • Quanta • Compal • Weft Chuang • Inventec • Pegatron United • Samsung • Apple Other Manufactures **iii) Identify Any Laptop Motherboards Adaptor Power Driving Circuits With Working Concept .** **iv) What is LDO Voltages & How there Logics.** **v) How to Find LDO Power Short Circuits Fault Repair.**

5th Day	i) *LAPTOP MOTHERBOARD POWER ON SEQUNCE* ii) *SOME IMPORTANT POWER SIGNALS* *NAME & IDENTIFY*	5th Day	i) **UNDERSTANDING WORLDWIDE IEEE STANDED LAPTOP POWER STAGES** **ii) What is ICH,GMCH ,PCH, IVY BRIGE CHIPSET TYPES** **iii) What is HASWELL ,BROADWELL ,BRASWELL ,KABY LAKE COFEE LAKE ,COMET LAKE Architecture wise Chipset Types.** **iv) What is PWM Buck Controller Power Supplies Advantages .** • **1st Power stage 5v, 3v (Always On) or 1.8v** • **2nd power stage 1.8v 1.5v ,1.35v /1.2v** • **3rd power stage VRM CPU CORE 1.1v** • **4th power stage GFX/VGFX CORE 1.1v/0.45V** • **5th power stage SUS 3.3v/5v** POWER DISTRIBUTE **BUCK DIFFERENT CHIPS** 5V,3V REG & LDO ,VDDQ,VTT,VCCSA,VCC CORE,VCCST,VCCGT 5V/3V, SUS, 1.05V, 1.8VSUS, 5V, 2.5V **v) Understanding different power stages and different Signals.**
6th Day	**ADV. LAPTOP CHIP LEVEL LATEST BIOS EDITING & PROGRAMMUING REPAIRING TRAINING**	6th Day	**i) What is RTC Circuit with or without CMOS Power.** **ii) What is Serial & Parallel Data Communications .** **iii) How Identify Chip Select Command & SM Bus Communication Topology.** **iv) What is EC Bios POST Booting ,Secure Boot Settings AHCI & UEFI BIOS Boot Settings.** **v) How to Extract Rom.Bin,Hex File From Manufacture Original exe Bios File.** **vi) Advance BIOS Programming , Editing With UEFI Tools** **vii) New Any Gen Bios Bins What is Region Settings & Intel Clean ME** **(Any Bios Editing , ME Region Editing's with Intel Official Tools.)** **viii) How to Flash Bios of Laptop Chip Online or Offline Using Advance BIOS Programmers…….** **ix) Programming Advance BIOS Unlocking Programmer Firmware** **Bios Chips 3.3v / 1.8v & 1.2v.with ICSP…….** **<u>WHAT IS MICROCONTROLER TYPE SUPER IO CHIPS</u>** **i) Understanding Temperature Controller & Fan PWM Controller Circuits.** **ii) KBC Tracing Programming ,Bios Password Removing ,TPM Unlocking & Fault Finding…** **iii) KBC Programming On Board Or Separate ,Serial & Parallel Methods Using Advance KBC Programmers….**

7th Day	**ENGINEERING LAPTOP MOTHERBOARD BGA LEVEL REPAIRING TRAINING**	7th Day	**BGA LEVEL REPAIRING TRAINING USING DARK INFRARED SIX ZONE BGA STATION MACHINE** What is BGA Chip, BGA Station & BGA CHIP Anatomy Removing BGA Chips and Reballing It Using Reball Stencil **Chipset ICS Reballing ,BGA Ball Arrangements Using BGA Rebaling Station Stencils & Practice** **How to Find** **Lead /Lead free / Halogen Free Soldering Methods & Temperature Profiles Creations** **Two methods** i) Applying balls with help of BGA Reballing Station ii)) Applying liquid paste and Direct Heat with BGA blower BGA IC Removing Practice, Component Practice, Dark Infrared BGA Machine, Removing chip to Reball, Reballing to Chip Using Different Method, BGA BALL Arrangement, BGA Soldering Station, Using Liquid Lead free Paste, Solder Bath Tub, Removing Sockets, Connectors.
8th Day	**ENGINEERING LAPTOP MOTHERBOARD REPAIR TRAINING** **UNDERSTANDING DIFFERENT SIGNALS OF MIXED SIGNAL OSILASCOPE (OCR & MSO TRANING)** **Part I** **PRACTICE WITH ADVANCE TOOLS**	8th Day	• **Main Logic Signals of Power Supply Chips** • **Main signals of Charge discharge control –chip** • **Main Logic signals of MAIN POWER CHIP 5V, 3V** • **Main signals of Power Supply Chips 1.05V,1.8V** • **Main signals of memory power supply** • **Main signals of CPU power supply chips** • **Main signals of LCD back light control** • **Main signals of Ethernet chips** • **Main signals of Sound audio Chip** • **Main signals of Other Common chipsets**
9th Day	**UNDERSTANDING DIFFERENT SIGNALS OF MIXED SIGNAL OSILASCOPE DIFFERENT MOTHERBOARDS** **Part II**	9th Day	**i) WHAT IS INTEL POWER MANAGEMENT TIMING SEQUANCE IEEE MODE** **FAULT FINDING WITH MIXED SIGNAL OSILASCOPE** • **Main signals of Clock Generator** • **Main signals of CPU Processor** • **Main signals of North Bridge** • **Main signals of Graphics Card** • **Main signals of South Bridge** • **Main signals of IO/Power Management Chip** • **Main signals of CPU IVY Bridge ,** • **Main signals of Intel CPU Haswell ,Broadwell , Braswell ,Kaby Lake ,Coffee Lake ,Comet Lake,** • **Rocket Lake ,Alder Lake Processors & Chipsets** • **(6th GEN to 12th GEN)** CLOCK GENERATOR /GPU PROCESSOR/ CPU TEMPERATURE CONTROL/ NORTHBRIDGE CHIPS/ GRAPHIC CHIPS/ SOUTHBRIDGE CHIP/ IVY BRIGE ,HASWELL ,BROADWELL ,BRASWELL CHIPSETS FOULT FINDING TEST POINTS **Mini PCI Slot, NGFF Slot & Debug Ports Troubleshooting .**

10th Day	**NEW GEN LAPTOP ENGINEERING LEVEL MOTHERBOARD REPAIRING TRAINING** **LATEST LEVEL ADVANCE SIGNALS DETAILS**	10th Day	**i) Up Intel 6th Gen to Intel Comet Lake 12th Gen Laptop Motherboard top Level Chip level Secrets..** **What is SLP_A Signals** **What is DSW Signals** **What is ASW Signals** **What is AMT Signals** **ii) What is UP to 6,7,8,9,10,11,12 Gen PMICs & PMC Advance Power Distributers** **iii)What is Type – C Interface Power Delivery & Communication Protocol** **iv) Latest Gen Practice with Different Motherboards Tracing Fault Finding With** **DELL, HP, IBM ,LENOVO,HP, COMPAQ, SONY, ACER PACARDBELL ,FUJITSU,ASUS APPLE , Mi Etc.** **v) 6th Gen to 12th Gen Processor BGA Level Removing & Replacing Practice Methods** Fully Practice with BGA Reballing and Reinserting different Chip Explaining Power Concept of Different Motherboards
11th Day	**ENGINEERING LAPTOP MOTHERBOARD REPAIRING TRAINING R & D**	11th Day	**i) ANY MOTHERBOARDS NO DISPLAY FAULT FINDING WITH BGA LEVEL (R & D) REPAIRS** **What is i GEN Processors Internal GFX Core** **What is PCH Internal GFX Core** **What is Dedicated NVIDIA /ATI VGFX Cores** **What is LVDS to eDP Protocol** **What is XDP Debug Port** **ii) How to Separate Dedicated VGA to integrated VGA Converting Secrets Method's BGA Level .** **(Discreet to UMA Method's)**
12th Day	**TRACING DIFFERENT GEN OF MOTHERBOARDS**	12th Day	**DIFFERENT REPAIRING MODES & TESTING WITH NEW DIAGONASTICS INSTRUMENTS** **ANY MANIFACTURE ANY GENARATION LAPTOP MOTHERBOARD MULTI TESTING AND TRABLESHOOTING PTACTICAL SESONS** **What is Digital Oscilloscope & How can Choose Oscilloscope for Laptop Repair Technicians ,** **How Setup, Trace & Calibrate Digital Oscilloscope, also Logic Analyzer For fault Findings Troubleshooting .** > VIN 3VPCU 5VPCU, NBSWON, DNBSWON, SUSC, SUSB, S5 ON, SUSON, MAIN-ON, VRON ON, HWPG, PWROK, RSM_RST, PCIRST, CPUINIT, CPUPG, CPURST, VID 0-5, ,, , , ,, , PWRSW, PWRBTN,PSL LOGIC, SLP-S3, SLP-S5, SUSCLK, RUNON, RUNPWROK, ...

13th Day	**ADV. LAPTOP BATTERY CHIP LEVEL REPAIR TRAINING .** **ADV. LAPTOP RAM CHIP LEVEL REPAIR TRAINING .**	13th Day	**i)** ***LAPTOP BATTERYS , DESKTOP & LAPTOP RAMS*** **Repairing** •**LAPTOP SMART OR NON SMART BATTERY** Repairing & Programming using with **Smart Battery Analyzer & Tester ..** •Types of Battery's , Pin out Detail ,Inside battery Main Board Repairing & Battery Cells Replacing.. • **LiPo** battery Problem Repair test with LiPo Battery Balancer **ii) Battery EEPROM Repairing/ Resetting Practice Erase & Programming Battery EEPROMs** **iii) RAMs Repairing** **DDR 1/2/3/4 Chip Level Ram Repairing** **RAM EEPROM Programming (SPD Flashing)** **iv) Repairing** :- ***LCD ,LED ,FULL HD SCREEN LVDS BOARDS*** **LCD/TFT Panels Screen FW- EEPROM Programming , LED Backlight Inverter & eDP to LVDS Board Chip level Repairing.**
14th Day	**ENGINEERING LAPTOP MOTHERBOARD REPAIRING TRAINING**	14th Day	**i) Understanding Any Laptop Battery Charging / Discharging Section & Repairing.** **ii) Troubleshooting and Repairing Not Charging any Type Laptop** **# Plugin Not Charging** **# Plugin Charging Battery Not Detecting …….** **# Etc….. 27 Nos Faults…….**
15th Day	**TRACING DIFFERENT CONNECTORS AND SOCKET WITH PINOUT DETAILS** **CPU /WIFI /NGFF /USB SLOT TESTER**	15th Day	• **Main signals of CPU slot** • **Testing point of CPU slots** • **MINI WIFI SLOT TESTER AND SIGNALS DETAIL** • **Main signals of WIFI slot** • **Testing point of WIFI slots** • **MINI PCI SLOT TESTER** • **IDE SLOT TESTER** • **USED OF DIFFERENT DEBUG CARD** • **Advance models tracing with different signals** • **Different motherboard advance tracing** • **FOULT FINDING AND TROUBLESHOOTING OF MOTHERBOARDS.**

16th Day	**TRACING DIFFERENT SIGNALS**	16th Day	**i) TRACING A DIFFERENT DEAD LAPTOP AND ALL IN ONE MOTHERBOARD.** **Cold Checking & Hot Checking** PRACTICE WITH SHORTCUT REPAIR TIPS & OUTSIDE MOTHERBOARD REPAIRING CUSTOMER MOTHERBOARD REPAIRING PRACTICLE KNOWLEDGE PRACTICE TRAINING WITH DIFFERENT MOTHERBOARD HAVING MORE CONFIEDENCE IN LAPTOP MOTHERBOARD REPAIRING…
17th Day	**STORAGE DIVICE REPAIR & TRABLESHOOTING FAULT FINDING**	17th Day	**i)** HDMI ,DISPLAY PORTS , USB 3.1 ,IEEE 1394 FIRE WIRE, SPDIF Audio Connection, RTC, I/O Controller KBC, CD Rom Connection, HDD Connection, VGA Connection , Key Board Connection, Touchpad Connection, Power Board DVD Panel I/O Out Tracing … **ii)** What is Hard Disk Data Storage Concept & HDD Motherboard Repair & Data Recover .(Logic Board Level) SATA/MSATA/SAS/SSD **CAN STUDENTS BRING LAPTOP MOTHERBOARD TO PRACTICE TO DEDICATED PRACTICAL DAY AND REPAIR IN THE CLASS ROOM .**

Course Conduct by :- **Mr. Indika Bandara**

(Desktop & Laptop Computer Motherboards SMT Level Manufacturing Plant QA Engineer)

Course Duration : - **06 Month** (**30th Sundays Full days**) (9.00 AM -5.00PM)

Course Fee :- Rs.120,000 /-

IET Institute Student Registration Fee :- Rs. 5,000 /-

Please Complete the Advance Payments **Rs,60,000/-** Before Starting the Class Day…..

Before You Come to Course

Notice : - * All Participations Must Completed

1) Computer Hardware Engineering Course
2) Practical Basic Electronic Course First . *

• Original **Intel 6th Gen to 12th Gen Laptop Schematics,** Working Bios Repository Pack Database & Very Valuable Software's, Diagrams Free With life time www.iet.lk web Site Membership.

• Dell, Hp, Intel, Asus, Toshiba .Lenovo,Sony,Panasonic and etc…

• A '**Certificate of Diploma will be issued all Students'** each participant Finished Final Exam as well..

• Two Tea time and refreshment included .

• A/C Class room Facilities