I. R. D. T

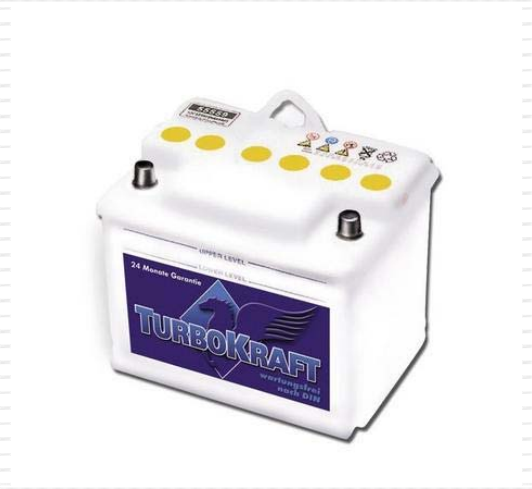
INSTITUTE OF RESEARCH DEVELOPMENT AND TRAINING

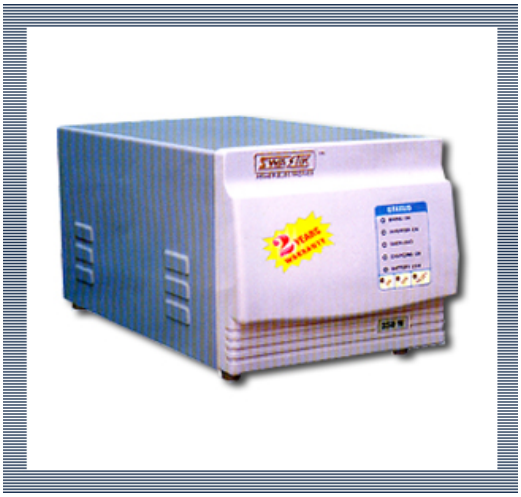
SYLLABUS

SIX MONTHS – FULL TIME

Repair and Maintenance of Batteries
&
Inverter

EFFECTIVE FROM:-





UNDER DEVELOPMENT

Prepared By:
Curriculum Development Cell

INSTITUTE OF RESEARCH DEVELOPMENT AND TRAINING
KANPUR

Repair and Maintenance
Of
Batteries and Inverter

Name : **Repair and Maintenance of Batteries Inverters**

Duration : **24Weeks**

Terminal Competency: **The participants will be able to:**

1. Observe the safety precautions while working

2. Preparation of electrolyte

3. Preparation of cells and arrangements of cells

4. Assembling of battery

5. Charging / recharging of battery

6. Care and preventive maintenance of battery

Course Content:

Theory

• Safety precautions • Practice procedure for electrical and personal safety measures • Use of multimeter • Construction a lead acid battery • How to keep lead acid battery health. • Recharging of battery • Check the condition of battery, reading of hydrometer, preparation of electrolyte and Chemical effect. Battery chargers and its application precautions to be taken while operation.
• Testing of active and passive components • Testing of transformers (Step up and Step down) • Testing of semiconductor components • Testing of unregulated and regulated voltages • Soldering and de-soldering techniques • Assemble and test rectifier circuits – half wave, full wave & bridge rectifier • Assemble a power amplifier circuit (ce, emitter follower) • Assemble and test an audio power amplifier (buzzer) • Construct a RC- oscillator and test it • Find the total load and select a suitable Inverter (rating factor) • Installation of battery and Inverters • Opening & dismantling an equipment and identifying the major parts , testing of major components, identifying transformers and hacking , checking of power modules, Charging , discharging and testing of batteries, repairing of SMPS, simulating various faults diagnosing and rectifying it.

Practical

• Safety precautions • Electrical and personal safety, dangers and preventions • Multimeter and its various application • Preparation of electrolyte • Preparation of cells and arrangements of cells • Assembling of battery • Charging / recharging of battery • Care and preventive maintenance of battery
• Basics of electricity – define DC, AC Practical measuring units of voltage, current, resistance. Types of transformers – its construction, testing • Testing of proper earth using test lamp • Testing of earth using multimeter • Fuse – types, use of fuses and its rating • Basic Electronics – passive and active components – testing of components, MOSFET – precautions when handling • Applications of transistor – its uses • Op-Amp – Introduction, applications, construction, comparators • Voltage Regulator and their types • DIAC, SCR, TRIAC - application • Digital electronics – gates and its application, multiplexers, de-multiplexers, counter • Electrical load their VA and watts. Various types of batteries used in UPS and Inverters and their maintenance. • Single phase and three phase system, Different types of inverter, Working principle, specifications, explanation with the help of block diagram, basic principle of working of power switches, testing Methods, discussions of various faults, diagnosing methods, rectifying common faults.

Tools and equipments:

1. Screw Driver 8” 10”, 12”
2. Cutting Pliers 6”, 8”
3. Neon Tester
4. Heavy Duty Screw Driver10”, 12”
5. Nose Pliers 6”
6. Hydrometer
7. High Discharge Tester
8. Battery charger
9. Technicians tool kit
10. Digital multimeter
11. v. Clip on ammeter
12. Soldering gun
13. Desoldering pump
14. Soldering / desoldering temp controlled station
15. SMD soldering tools
16. Antistatic mat with proper grounding and wrist band