

NATIONAL INSTITUTE OF ELECTRONICS AND INFORMATION TECHNOLOGY

Syllabus for "REPAIR AND MAINTANANCE OF ELECTRONIC HOME APPLIENCE"

1. Introduction to Basic of Electronics10hrs

Passive and active components-resistors, standardization, color coding techniques, types of resistors-capacitor, types of capacitors- inductors, types of inductors, transformers, types of transformer. Diodes, Transistor, NPN, PNP, MOSFET, JFET, FET. Energy band diagram of conductors, semiconductors, insulators- intrinsic and extrinsic semiconductors PN junction diode- characteristics of forward & reverse bias PN junction. Zener diode- light emitting diode (LED) - light dependant diode (LDR).

2. Calibration & testing of electronics Equipment20hrs

Test and measuring equipments like Cathode Ray Oscilloscope, operation of LCD-LED TV and Monitor, Repair Maintenance and serving and Practice, Basic principle, working and operation of FM radio, Induction Stove, Microwave Oven, CD-DVD Player and Home Theatre System etc. Multimeter. Study of ammeter, digital Multimeter and how they are used.

3. Integrated Circuit.

5hrs

Pin Diagram of different IC's. IC 555 Timer, LM339, LM324, SG3524, SG3524 etc.

4. Soldering & desoldering techniques

15hrs

Types of PCBs, soldering Iron, soldering wire, soldering flux, Soldering & De-soldering Techniques and Materials. Zero defect soldering, Desoldering pump, Temperature controlled soldering station

5. ESD issues5hrs

ESD and Heat Sink, Good soldering practices, Antistatic Material handling & Zero Defects Soldering.

6. Power supply10hrs

Introduction to regulated power supplies, power supply filters, three terminal regulators and regulated power supply using three terminal regulators. Batteries Types of Batteries and their regulated maintenance. SMPS Introduction to SMPS, various topologies, study of SMPS used in PCs, specification of SMPS according to system requirement, various voltage and current rating available on various types of SMPS, troubleshooting of SMPS, handling of SMPS. UPS Introduction to UPS, types of UPS.

7. Basic concepts of Repair and Maintenance

10hrs

Printer, CRT monitor, UPS, CPU, Induction stove, Phone-Hair dryer, Microwave Oven, FM-Radio-Cordless, electronic products-

8. Mini project.

5 hrs