

## Rajasthan Skill & Livelihoods Development Corporation

<b>1. Module Name</b>	<b>Installation &amp; Maintenance of DTH System</b>
<b>2. Sector</b>	Electronics
<b>3. Entry Qualification</b>	Minimum 10 <sup>th</sup> Pass
<b>4. Minimum Age (in years)</b>	15
<b>5. Duration</b>	<b>39 days/ 234 hrs.</b>
<b>6. Provision of Tool kit</b>	Yes
<b>7. Terminal Competency</b>	<p><b>After completion of training the trainee will be able to</b></p> <ul style="list-style-type: none"> <li>• recall the meaning of voltage, current, resistance and electric charges;</li> <li>• identify the Live, Neutral and Earth on power Socket;</li> <li>• construct a test lamp and use it to mains;</li> <li>• use a tester to monitor AC power;</li> <li>• identify and test passive and active electronic components and different AC mains cables;</li> <li>• measure the gauge of the wire;</li> <li>• solder and de-solder various types of electrical and electronic components;</li> <li>• make the mains cable for termination;</li> <li>• test the voltages of the given battery;</li> <li>• replace the battery in the Multi-meter;</li> <li>• identify different resistors, inductors, capacitors and measure their resistance, inductance and capacitance respectively;</li> <li>• maintain and repair Power Supply, Inverter and UPS;</li> <li>• identify parts of a DTH system and recall terms used while installation of DTH system;</li> <li>• recall the steps and assemble the parts of mini dish;</li> <li>• install dish at customer's premises;</li> <li>• activate/set IRD/ DIGICOM/ DIGBOX; and</li> <li>• guide the customers to operate the DTH systems installed in their residence;</li> </ul>

	<b>Approx. hrs.</b>
<b>8. Registration, Inauguration, introduction and objectives of the course</b>	2

<b>9. Course content</b>			
<b>Practical competencies</b>	<b>Approx. hrs.</b>	<b>Underpinning Knowledge (Theory)</b>	<b>Approx. hrs.</b>
<ul style="list-style-type: none"> <li>• Practice procedure for electrical and personal safety measures.</li> </ul>	2	<ul style="list-style-type: none"> <li>• Electrical and personal safety, dangers and preventions.</li> </ul>	1
<ul style="list-style-type: none"> <li>• Use of multimeter.</li> </ul>	2	<ul style="list-style-type: none"> <li>• Multimeter and its various application.</li> </ul>	1
<ul style="list-style-type: none"> <li>• Testing of active and passive components.</li> </ul>	3	<ul style="list-style-type: none"> <li>• Basics of electricity – define DC, AC// Practical measuring units of voltage, current, resistance.</li> </ul>	1

		<ul style="list-style-type: none"> <li>Types of transformers – its construction, testing.</li> </ul>	
<ul style="list-style-type: none"> <li>Testing of transformers.</li> </ul>	3	<ul style="list-style-type: none"> <li>Testing of proper earth using test lamp.</li> </ul>	1
<ul style="list-style-type: none"> <li>Testing of semiconductor components.</li> </ul>	3	<ul style="list-style-type: none"> <li>Testing of earth using multimeter.</li> </ul>	1
<ul style="list-style-type: none"> <li>Testing of unregulated and regulated voltages.</li> </ul>	3	<ul style="list-style-type: none"> <li>Fuse – Types, use of fuses and its rating.</li> </ul>	1
<ul style="list-style-type: none"> <li>Soldering and de-soldering techniques.</li> </ul>	12	<ul style="list-style-type: none"> <li>Basic Electronics – passive and active components – testing of components, MOSFET – precautions when handling.</li> </ul>	1
<ul style="list-style-type: none"> <li>Assemble and test rectifier circuits – half wave, full wave &amp; bridge rectifier.</li> </ul>	12	<ul style="list-style-type: none"> <li>Application of transistor – its uses.</li> </ul>	1
<ul style="list-style-type: none"> <li>Assemble a power amplifier circuit (common emitter, emitter follower).</li> </ul>	12	<ul style="list-style-type: none"> <li>Op-Amp – Introduction, applications, constructions, comparators.</li> </ul>	1
<ul style="list-style-type: none"> <li>Assemble and test an audio power amplifier (buzzer).</li> </ul>	9	<ul style="list-style-type: none"> <li>Voltage Regulator and their types.</li> </ul>	1
<ul style="list-style-type: none"> <li>Construct a RC – oscillator and test it.</li> </ul>	9	<ul style="list-style-type: none"> <li>DIAC, SCR, TRIAC – application.</li> </ul>	1
<ul style="list-style-type: none"> <li>Find the total load and select a suitable UPS/ Inverter (rating factor).</li> </ul>	3	<ul style="list-style-type: none"> <li>Digital Electronics – gates and its application, multiplexers, demultiplexers, counter.</li> </ul>	2
<ul style="list-style-type: none"> <li>Installation of UPS and Inverter.</li> </ul>	6	<ul style="list-style-type: none"> <li>Electrical load their VA and watts.</li> <li>Various types of batteries used in UPS and inverters and their maintenance.</li> </ul>	1
<ul style="list-style-type: none"> <li>Maintenance of Battery.</li> </ul>	3	<ul style="list-style-type: none"> <li>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.</li> </ul>	2
<ul style="list-style-type: none"> <li>Opening &amp; 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.</li> </ul>	24		
<ul style="list-style-type: none"> <li>Name the various mini-dish components and their functions.</li> </ul>	2	<ul style="list-style-type: none"> <li>Basic satellite communication, types of satellite &amp; its orbits, uplinks and down links, frequency spectrum, broadcast centres, area covered, polarization, EFC, symbol rate, BER, MER, C/N etc.</li> </ul>	10
<ul style="list-style-type: none"> <li>Chronology to assemble the various parts of mini dish.</li> </ul>	3	<ul style="list-style-type: none"> <li>Specification &amp; parts of coaxial cable, impedance and specification.</li> </ul>	3

<ul style="list-style-type: none"> <li>• Various types of connectors and cables, its specifications and connectorization procedure.</li> </ul>	3	<ul style="list-style-type: none"> <li>• Multi-dwelling unit design, headed amplifier, line amplifier, cascaded in/out multi-switch, tap, splitter.</li> </ul>	3
<ul style="list-style-type: none"> <li>• Identify and use different tools and equipments used in DTH installation procedure &amp; cabling procedure.</li> </ul>	6		
<ul style="list-style-type: none"> <li>• Site selection, installation mounting tracking for azimuth and elevation angles using SAT meter.</li> <li>• Laying cable, connecting auxiliary equipments.</li> </ul>	24		
<ul style="list-style-type: none"> <li>• Activating, setting of IRD/ DIGICOM/ DIGIBOX</li> </ul>	6	<b>Entrepreneurship &amp; Soft Skills and Computer Literacy Module:</b>	0
		<ul style="list-style-type: none"> <li>• Entrepreneurship – its necessity and charms of being an entrepreneur.</li> </ul>	1
		<ul style="list-style-type: none"> <li>• Who is an entrepreneur and characteristics of a successful Entrepreneur?</li> </ul>	2
		<ul style="list-style-type: none"> <li>• How to identify Business opportunities?</li> </ul>	2
		<ul style="list-style-type: none"> <li>• Steps for setting up a small scale venture.</li> </ul>	1
		<ul style="list-style-type: none"> <li>• Institutional support for entrepreneurship (whom to contact for what)</li> </ul>	2
		<ul style="list-style-type: none"> <li>• Government (Central/ State) Schemes and assistance from Banks/ other financial institutions - Procedures and formalities for getting loan.</li> </ul>	2
		<ul style="list-style-type: none"> <li>• How to prepare Business plan?</li> </ul>	2
		<ul style="list-style-type: none"> <li>• Financial literacy-Costing, Pricing, Profitability and Break Even Analysis.</li> </ul>	2
		<ul style="list-style-type: none"> <li>• Cash management in small enterprises.</li> </ul>	2
		<ul style="list-style-type: none"> <li>• Accounting and Book Keeping</li> </ul>	2
		<ul style="list-style-type: none"> <li>• Introduction to Taxation</li> </ul>	1
		<ul style="list-style-type: none"> <li>• Shop and Establishment Act and its provisions.</li> </ul>	1
		<ul style="list-style-type: none"> <li>• Creativity, Problem solving &amp; decision making.</li> </ul>	1
		<ul style="list-style-type: none"> <li>• Common mistakes generally made by entrepreneurs.</li> </ul>	1
		<ul style="list-style-type: none"> <li>• Interaction with successful entrepreneur and success stories.</li> </ul>	2

		• Communication and Negotiation skills.	1
		• Interpersonal skills	1
		• How to Deal with customer attitude – Effective selling.	1
		• Marketing – Basic concepts/ Skills and effective mode of advertising.	1
		• Introduction to e-commerce.	2
<b>Computer Fundamentals</b> <b>Customize the Desktop Environment e.g.</b> Desktop, Start Menu, and Taskbar etc. Configuring & Migrating Files, Folders & Settings - Folder Views, Accessibility Settings	2	<b>Computer Fundamentals, MS-Office &amp; Internet</b> introduction to Computers History of Computers Components of Hardware Peripherals	1
<b>MS Word</b> Creating, Organizing & Formatting Content Collaborating – Merge, Insert, View, Edit, Track Mode etc. Formatting & Managing Documents	4	<b>Concept of Operating System –</b> Windows XP, Exploring & Configuring the Windows XP Desktop Environment-Customize the Desktop, Start Menu, and Taskbar etc. Configuring & Migrating Files, Folders	1
<b>MS Excel</b> Creating, Analyzing & Formatting Data & Content Collaborating - Insert, View, Edit etc. Managing Workbooks	3	<b>Settings - Folder Views, Accessibility Settings</b> Features of Windows XP Understanding concepts of Word processing using MS-Word Understanding concepts of Electronic spreadsheet and various types of entries in it	1
<b>MS PowerPoint</b> Creating & Formatting Content Collaborating - Track, Edit, Add, Delete Comments, Merge Managing & Delivering Presentations	3		
<b>Internet Concepts</b> Opening websites and downloading data Writing, reading and sending emails	4	<b>Understanding concepts of URL</b> Creating and Opening an E-mail account. Receiving and sending emails Searching information on Internet.	1
<b>Approx. Total Practical hours</b>	<b>166</b>	<b>Approx. Total Theory hours</b>	<b>66</b>
<b>Grand Total (2+166+66)</b>			<b>234</b>

#### 10. Tools, Equipments and Material for a batch of 30 trainees

S.No.	Item	Quantity
1	Inverter / UPS Trainer	1
2	Battery Charger	1
3	Technicians tool kit comprising of all tools required in repair and maintenance of Basic electronic items	6
4	Digital multi-meter	6

5	Soldering / De-soldering temp controlled station	6
6	Clip on ammeter	6
7	Soldering gun	6
8	De-soldering Pump	6
9	SMD Soldering tools	6
10	Antistatic mat with proper grounding and wrist band	As required
11	Complete assembly of mini dish.	6
12	IRD/ Digibox/ digicom along with all channel package	2
13	Special tools as compression tools, preparation tools and other tools required time to time etc.	6
14	Power drill machine hammer type bidirectional rotation	1
15	SAT Meter	6
16	Color TV	2
17	Inclano meter	2
18	Practice wall comprising bricks, concrete etc.	2
19	Headed amplifier, line amplifier, cascaded 2 in 4 out multi - switch, tap, splitter	As required
20	LNBF (Universal, dual, quad, quattero)	As required
21	Compass	2

S.No.	Item	Quantity	S.No.	Item	Quantity
	<b>Hardware</b>			<b>Software:</b>	
1	Computers/Laptops	10 (one for three trainee)	6	Microsoft Windows 7/8/10 or UNIX/ LINUX or latest software	For all Systems
2	Power backup	For all Systems	7	Microsoft Office 2007/ 2010/ 2013 or latest software	For all Systems
3	Inkjet/Laser Printer (Network/USB Printer)	1	8	Antivirus Software (TVD/ Norton/ Quick Heal Total Security/ Kaspersky/ Any Popular brand)	For all Systems
4	Speaker	1	9	Internet Connection	For all Systems
5	Spare H/W components	As per requirement			