

# LAPTOP LEVEL-2 SYLLABUS

SESSI ON	DESCRIPTION	CLASS
<b>WEEK -1</b>		
1	<p><b><u>What is motherboard? And Laptop motherboard blockdiagram explain</u></b></p> <p>a) Laptop Motherboard Block Diagram -Explain            b) What is difference between dual core board and core i5, i7 board?            c) Motherboard chip level service tools list</p>	Tips
2	<p style="text-align: center;"><b><u>Basic electronics</u></b></p> <p><b><u>introduction</u></b></p> <p>what is difference between electrical and electronics            What is current and volt?            What is difference between AC and DC? AC current/volt-DC current /volt            Difference between normal electronics and SMT electronics            What is multimeter? How use multimeter?</p>	PRACTIC AL
3	<p><b><u>RESISTOR</u></b></p> <p>What is resistor and its working function?            Types of resistor            Resistor colour coding            Difference between normal resistor and SMT resistor            How find smd resistor value? And its checking method</p>	
	<p><b><u>CAPACITOR</u></b></p> <p>What is capacitor and its working function?            Types of capacitor            Difference between normal capacitor and SMT capacitor            How find capacitor value? And its checking method</p>	
	<p><b><u>Student soldering practical-resistor and capacitor</u></b></p>	
4	<p><b><u>INDUCTOR AND TRANSFORMER</u></b></p> <p>What is inductor and its working function?            Types of inductor            Inductor checking method            What is transformer and its working function?            Types of transformer            transformer checking method</p>	

5	<p><b>DIODE</b></p> <p>What is diode and its working function?  Types of diode  Difference between normal diode and SMT diode  diode checking method</p>	
6	<p><b>TRANSISTOR</b></p> <p>What is transistor and its working function?  Types of transistor-mosfet,Fet,PNP and NPN  Difference between normal transistor and SMT transistor  transistor checking method</p>	
7	<p><b>Students soldering practice</b></p> <p>Mosfet and diode</p>	
8	<p><b>Integrated circuits [IC]</b></p> <p>What is ic ? and its working function?  Types of ic  Various packages of ic  Smd double side ic removing and fixing by using SMD REWORK STATION  Smd four side ic removing and fixing by using SMD REWORK STATION</p>	
<b>WEEK-2</b>		
9	<p><b>How to Solve Laptop Power Adapter Problem? - Practical</b></p> <ul style="list-style-type: none"> <li>✓ Laptop Battery Charging Slowly</li> <li>✓ Laptop are not power on</li> <li>✓ No output voltage for adapter [0 volt]</li> <li>✓ Less output voltage for adapter [16v/17v]</li> <li>✓ Adapter over heating</li> <li>✓ Earth shocking problem</li> </ul> <p><b>Power Section-How Laptop Power Section Works?</b></p> <ul style="list-style-type: none"> <li>✓ How super IO ic works? And its function-Block diagram</li> <li>✓ How motherboard power on?</li> <li>✓ How work battery section and step- down Voltage regulator section?</li> </ul>	PRACTICAL
10	<p><b>Adapter V In Section [AC -Mode] -Practical</b></p> <ul style="list-style-type: none"> <li>❖ <b>Problem:</b> <u>Not power on Laptop both battery power and adapter power mode [Laptop Dead]</u></li> <li>• <b>Symptoms:</b> <i>power LED are not glowing /FAN are not rotate,</i></li> <li>• <i>When plug in adapter to laptop then OFF adapter power</i></li> </ul>	PRACTICAL

	<p><i>LED&gt;&gt;&gt;&gt;</i></p> <ul style="list-style-type: none"> <li>• After unplug adapter from laptop then adapter indicator LED is ON.</li> <li>• When plug in adapter &gt;&gt;&gt;then the adapter indicator LED is blinking.</li> </ul> <ul style="list-style-type: none"> <li>✓ Battery Terminal pin outs</li> <li>✓ Battery charger IC pin outs and its function</li> <li>✓ Adapter Voltage [VIN] IN circuit tracing/fault finding method and its troubleshooting tips</li> <li>✓ Battery <b>Charge</b> Line tracing/fault finding method, and its trouble shooting tips</li> </ul>	
11	<p><b>Battery Charging Section [Charge Mode]–Practical</b></p> <ul style="list-style-type: none"> <li>❖ <b>Problem 1:</b> Laptop working by Adapter power mode only, but are not charging battery /and are not working battery power mode</li> </ul> <p><b>Symptoms:</b> Battery Charge Led Are Not Glowing/plugged in not charging</p> <p><b>Problem 2:</b> laptop battery charging very slowly and charge percentage are not increase</p> <p><b>Problem 3:</b>after remove battery from laptop &gt;then laptop working properly through adapter power&gt;then connect battery to laptop &gt;are not power on laptop both power mode</p> <p><b>Problem 4:</b> laptop battery power quickly discharged &gt;quickly goes low battery level</p> <p><b>Problem 5:</b> when power on laptop &gt;power LED is glowing and fan are rotating &gt;now battery LED is blinking continuously [on then off] then suddenly off laptop power</p> <p><b>DC mode</b></p> <ul style="list-style-type: none"> <li>✓ Battery Power Terminal [<b>Discharge Line</b>] tracing /fault finding method and its trouble shooting tips</li> <li>✓ PMOS and NMOS charging circuit comparison</li> </ul>	PRACTICAL
	<p><b>STUDENT PRACTICE</b></p> <p>Adapter vin circuit and battery charging circuit [AC mode,DC mode and Charge mode]</p>	
<b>WEEK-3</b>		

12	<p><b><u>Step-Down Regulator Section</u></b>  <b>MAIN STEP-DOWN VOLTAGE REGULATOR CIRCUIT [3.3V &amp; 5V]</b>  <b>Circuit Fault Finding/Tracing and its Troubleshooting Tips</b></p> <ul style="list-style-type: none"> <li>✓ a) What is step down regulator section problem? [laptop power fail or dead board]</li> <li>✓ b) step-down ic pin outs and its function</li> <li>✓ c) What is always power?</li> </ul>	PRACTICAL
	<p><b><u>Student practice</u></b>  Step down regulator circuit</p>	
13	<p><b><u>CPU V core circuit fault finding -practical</u></b>  CPU Voltage Regulator Section Circuit Fault Finding/Tracing and its Troubleshooting Tips [below 1.5V]</p> <ul style="list-style-type: none"> <li>✓ a) What is cpu regulator circuit problem? {Power on laptop &gt;fan are rotating &gt;then suddenly board is off and cpu over heating problem}</li> <li>✓ b) cpu circuit N-mosfet connectivity explanation</li> </ul> <p>b) cpu circuit Mosfet and capacitor checking method</p>	PRACTICAL
	<p><b><u>Student practice</u></b>  CPU V core circuit fault finding</p>	
14	<p><b><u>MEMORY [DDR1/DDR2/DDR3] VOLTAGE REGULATOR SECTION Circuit Fault Finding/Tracing and its Troubleshooting Tips [2.5V/1.8V/1.5V]</u></b></p> <ul style="list-style-type: none"> <li>✓ What is memory regulator circuit problem?</li> <li>✓ a) power ok &gt; fan are rotate but no display both LCD screen and external monitor</li> <li>✓ b) Power on laptop &gt; fan are rotating &gt; then suddenly board is off</li> </ul>	PRACTICAL
15	<p><b><u>CHIPSET VOLTAGE REGULATOR SECTION Circuit Fault Finding/Tracing and its Troubleshooting Tips [1.5V/1.05V]</u></b></p> <p>a) What is chipset regulator circuit problem?  b) Power on laptop &gt; the chipset produce abnormal heat &gt; then board is suddenly off [BGA chipset short]  c) Poor display for both LCD screen and external monitor {BGA chipset weak}  d) No display for both LCD screen and external monitor [BGA chipset fail]</p>	PRACTICAL
16	<p><b><u>STUDENT PRACTICAL</u></b>  Ram and chipset voltage regulator circuit</p>	PRACTICAL

<b>WEEK-4</b>		
17	<p><b><u>Laptop motherboard voltage checking method for power fail laptop motherboard [motherboard Dead]</u></b></p> <ul style="list-style-type: none"> <li>✓ a) How check adapter volt power line [19V]?</li> <li>✓ b) How check battery terminal volt in laptop motherboard [12V]?</li> <li>✓ c) How check always volt in power button and IO chip near?</li> <li>d) Where to check regulated output voltage[3V/5V/1.5V/1.05V and cpu voltage]?</li> </ul>	PRACTIC AL
18	<p><b><u>LAPTOP -No Display Problem-PRACTICAL</u></b></p> <p>Laptop Power ON ok /power LED is Glow and CPU cooler FAN is Rotating continuously.....but No Display Problem for Both LCD screen and External VGA</p> <ul style="list-style-type: none"> <li>✓ How check Northbridge Video chipset voltage?</li> <li>✓ How check south bridge chipset voltage?</li> <li>✓ How check DDR1/DDR2 &amp; DDR3 RAM voltage?</li> <li>✓ Latest i5/i7 cpu motherboard complete voltage checking method</li> </ul>	PRACTIC AL
19	<p><b><u>Clock Frequency Checking-CRO Practical</u></b></p> <p><b><u>No Display Problem for Both LCD screen and External VGA</u></b></p> <ul style="list-style-type: none"> <li>✓ What is clock and frequency? [HZ/KHZ/MHZ]</li> <li>✓ How check system clock crystal frequency by <b>CRO</b> [14.3 MHz]?</li> <li>✓ How check system clock generator clock output frequency?</li> </ul>	PRACTIC AL
20	<p><b><u>BGA REWORK PRACTICAL</u></b></p> <p><b><u>No Display Problem for Both LCD screen and External VGA</u></b></p> <ul style="list-style-type: none"> <li>✓ BGA CHIPSET Dry soldering method</li> <li>✓ BGA chip replacement by using BGA Rework Machine</li> <li>✓ BGA chip reballing method</li> </ul>	PRACTIC AL
21	<p><b><u>LCD Screen Power Supply Section</u></b></p> <p><b><u>No display problem only LCD screen but external VGA monitor ok</u></b></p> <ul style="list-style-type: none"> <li>✓ LCD Screen power supply circuit fault finding /circuit tracing and its trouble shooting tips</li> <li>✓ No LCD signal and no Backlight problem</li> <li>✓ LCD signal OK but No backlight problem [Black screen]</li> <li>✓ No LCD signal but backlight ok problem [white screen]</li> <li>✓ LCD screen vertical lines problem</li> <li>✓ What is difference between LED and CCFL Backlight?</li> <li>✓ Backlight CCFL inverter circuit function</li> </ul>	PRACTIC AL
22	<b><u>STUDENT PRACTICAL</u></b>	PRACTIC

		AL
23	<p><b><u>BIOS FLASHING METHOD -Practical</u></b></p> <ul style="list-style-type: none"> <li>✓ What is BIOS?</li> <li>✓ Why reprogram BIOS? [Password problem/Bios Rom checksum error message/laptop not booting problem/no display problem/post Error message problem and Etc...]</li> <li>✓ Bios chip pin outs and capacity identification</li> <li>✓ Bios file backup method using Bios Programmer kit</li> </ul>	PRACTICAL
24	<p><b><u>Audio section problem -practical</u></b></p> <ul style="list-style-type: none"> <li>✓ No any sound signal for laptop [audio driver and sound setting is ok]</li> <li>✓ Speaker /microphone and head phone are not working</li> <li>✓ Head phone and mic are working but speaker no sound signal</li> <li>✓ Speaker sound signal is very low</li> <li>✓ Poor sound [distortion] signal for speaker</li> <li>✓ Left side speaker ok but right side speaker no sound signal</li> </ul> <p><b><u>USB power circuit problem and its troubleshooting</u></b></p> <ul style="list-style-type: none"> <li>✓ How solve USB Port not working problem -practical</li> <li>✓ Laptop online reference website [laptop board circuit/BGA chip/power ic/io ic /mosfet and etc]</li> <li>✓ Laptop motherboard parts and tools shop address list collection</li> </ul>	PRACTICAL
25	<b><u>Students practical</u></b>	