

1	Name of Course	Certificate Course in Repair and Maintenance of Back Up Power Unit (301114)																																								
2	Max. Nos. of Student	25 Students																																								
3	Duration	6 Months																																								
4	Type	Part Time																																								
5	Nos. of Days / Week	6 Days																																								
6	Nos. of Hours /Days	4 Hrs																																								
7	Space Required	Theory Class Room – 200 sqft Practical – 200 sqft																																								
8	Entry Qualification	S.S.C. appeared																																								
9	Objective Of Syllabus/ introduction	After completion, the participant would be able to maintain and repair of Power supply, inverter and UPS.																																								
10	Employment Opportunity	Self Employment / May get job in Establishment																																								
11	Teacher’s Qualification	Diploma in eloelectronics , I.T.I. N.C.V.T. (Electronics)																																								
12	Training System	Training System Per Week <table><tr><td colspan="2">Theory</td><td colspan="2">Practical</td><td colspan="2">Total</td></tr><tr><td colspan="2">6 hrs</td><td colspan="2">18hrs</td><td colspan="2">24hrs</td></tr></table>						Theory		Practical		Total		6 hrs		18hrs		24hrs																								
Theory		Practical		Total																																						
6 hrs		18hrs		24hrs																																						
13	Exam. System	<table><tr><th>Sr. No.</th><th>Paper Code</th><th>Name of Subject</th><th>TH/PR</th><th>Hours</th><th>Max. Marks</th><th>Min. Marks</th></tr><tr><td>1</td><td>30111411</td><td>Power supply, Inverter and UPS Theory</td><td>TH-I</td><td>3 Hrs</td><td>100</td><td>35</td></tr><tr><td>2</td><td>30111421</td><td>Basic Electronics</td><td>PR-I</td><td>3 Hrs</td><td>100</td><td>50</td></tr><tr><td>3</td><td>30111422</td><td>Maintenance of Power supply, Inverter and UPS</td><td>PR-II</td><td>6 Hrs</td><td>200</td><td>100</td></tr><tr><td></td><td></td><td>TOTAL</td><td></td><td></td><td>400</td><td>185</td></tr></table>						Sr. No.	Paper Code	Name of Subject	TH/PR	Hours	Max. Marks	Min. Marks	1	30111411	Power supply, Inverter and UPS Theory	TH-I	3 Hrs	100	35	2	30111421	Basic Electronics	PR-I	3 Hrs	100	50	3	30111422	Maintenance of Power supply, Inverter and UPS	PR-II	6 Hrs	200	100			TOTAL			400	185
Sr. No.	Paper Code	Name of Subject	TH/PR	Hours	Max. Marks	Min. Marks																																				
1	30111411	Power supply, Inverter and UPS Theory	TH-I	3 Hrs	100	35																																				
2	30111421	Basic Electronics	PR-I	3 Hrs	100	50																																				
3	30111422	Maintenance of Power supply, Inverter and UPS	PR-II	6 Hrs	200	100																																				
		TOTAL			400	185																																				

SYLLABUS

Theory – I

Power Supply, Inverter and UPS

1. Electrical and personal safety, dangers and preventions
2. Multi meter and its various application
3. Basics of electricity – define DC, AC , practical measuring units of voltage, current, resistance. Types of transformers – its construction, testing
4. Testing of proper earth using test lamp
5. Testing of earth using multi meter
6. Fuse – types, use of fuses and its rating
7. Basic Electronics – passive and active components – testing of components, MOSFET – precautions when handling
8. Applications of transistor – its uses
9. Op-Amp – Introduction, applications, construction, comparators
10. Voltage Regulator and their types
11. DIAC, SCR, TRIAC - application
12. Digital electronics – gates and its application, multiplexers, de-multiplexers, counter
13. Electrical load their VA and watts. Various types of batteries used in UPS and Inverters and their maintenance.
14. 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.

Practical – I

Basic Electronics

1. Practice procedure for electrical and personal safety measures
2. Use of multimeter
3. Testing of active and passive components
4. Testing of transformers
5. Testing of semiconductor components
6. Testing of unregulated and regulated voltages
7. Soldering and de-soldering techniques
8. Assemble and test rectifier circuits – half wave, full wave & bridge rectifier
9. Assemble a power amplifier circuit (ce, emitter follower)
10. Assemble and test an audio power amplifier (buzzer)
11. Construct a RC- oscillator and test it

Practical - II

Maintenance of Power supply, Inverter and UPS

1. Find the total load and select a suitable UPS/Inverter (rating factor)
2. Installation of UPS and Inverters
3. Maintenance of battery
4. Opening & dismantling an equipment and identifying the major parts , testing of major components, identifying
5. Transformers and checking , checking of power modules.
6. Charging , discharging and testing of batteries.
7. Repairing of SMPS,
8. simulating various faults diagnosing and rectifying it.

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