

MODULES

Basic Electronics -Repair and Maintenance of Power supply, Inverter and UPS

NAME	: Basic Electronics -Repair and Maintenance of Power supply, Inverter and UPS
SECTOR	: Electronics.
CODE	: ELC101
TERMINAL COMPETENCY	: After completion, the participant would be able to maintain and repair of Power supply, inverter and UPS.
Entry qualification	: 8th std pass with age at least 14 years.
DURATION	: 120 Hrs.
CONTENTS	:

Practical Competencies	Underpinning Knowledge (Theory)
<ul style="list-style-type: none"> • Practice procedure for electrical and personal safety measures • Use of multimeter • Testing of active and passive components • Testing of transformers • 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 UPS/Inverter (rating factor) • Installation of UPS and Inverters • Maintenance of battery • Opening & dismantling an equipment and identifying the major parts , testing of major components, identifying transformers and checking , checking of power modules, Charging , discharging and testing of batteries, repairing of SMPS, simulating various faults diagnosing and rectifying it. 	<ul style="list-style-type: none"> • Electrical and personal safety, dangers and preventions • Multimeter and its various application • 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, UPS, 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.

Equipment List ;

- i. Inverter / UPS trainer
- ii. Battery charger
- iii. Technicians tool kit
- iv. Digital multimeter
- v. Clip on ammeter
- vi. Soldering gun
- vii. Desoldering pump
- viii. Soldering / desoldering temp controlled station
- ix. SMD soldering tools
- x. Antistatic mat with proper grounding and wrist band