

ELECTRONICS

Skill Based Elective I (Semester IV)

HOME APPLIANCE MAINTENANCE AND SERVICING

Objective

To explain the operation and troubleshooting techniques of home appliances

UNIT I Electronic components:

Introduction–Passive components–Transformer–Working principle–application–Active devices: Diode–Transistor– Analog IC–amplifier– oscillators and Digital ICs–logic gates–encoder–decoder.

Unit II Equipments for servicing

Soldering Iron–Flux–lead–Zero defect soldering–Desoldering pump– soldering station– Basics of Multimeter–Measurement of current, voltage and resistance using multimeter–Checking transistors and diodes–In circuit measurements.

Unit III. Heating appliances

Heater types–working principle– Heating Rod–Iron Box–Iron box with steamer–Toasters– Geysers– MicroWave Ovens– Oven –Disassembling and assembling procedure– Fault indicator–Testing and Troubleshooting methods.

Unit IV Motorised appliances

Types of Motors–DC and AC motor– Fans– mixers– blenders–wet grinders– circuit connection- testing methods. Washing machine–Electrical connections–assembly–Dish washer –Electrical connection–Testing and Trouble shooting methods.

Unit V Refrigeration appliances

Fridge– Electrical connection– Compressor–coolants–Automatic defrost circuits –Testing and troubleshooting of refrigerators–Air coolers and Air conditioners– Mounting and fixing of Air Conditioners–testing and troubleshooting methods.

Text Book

1. Eric Kleinert, Troubleshooting and Repairing major appliances, Mc Graw Hill, McGraw Hill Professional, third edition, 2012.

Skill Based Elective II (Semester V)

COMPUTER HARDWARE AND NETWORKING

UNIT I Processor, Memory and Mother Board

Basic PC concepts-Processor-Intel dual core –i core-AMD –Athlon –Processor speed- 12-13 cache memory-Processor Sockets –Heat sink-processor and heat sink mounting –Memory-DDR2-DDR3-DDR4-RAM sockets –FSB and mounting- Motherboard organization-chip set-PCI slot-Type of mother boards-front and Rear panel organization-BIOS and setting.

UNIT II STORAGE DEVICES

Introduction-Magnetic Storage devices – Hard disk organization –hard disk type-PATA-SATA-SCSI-SAS—hard disk partition-formatting – Introduction -Optical storage devices-CD-DVD-Drive type-Connectors and connections –USB storage devices.

UNIT III INPUT AND OUTPUT DEVICES

Keyboard type-AT and Ps/2 keyboards- connectors- Mouse-type-working-Display card- display memory-VGA –DVI-HDMI-ports-Monitors-CRT-LCD-LED monitors-principle and working-Printers-Dot matrix-Inkjet-laser printers introduction-type – interface type and connectors-connection-installation.

UNIT IV SYSTEM ASSEMBLING

SMPS – cabinets – types – SMPS – Testing - voltage measurements - stepwise assembling procedure-Device interconnections-Operating system installation-device driver installation-System installation and testing-report generation.

UNIT V COMPUTER NETWORK

Network fundamentals – Ethernet card – Ethernet port – cat5 - cat6 cable - RJ45 connector crimping and colour code-T568A-T568B-network switch-router-wireless Access point-IP setting-Home-network setting-internet connection setting.

Text books:

1. Scott Mueller, Upgrading and Repairing PC's 20th edition

Reference Book:

1. Mark L. Chambers, Build Your Own PC Do-It-Yourself For Dummies
Dummies series.

Skill Based Elective III (Semester V)

MOBILE SERVICING

Objectives

- To understand the fundamentals of cell phone
- To learn the chip level study and trouble shooting
- To acquire the practical knowledge.

Unit I : Fundamentals of CELL phone

Introduction to GSM/CDMA - Concepts of GSM/CDMA Cellular Technologies - Working of GSM - Information of Cell Sites & Base Station - Call Processing of a GSM - GPRS - Mobile Softwares (PC suite)

Unit II : Chip level study

I Chip Level Information of Mobile Phones (Tools & Components) - BGA - SMD - Air Gun - Soldering Station - Rework Station - Soldering lead -Soldering paste - De-Soldering wire - Identification of IC's - Assembling & Disassembling of mobile phones.

Unit III : Trouble shooting

Causes for various problems & Troubleshooting of Problems in a Mobile Phone - Network Problems - Display Problems - Sim Card Problems – Charging problems - Battery Problems - Software Unlocking - Software Flashing -IMEI information - Downloads of logos & Ring tones - Problems related to mobile phone hand sets - replacement of Various components ICS.

Unit IV : Practical 1

Disassembling the cell phone - Battery problems - display - Antenna problems- Network problems - Sim Card problems - SMD soldering.

Unit V : Practical 2

Software Unlocking - Software flashing - Downloads of logos – Downloads of Ring tones - Hand set problems - Replacement of modules (display, mic, speaker, antenna, amplifier, etc.).

Text book

1. William L. Armstrong, Learn Cell Phone Repair, kindle edition, 2013
2. Pandit Sanjib, Advance Mobile Repairing: Multicolour Circuits, Service Diagrams & Repairing, BPB publications.2010.
