

TELEPHONE & MOBILE SET REPAIRING (TMSR)

General Information :

1. Name of the Trade : Telephone & Mobile Set Repairing
2. Entry Qualification : Passed Class VIII
3. Duration of Training : 06 Months [Under Vocational Short Term Course]

Objective of the Course :

The objective of the course is to impart necessary competencies focusing on technical competencies like skill and knowledge so that they become employable in private sectors as well as public sectors.

At the end of the training the trainees will be able to

- Identify different components of a Telephone Set and Mobile set.
- Identify and make list of tools equipment required for specific job.
- Identify faults in functioning a Telephone & Mobile Set operation... .

The Course content is to be covered in less than 26 weeks since some weeks will be used for enrolment procedures, leave of the instructor, holidays, examination and tests, industrial visits etc.

COURSE BREAK-UP :

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|---------------------------------|---|-------------------|
| (a) Practical instruction | : | 288 Hours. |
| (b) Theoretical instruction | : | 67 Hours. |
| (c) Entrepreneurial Instruction | : | 05 Hours. |
| Total = | | 360 Hours. |

Marks Alloted :

- | | | |
|----------------|---|------------|
| (a) Practical | : | 400 |
| (b) Theory | : | 100 |
| Total = | | 500 |

INDUSTRIAL VISIT

Industrial cum study tour in various work places to take practical knowledge with the modern communication advancement.

Sl. No.	Theory	Time	Sl. No	Practical	Time
1.1	Module -1 Electricity, Conductor, Insulator, Ohm's Law, voltage, current, resistance, wattage, simple calculation of voltage current & resistance.	2 hours	1.	Identification of different types of resistor and calculation of resistance by using colour code Measure the voltage, current and resistance by multi meter.	3 hours
1.2	Symbols of basic Electronic Components, Resistance, Resistor, different types of resistance, colour code of resistance, variable resistance, series & parallel combination of resistance, function of resistance.	2 hours	1.2	Series and parallel combination of resistance, checking, the variable resistance.	3 hours
1.3	Electronic Instrument, Name of some important Electronic instrument used in an electronic repair center and take precautions to handle Electronic & Electrical instrument.	2 hours	1.3	Demonstration on various type of Electronic Instrument.	3 hours
2.1	Module - 2 Capacitor, Types of capacitor, series & parallel combination of capacitor, unit of capacitor, colourcode of capacitor, function, testing and application of the capacitor.	2 hours	2.1	Identification of different types of capacitor, different methods used for calculating the value of capacitor testing of capacitor.	3 hours
2.2	A.C. theory: Basic concept of AC, R.M.S., value of A.C. Reactance, Induced, behaviour of capacitor & Inductor in AC.	2 hours	2.2	AC voltage & current measurement	hours
2.3	Transformer : Basic Knowledge of transformer, types of transformer, testing and application of the transformer, semiconductor, Concept of Diode & rectifier (half wave & full wave) and transistor (PNP & NPN)	2 hours	2.3	Testing procedure of the coil, use of the coil, testing of transformer, checking the different types of diodes and transistors and rectifier ckt.	3 hours
3.1	Module - 3 Introduction of telephone exchange : Concept of Local battery exchange (LB exchange) and control battery exchange (CB exchange), manual exchange, electronics, Electronics exchange	2 hours	3.1	Demo on Simplex duplex and multiplex transmission and also Telephone line: Rosset cord, Rosset Box, Hook switch or geedel switch.	3 hours

Sl. No.	Theory	Time	Sl. No.	Practical	Time
	busy hour traffic unit, simplex duplex and multiplex ptransmission.				
3.2	Dialing System : Principle and operation of the rotary and push button dialing. Definition of pulse dialing, DTMF dialing, dial tone.. auto dialing, fast dialing.	3 hours	3.2	Demo on dialing system	6 hours
3.2.1	Speaker system : Concept of Mute, Piazo transducer, microphone, relation between dialing and speaker section.	2 hours	3.2.	Speaker system. Application of bridge rectifier in telephone receiver.	hours
4.1	Introduction of telephone system telephone lines, the speech network.	2 hours	4.1	Rotary and Push button dialing, pulse dialing, DTMF Dialing, Dial tone. Auto Dialing, RE-Dialing, Fast Dialing, Mute, Pause.	6 hours
4.2	Ringer System (concept)	2 hours	4.2	Ringer System : Hook switch, Buzzer Piazo transducer soft tone, Automatic Bell cut out. Telephone computer memory amplifier	9 hours
4.1	<u>Module - 4</u> The structure of telecommunication network : The telephone network, non voice traffic, telephone connections, local distribution, corporate telephone facilities.	2 hours	4.1	Hook switch, Buzzer, Piazo transducer Soft tone. Automatic Bell cut out, Telephone computer memory amplifier.	9 hours
			4.2	Mute, Piazo transducer, Microphone, relation between dialing and speaker section; Application of bridge rectifier in telephone receiver	3 hours
			5.1	Demo of different types of communication cables and their colour codes.	3 hours
,	Module - 5		5.2	Trouble shooting of different types of telephone circuit, its explanation, PCO tracing and fault finding: ITI telephone, Sieneus, Beetel, BPL, TATA, Webcom, working and fault finding.	9 hours
			5.3	Telephone servicing : A generates guidance some common complaints. dialer section, ringer section, speech fault.	hours

Sl. No.	Theory	Tim e	Sl.	Practical	Time
6.1	<u>Module - 6</u> Digital Electronics, (OR, NOR, AND, NAND etc.) Concept of Flip-Flop	2 hours	6.1	Logic gates : Application of OR, NOR, AND, NAND etc. Leatch, Flip-Flop, Register, Counter, Schmitt Trigger multivibrator, Multiplexer, demultiplexer, decoder, encoder.	3 hours
			6.2	Speaker phone and CKT, description of CKT function and application Analyzer function, and application of analyzer in telephone servicing. Fault finding & trouble shooting.	hours
7.1	<u>Module-7</u> Function of EBPX, EPBX Architecture Blocking and non blocking	2 hours	7.2	Demon EPBX pCX network important safety instructions system components hardware considerations.	12 hours
	NIL		7.2	Function of cordless telephones, Maintenance of cordless telephone, operation and mechanism of Fax machine	15 hours
8.1	<u>Module - 8</u> Introduction : History of mobile phone, basic mobile phone, service network, working system of mobile telephone.	2 hours	8.1	Multiple division techniques, concept of FDMA, TDMA, CDMA, Modulation techniques AM, FM.	6 hours
8.2	Concept of GSM & WLL System, concept of BROAD BAND, DUAL BAND AND ROAMING	2 hours	8.2	Demon GPRS, WAP, BLUETUTH, 3G, INFRARED, SMS, MMS, MMM	hours
8.3	The benefit and limitation of surface mount technology, introduction of SMD resistor, graphical symbol, values and rating.	2 hours	8.3	Tools using in the repairing of mobile phone, demo on Digital Multimeter, Types of SMD resistor (Checking)	3 hours

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Sl. No.	Theory	Time	Sl. No.	Practical	Time
9.1	Module -9 Instruction Various types of SMD fuse, Speaker and Buzzer.	2 hours	9.1	Checking resistor & preset by Multimeter, checking of Speaker Buzzer and Microphone.	6 hours
9.2	Diffinition of SM Capacitor (Electrolytic), multiplier chip capacitor, tantalum capacitor graphical symbol.	2 hours	9.2	Testing & Checking of SMD Capacitor	9 hours
10.1	Module -10 Concept of Tunnel Diode, LED, Photodiode.	2 hours	10.1	Checking of Tunnel Diode, Led, Photodiode & Others by multimeter. Testing of Transister (3 Pin Package, 4 Pin Package) (Bipolar)	3 hours
10.2	Introduction of SMD transistor	2 hours	10.2	Testing of 6-RF transistors, field effect transistors,	6 hours
			10.3	Pin configuration, Checking of SMD transister by multimeters.	3 hours
11.1	Module -11 Types of coupling filter, Saw filter.	2 hours	11.1	Different types of IC. Introduction of 8-28 pin dual-in-line package. 20 to 124 pin package, line-pitch package and and BGA IC.	3 hours
11.2	Introduction of Oscillator, crystal Oscillator Freq. synthesizer.	2 hours	11.2	BGA IC Ball making by using BGA Kit.	3 hours
11.3	Introduction to Inductor-definition, unit, graphical symbol & various types of inductor.	2 hours	11.3	HF-SF inductor (NC Series, PA Series), HF multiplier chip inductor SM isolating interface, transformer & checking of coil & transformer.	6 hours
12.1	Module -12 Introduction of Phase locked loop ckt (PLL) & voltage control Oscillator (VCO)	2 hours	12.1	SMD component checking.	3 hours

Sl. No.	Theory	Time	Sl. No.	Practical	Time
12.2	Introduction of memory IC concept of EEPROM, RAM, ROMSRAM, VRAM.	2 hours	12.2	<ul style="list-style-type: none"> • Soldering and De-soldering IC by using HOT AIR GUN. • Demonstration on various types of switch, socket and connector • Checking switch connector, socket by meter. 	15 hours
13.1	Module - 13 Description of mobile phone block diagram.	2 hours	13.1	<ul style="list-style-type: none"> • Introduction of battery checking nickel cadmium, nickel hybride, lion-battery, faults of battery checking procedure of battery 	6 hours
13.2	Block diagram of RX Section.	1 hour	13.2	<ul style="list-style-type: none"> • Connect about liquid crystal display. 	3 hours
			13.3	<ul style="list-style-type: none"> • Concept of Segment display, dot-matrix display, character display. 	6 hours
			13.4	<ul style="list-style-type: none"> • Checking of Display circuit. 	3 hours
14.1	Module - 14 Block diagram - LNA, IFIC, CPU, Audio IC.	1 hour	14.1	<ul style="list-style-type: none"> • Demo on LNA IFIC, CPU 	12 hours
14.2	Block diagram of TX Section	1 hour	14.2	<ul style="list-style-type: none"> • Audio IC, 	
14.3	Block diagram of charging section.	1 hour	14.3	<ul style="list-style-type: none"> • Demo on TX Section 	
			14.4	<ul style="list-style-type: none"> • Demo on Charging section 	
15.1	Module - 15 Block diagram of power supply section	3 hours	15.1	<ul style="list-style-type: none"> • Demo on Power Supply section, logic control section, display section. 	12 hours
15.2	Block diagram of logic control section				
15.3	Block diagram of display section.				

Sl. No.	Theory	Time	Sl. No.	Practical	Time
16.1	Module - 18 Block diagram SIM card circuit section.	2 hours	16.1	<ul style="list-style-type: none"> • Circuit tracing-model 3315 • Demo on Vibrator Ckt. • Demon on LED Ckt. • Description. • Demo on Buzzer Ckt. 	15 hours
16.2	Concept of Buzzer circuit.	2 hours			
			17.1	Soldering and desoldering by using pin point solder iron.	9 hours
			17.2	Mobile phone voltage checking by using testing box.	9 hours
			17.3	Fault finding and trouble shooting from various section.	9 hours
			17.4	Fault finding and trouble shooting from various section.	9 hours
			17.5	Fault finding and trouble shooting from various section.	9 hours
			17.6	Internet connecting setting, Activate blue tooth.	9 hours
	TOTAL	67 hours			288 hours

ENTREPRENEURIAL INSTRUCTION

SL No.	Course Curriculum	Hours
1.	Brief idea on nature of small business management and Industrial Technical skill.	
2.	Preparation of schemes and vetting to Financial Institutions/ Lead Bank for obtaining loans.	
3.	Rules for setting up of business / production Unit.	
4.	Maintenance of Accounts; Labour Capital etc.	
5.	Man Management, Communication, Motivation.	
6.	Operational Management.	
7.	Market Survey.	
8.	Quality Control.	
9.	Visit to Industrial units for gathering idea to start the unit.	
10.	Choice of technology as per demand of local people of the District / State.	
11.	Knowledge of Sales Tax etc.	
12.	Brief idea for Registration of SSI, Trade License, Project Report, Proposal for loans etc.	
		Total 05