CERTIFICATE COURSE IN TV & MOBILE PHONE REPAIR & MAINTENANCE

- ➢ Course ID **: MSME/TVMO/001**
- ➢ Candidate Eligibility **: Pass Class 10th**
- ➢ No. of NOS (if QP) : UNDER PROCESS
- ➢ NSQF Level : **3**
- ➢ **Cost Category : 1**
- ➢ Course Duration **:**
  - ● **Technical Training at CTTC (Theory & Practical): 270 Hrs.**

Trainer Qualification and Work Experience:

Trainer Qualification: Degree in Electrical & Electronics Engineering.

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

Name and address of submitting body:

MSME TOOL ROOM – KOLKATA
(Central Tool Room & Training Centre)
Ministry of MSME , Govt. of India
Bonhooghly Industrial Area
Kolkata – 700108 , West Bengal
Ph: (033)25788769,25771068

Name and contact details of individual dealing with the submission
Name: Shri Kanakendu Das

Position in the organisation: Senior Manager-Trg.

Tel number(s): 9231897100

E-mail address: cttc@cal.vsnl.net.in / cttc-msme@gov.in

Qualification Title :	CERTIFICATE CIURSE IN TV & MOBILE PHONE MAINTENANCE
Qualification Code	MSME/TVMO/001

Nature and purpose of the : Qualification	Nature of the course is trade **Certificate Course.** The purpose of the qualification are • Learners who attend this qualification are competent to work on Different Types of Tablets, Feature phone, SMART Phone, Keypad phone, Led TV,LCD TV,PLASMA TV, IDTV,CURVED SMART TV with 3D Technology. • Qualified learners get employed into work. • People upgrade their skills and knowledge already in work. • People with vocational – professional skill access to the higher education courses. • Qualifying learners of this qualification would be able to get opportunity in particular sector to learn new skills to deal with technological change.
Body/bodies which will award the qualification	MSME TOOL ROOM – KOLKATA (Central Tool Room & Training Centre - Kolkata)
Body which will accredit providers to offer courses leading to the qualification	MSME TOOL ROOM – KOLKATA (Central Tool Room & Training Centre – Kolkata)
Body/bodies which will carry out assessment of learners	Examination Cell of MSME TOOL ROOM - KOLKATA
Occupation(s) to which the qualification gives access	Asst. Engineer / Service & Demonstration Engineer / Skilled worker in Mobile phones & TV / Entrepreneur.
Licensing requirements	NA
Level of the qualification in the NSQF	3

Anticipated volume of training/learning required to complete the qualification

1.5 Months / 45 Days.

Sr. No	Course Elements (Subject)	Daily Distribution
Module-1	- FEATURE Mobile phone Technical Class	66 Hrs.
Module-2	- LED,LCD & IDTV Technical Class	66 Hrs.
Module-3		66 Hrs.
Module-4	- TABLETS, SMART Phone Technical Class	66 Hrs.
Module-5	- PLASMA & Curved LED TV Technical Class -- Soft skills development & Empathy Classes	06 Hrs.
	Total	270 Hrs.

Entry requirements and/or recommendations	**Passed 8thclass / 10thclass / 12thclass / ITI / Diploma in any trade / Graduate.** **Minimum Age: No age limit**
Progression from the qualification	Qualifying trainee should obtain a MSME Approved certificate in "Mobile Phone & TV Repairing & Servicing" trade issued by MSME Tool Room Kolkata. This qualification shall enable the trainee to find employment on a skilled work in the fields of repairing & servicing of Mobile Phone & TV Industries. Having Scope to access to other qualification at the same level and at the next higher level. After completion of course the trainee can work as a Junior Engineer / Engineer / Senior Engineer /After 2 to 3 years of

		experience in service centres, the person can develop his own service centre as an entrepreneur.

SYLLABUS:

T:Theory   AV: Audio Video
P:Practical

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Chapter	Module	Topic	Description	Training Type
1	Introduction	About Samsung	Samsung Beginnings, History and About Samsung Electronics India, Company policies, reporting structure & knowledge of the company, Guidelines for CCE's.	T / AV
2	Basic Terminology	Introduction to Basic Electronics	About Electricity, Electronics	T
			What is Ohm's Law, What is Voltage, Current, resistance.	T
			Series circuit, Parallel circuit	T
		Identifying Electronics Components and Circuit Symbols	Resistor, Variable Resistor(Rheostat), Variable Resistor(Potentiometer), Variable Resistor(Preset),Capacitor, Polarized Capacitor, Variable Capacitor, Trimmer Capacitor, Diode, LED(Light Emitting Diode), Zener Diode, Photodiode, Transistor NPN, Transistor PNP, Phototransistor, Microphone, Earphone, Loudspeaker, Piezo Transducer, Amplifier, Aerial(Antenna), Voltmeter, Ammeter, Galvanometer, Ohmmeter, Oscilloscope, LDR, Thermistor	T

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Chapter	Module	Topic	Description	Training Type
3	Overview of Technologies	Network Technologies	What is FDMA (Frequency division multiple access), What is TDMA (Time division multiple access), What is CDMA (Code division multiple access), What is GSM (Global System for Mobile Communication), Comparison between CDMA (Code division multiple access) and GSM(Global System for Mobile Communication) technologies	T
		Technology Evolution	1G (First Generation), 2G(Second Generation), 3G (Third Generation), 4G(Fourth Generation)	T
		GSM (Global System for Mobile Communication) Overview	Services Provided By GSM	T
		GSM (Global System for Mobile Communication) Architecture	Mobile Station (MS), Base Station Subsystem (BSS), Network Switching Subsystem (NSS), Functions of Mobile Station (ME),Base Station Subsystem (BSS), Base Transceiver station (BTS), Base Station Controller (BSC), Network Subsystem (NS), Mobile Switching Center (MSC), Mobile Switching Center (MSC), Visitor Location Register (VLR), Authentication Center (AuC), Equipment Identity Register (EIR)	T

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Chapter	Module	Topic	Description	Training Type
3	Overview of Technologies	GSM (Global System for Mobile Communication) Working	Location Update, Call Originating, Call Terminating, Handoff, Intra -BSC Handoff, Inter-BSC Handoff, Inter-MSC Handoff	T
		GSM (Global System for Mobile Communication) Call Flow	Step by step call flow process in GSM(Global System for Mobile Communication)	T
		Voice Transmission process	General terms definitions like Sound, Frequency, Audio Signal, Transducer, Actuator, Combination Transducers, Microphone, Loud Speaker, Signal, Analog Signal, Digital Signal, Electronic Processor, Digital to Analog Converter (DAC) and Analog to Digital Converter (ADC), Power Amplifier, Frequency Converter	T
			Internal Process for Voice Conversion and Transmission	T
Test - 1				

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Chapter	Module	Topic	Description	Training Type
3	Overview of Technologies	Type of Wireless communication	Infrared (IR), Bluetooth (BT), Wireless Fidelity (Wi-Fi), Radio frequency (RF), Global Positioning System (GPS), Near field communication (NFC)	T/P
			About Near field communication (NFC), Difference between Near field communication (NFC) & Bluetooth (BT), Modulation in NFC, Operation modes in Near field communication NFC	T/P
4	Safety and Precautions	Electrostatic Discharge	Definitions of ElectroStatic Discharge (ESD), ElectroStatic Discharge Sensitive (ESDS), Electrostatic protected Area (EPA)	T
			What is ElectroStatic Discharge (ESD), Charge is generated all the time, How to observe ESD, Damage Criteria, ESD comparison with germs	T/P/AV
			Electrostatic Protected Area (EPA) Setup	T/P
			Methods of ESD Protection, Methods of Handling Printed Board Assembly (PBA), ESD Labels , first aid requirement, safety guidelines.	T/P
Test - 2				

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Chapter	Module	Topic	Description	Training Type
5	Basic Tools Identification & Function	Repairing Tools & Equipments	Soldering Iron, Soldering Station, PBA (Printed Board Assembly) Holder, Solder Wire, Thinner or PBA(Printed Board Assembly) Cleaner, Liquid Flux, Precision Screwdriver, Tweezers, Brush, Hot Air Blower, Magnifying Lamp, Mobile Opener, DC Power Supply, Desolder Wick, Cleaning Sponge, Multimeter, mobile dryer, window pressing pad etc.	T/P//AV
		ESD Tools & Equipments	Wrist Strap, Antistatic Hand Gloves, Antistatic Apron, Anti Static Bin, Antistatic Slipper, Antistatic Bag, Antistatic Mat	T/P
		Basics of Multimeter	About Multimeter, Rotary selector switch, Sliding switch, Probes, Display, COM Plug, VΩPlug, A Plug, DC Volt Range, DC Current Range, AC Volt Range, AC Current Range, Ohm Range, Frequency Range, Logic Range, Diode Range, Continuity.	T/P
		How to use Multimeter	Measuring AC Volt, DC Volt, DC Current, AC Current, Checking Continuity, Frequency & Logic	T/P
		Wristband Testing	ElectroStatic Discharge (ESD) Measurement of safe Wristband value using multimeter	T/P
		Electrical Ground Testing	Measurement of safe Electrical Grounding value using multimeter	T/P

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Chapter	Module	Topic	Description	Training Type
6	Types of TV's	Basic Overview	Types of TV's, Basic terms & technology related to TV	T
7	LCD TV	Technology Overview	What is LCD, History of LCD TV, Working Principle of LCD, What is CCFL, Features(CCFL), Advantages of LCD, Disadvantages of LCD, Key features of LCD TV, Wiring Layout of LCD TV, Major components	T/AV/P
		Disassembly Process	Assembling disassembling Process, Identification of parts	T/P
8	LED TV	Technology Overview	What is LED, LED BackLighting, Features of LED backlit LCD TVs, How LED technology is used in LCD TVs, Full-Array vs. Edge Lit, Energy Consumption, How LED TV works.	T/AV/P
		Disassembly Process	Assembling disassembling Process, Identification of parts	T/AV/P

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Chapter	Module	Topic	Description	Training Type
9	Plasma TV	Technology Overview	Basic Theory of Plasma, History of Plasma Display, Basic concept of Plasma, What is plasma, Inside a Plasma Display, How Plasma Displays Work, Advantages of Plasma TV, Disadvantages of Plasma TV	T/P
10	Plasma TV	Disassembly Process	Assembling disassembling Process, Identification of parts	P
Test – 2 (Module 5 - 10)				
11	Samsung Smart TV	Joy Series & Curved TV :Installation & features	TV Model Nomenclature , installation process of Joy Series LED TV's and features ,installation process for curved TV and features.	T/AV/P
		Making Connections & IIDM checklist	Menu options, I/O ports, Making connections, IIDM checklist, segment comparison, few '16 features	T/AV
		Troubleshoot & How to reduce repeat repairs	Check list for initial operation, Troubleshooting. :No Power & No Video, Symptoms related to T-Con, LVDS, Main boards of LED TV, customer education, Awareness on liquid log cases, importance of tool adherence	T/AV/P
Test – 3 (Module 11)				

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Chapter	Module	Topic	Description	Training Type
12	Types of Mobile Phone & its Features	About Mobile Phone & Features	Introduction to the Mobile Phone, Block Diagram of mobile phone	T/P/AV
			Introduction to the Basic Mobile Phone	T/P/AV
			Introduction To Dual SIM Mobile Phone	T/P/AV
			Introduction To Feature Mobile Phone	T/P/AV
			Introduction To Smart Mobile Phone	T/P/AV
		Introduction To Mobile Phone Sensors	What is Sensor, About Grip Sensor, Barometer Sensor, Accelerometer Sensor, Gyro Sensor, Magnetic Sensor, Proximity Sensor and Ambient Light Sensor (ALS), Hall sensor, UV sensor & fingerprint sensor.	T/P/AV
13		Basic settings & key features	Set up a Samsung Account, Set up a Gmail Account, Turning Wi-Fi On/Off, How to connect to a Wi-Fi network, Bluetooth Connection, Mobile Hotspot & Tethering, Swype & Voice command, Smart Manager, Smart Switch, Fingerprint Sensor, TV to Mobile, Screen Mirroring, Find my Mobile etc.	T/P

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Chapter	Module	Topic	Description	Training Type
14	Assembly & Disassembly Process	Disassembly Process	Basic Process of Disassembly, Required tools, How to open or disassemble a mobile cell phone	T/P/AV
		Assembly Process	How to Assemble a mobile cell phone	
15	Soldering & Desoldering process	Important soldering tips	Tools required ,Cleanliness , Soldering Precautions	T/P
		Soldering Process	How to Solder Through-Hole Components	T/P
			How to Solder Surface-Mount Components	T/P
		Desoldering Process	How to remove component efficiently, Tips for removing components, IFC Soldering Process	T/P
Test - 3				
16	Troubleshooting	Basic Inspection /Hardware/Software Handling Procedures	Physical Inspection	T/P/AV
			Warranty Void	T/P/AV
			Test using codes	T/P/AV

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Chapter	Module	Topic	Description	Training Type
17	Skills	Communication & Professional skills	Optional skills, checkpoints for OJT, Interaction with supervisor.	T
Test – 4 (Module 12 - 14)				
Final Theory (1 hr.)			**Final Practical**	

Minimum pass mark (COMPETENT): 55% for each theory subject and 55% for practical; Failed candidates are entitled to one more chance to clear the paper.
RESULTS AND CERTIFICATION: Successful trainees will be awarded the Certificates by **MSME TECHNOLOGY CENTRE**.

ASSESSMENT EVIDENCE: Assessment evidence comprises the following components document in the form of records:

- Examination - Answer sheet of assessment
- Viva –voce   ;   Class test
- Progress chart   ;   Attendance and punctuality
- Assignment of practical exercise job   ;   Practical Exam for each module

Evaluation Criteria for MSME Students Certification for CERTIFICATE CIURSE IN TV & MOBILE PHONE MAINTENANCE Course				
Date Prepared: 15-Nov-15, Date Updated: 06-Jan-17				
Sr. No.	**Evaluation Topic**	**Method**	**Sub evaluation criteria**	**Marks**
1	Theoretical	Written test	**Final certification test**	20
			Product-Module wise test	10
2	Practical	Practical test	**Product-Module wise Practical test**	50
3	Behavioral	Attendance tracking	**Attendance**	10
		Instructor Observation	**Discipline**	5
			Daily uniforms	
			Participation in class activities	
			personal hygiene	
			Communication Skills	5
			Speaking skills	
			Listening skills	
			courteous communication	
			Interaction with others	
Total				100

Title of Component: **"CERTIFICATE CIURSE IN TV & MOBILE PHONE MAINTENANCE"**
Assessable outcomes:

Means of assessment :
Assessment comprises the following components: • Answer sheet of assessment • Written Class Test • Viva-voce • Attendance and punctuality • Practical Exam for each module
Pass (Competent)/Fail (Not yet Competent): 50% for each Theory subject and 50% for Practical. **Failed candidates (not yet competent) are entitled to one more chance to clear the paper in order to be competent.**