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MOBILE PHONE TECHNICIAN

CBT Curriculum

National Vocational Certificate Level 1

Version 1 - November 2019

NAVTTC

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Introduction

Mobile technology has become one of the fastest growing technologies in the world. Today people use mobile phones to stay in touch with friends and family, to share stories and photographs in social media, and to carry out financial transactions. This widespread ownership and use of mobile phones have been creating need of trained professionals in the field of Mobile Phone Repairer. The course development will address the need of professionals who can repair Mobile Phones.

Based upon demand of the concerned industry, competency-based qualifications for Mobile Phone Technician are developed under the National Vocational Qualification Framework (NVQF) (Level 1 to 4). These qualifications mainly cover the competencies along with the related knowledge, skills and attitude which are essential for getting a job or self-employment. The qualifications are also in line with the vision of Pakistan's National Skills Strategy (NSS), National TVET Policy and National Vocational Qualification Framework (NVQF).

The National Vocational & Technical Training Commission (NAVTTC) has approved the Qualification Development Committee (QDC). The QDC consists of experts from the relevant industries from different geographical locations across Pakistan and academicians who were consulted during the development process to ensure their input and ownership of all the stakeholders. The National Competency Standards could be used as a reference document for the development of curricula to be delivered by the training institutions.

Course objective is to prepare a student/trainee who can be able to assembly, disassemble, Service & checking components of mobile Phones PCB (printed circuit broad) with using proper tools. On completion of the course he/she will be able to diagnose & repair any kind of mobile phone's software & hardware faults and can easily Read mobile phone block & layout Diagrams diagnose problems and repair it by using proper tips and techniques.

On successful completion of the course the student will be able to join as a customer support executive in any existing mobile service center & repairing Center or can establish his/her own business of mobile phones.

Purpose of the Training program:

Purpose of the training is to provide skilled manpower to improve the existing capacity of Electronics sector. This training will provide the requisite skills to the trainees to Repair Mobile Phones. It will enable the passed out to meet the challenges in the field of Mobile phone industry. Furthermore, it would augment endeavours of TVET sector to prepare such a work force of skilled labour who would be globally acceptable

The core purpose of this qualification is to produce employable mobile phone technician who could repair mobile phones according to national and international standards. In addition, this qualification will prepare unemployable youth to employee in electronics sector.

Overall objectives of Training program:

The Mobile Phone Technician qualifications level 1- 4 consists of both the theoretical and practical details required to repair a Mobile phone. The main objectives of the qualification are to prepare a student/trainee who can be able to assembly, disassemble, Service & checking components of mobile Phones PCB (printed circuit broad) with using proper tools

Competencies to be gained after completion of course:

The detail of the competency standards included in this qualification are given below:

National Vocational Certificate level 1, Mobile Phone Technician in (Electronics Sector)

1. Comply with Work Health and Safety Policies
2. Obey the Workplace Policies and Procedures
3. Follow Basic Communication Skills (General)
4. Operate Computer Functions (General)
5. Maintain Tools and Equipment
6. Measure Basic Electrical & Electronics Units in Series/Parallel Circuits.

Job opportunities:

The Pass outs of this course may find job / employment opportunities in the following areas:

- Work as Mobile Phone Technician (Helper – Level 1)
- Work as Mobile Phone Technician (Assistant – Level 2)
- Work as Mobile Phone Technician (Technician – Level 3)
- Work as Mobile Phone Technician (Supervisor – Level 4)

Entry level of Trainees:

The entry for National Vocational Certificate level 1, in Mobile Phone Technician are given below:

Title	Entry requirements
National Vocational Certificate level 1, "Mobile Phone Technician" in (Electronics Sector)	Entry for assessment for this qualification is open. However, entry into formal training institutes, based on this qualification is open

Minimum qualification for Teachers:

- Should have completed intermediate or equivalent qualifications
- Must be a holder of G II certificate or Three years DAE in Electronics Technology.
- Must be able to communicate effectively.
- Must have at least 4 years teaching experience.

Recommended Trainer/Trainee ratio

Generally, Trainer/Trainee ratio for CBT&A courses is 1:20

Medium of instruction:

Urdu, local language.

Duration of the course:

The proposed curriculum is composed of **06** modules that will be covered in **350** learning hours. It is proposed that the course may be delivered in **Three months** period. The distribution of contact hours is given below:

Total - 350 hours.

Theory - 70 hours (20%)

Practical - 280 hours (80%)

Sequence of the modules

Following is the structure of the course:

NVQF Level	Module #	Title	Category	Theory (hours)	Practical (hours)	Total (hour)	Credits hours	Total Credit Hours
1	A	Comply with Work Health and Safety Policies	Generic	**06**	**24**	**30**	03	**35**
	B	Obey the Workplace Policies and Procedures	Functional	**04**	**16**	**20**	02	
	C	Follow Basic Communication Skills (General)	Technical	**10**	**40**	**50**	05	
	D	Operate Computer Functions(General)	Generic	**10**	**40**	**50**	05	
	E	Maintain Tools and equipment	Technical	**10**	**40**	**50**	05	
	F	Measure Basic Electrical & Electronics Units in Series/Parallel Circuits.	Technical	**30**	**120**	**150**	15	
			TOTAL	**70**	**280**	**350**	**35**	**35**
			Percentage.	**20%**	**80%**			

Overview of the Curriculum for Mobile Phone Technician:

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of Modules
Module A: **Comply with Work Health and Safety Policies** **Aim:** After completing this module, the learner will be able to know skills and knowledge required to apply general work health and safety requirements in the workplace. Communicate work and health safety assess at work place. It describes generic work health and safety responsibilities applicable to employees without managerial or supervisory responsibilities.	**LU-1:** Work safely at work place **LU-2:** Communicate work health and safety (WHS) assess at work place **LU-3:** Minimize risks to personal safety at work place **LU-4:** Minimize risks to public safety	**06**	**24**	**30**
Module B: **Obey the Workplace Policies and Procedures** **Aim:** After completing this module, the learner will be able to obey the workplace personal appearance and hygiene, follow work ethics, Demonstrate the workplace behavior, Communicate the workplace policy and procedure and review the implementation of workplace policy and procedures.	**LU-1:** Obey the workplace personal appearance and hygiene **LU-2:** Follow work ethics **LU-3:** Demonstrate the Work place behaviours **LU-4:** Communicate workplace policy & procedures **LU-5:** Review the implementation of workplace policy & procedures	**04**	**16**	**20**

Module C: **Follow Basic Communication Skills (General)** **Aim:** After completing this module, the learner will be able to listen attentively, develop non-verbal communication, and identify communication barriers, interview preparation for job and different communication platforms in the workplace and throughout your career.	**LU-1:** Adopt Effective listening to Skills **LU-2:** Develop Nonverbal communication with peers **LU-3:** Prepare for Interview to get a job **LU-4:** Use communication platform at workplace **LU-5:** Identify communication barriers to improve interpersonal skills	**10**	**40**	**50**
Module D: **Operate Computer Functions (General).** **Aim:** After completing this module, the learner will be able to have skills and knowledge required to setup a computer system, organize files in folders, and shutdown a computer system.	**LU1.** Set up the computer for use **LU2.** Organize files in folder **LU3.** Shut down computer system	**10**	**40**	**50**
Module E: **Maintain Tools and Equipment** **Aim:** This module covers the skills and knowledge required for identification and maintenance of tools and equipment, calibration techniques of measuring instruments ,Insulation of tools /equipment and their inventory management.	**LU1.** Arrange Tools & Equipment **LU2.** Maintain Tool Kit **LU3.** Insulate Tools and Equipment **LU4.** Calibrate measuring instruments **LU5.** Manage Inventory of tools and equipment.	**10**	**40**	**50**

Module F: **Measure Basic Electrical & Electronics Units in Series/Parallel Circuits.** Aim: This module covers the skills and knowledge required to Measure Electrical Current and Resistance, Perform Voltage Measurement, Calculate Electrical Power, Perform capacitance and inductance measurement/Test, Perform Low voltage(step-down) transformer test and Construct DC regulated power supply circuit	**LU1.** Measure Electrical Current and Resistance **LU2.** Perform Voltage Measurement **LU3.** Measure Electrical Power **LU4.** Perform Capacitor and Inductor measurement/Test. **LU5.** Perform Low voltage transformer test **LU6.** Construct rectifier circuit and DC regulated power supply	**30**	**120**	**150**
	TOTAL	**70**	**280**	**350**

Module E: Maintain Tools and Equipment

Objective: This module covers the skills and knowledge required for identification and maintenance of tools and equipment, calibration techniques of measuring instruments ,Insulation of tools /equipment and their inventory management.

Duration: 50 Hours **Theory: 10 Hours** **Practice: 40 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Arrange Tools & Equipment	• Identify tools and equipment • Prepare list of tools and equipment as per requirement • Check specifications of measuring Instruments • Collect tools and equipment from store	• Identification of tools and equipment • Specification/ranges of equipment for example volt meter Ampere meter • Use of tools and equipment	Theory: 02 Hrs. Practical – 08 Hrs. Total – 10 Hrs.	• Hand tools • Measuring tools	Class Room and workshop
LU2. Maintain Tool Kit	• Check Physical Condition of Tools & Equipment before use • Perform preventive maintenance as per standards • Perform corrective maintenance (If required) • Clean Tools and equipment after use	• Knowledge of preventive/ corrective maintenance • Preventive/corrective maintenance Techniques • Cleaning procedure of Tools and equipment • Storing techniques of tools in the tools kit	Theory – 02 Hrs. Practical – 08 Hrs. Total – 10 Hrs.	• Hot gun • Smoke Absorber • Hot air blower • Hot plate display separator • Freezer for separation of OLED • Flex binding machine • Mini electric grinder kit (EMC) • UV lamp	Class Room and workshop

	• Place tools and equipment at appropriate place			• Glass laminating machine • De-bubbler machine • PCB Owen	
LU3. Insulate Tools and Equipment	• Check insulation of tools and equipment • Ensure insulation of tools and equipment as per standards	• Techniques for insulation of tools and equipment	Theory – 02 Hrs. Practical – 08 Hrs. Total – 10 Hrs.	Nil	Class Room and workshop
LU4. Calibrate measuring instruments	• Check calibration status of the measuring tools • Perform calibration of measuring tools as per standards • Record Calibration test results	• Identification of measuring instruments for calibration • Techniques for Calibration of measuring instruments for example Voltmeter, Ampere meter multi meter • Importance of test results recording	Theory – 02 Hrs. Practical – 08 Hrs. Total – 10 Hrs.	Nil	Class Room and workshop
LU5. Manage Inventory of tools and equipment.	• Check number of tools and equipment as per record • Report for faulty tools and equipment	• Identification of faulty tools	Theory – 02 Hrs. Practical – 08 Hrs. Total – 10 Hrs.	**Nil**	Class Room and workshop

	• Generate demand for replacement of defective tools and equipment • Maintain record of all tools and equipment.	• Demand generation for provision/replacement of tools • Inventory management techniques			

Module F: Measure Basic Electrical & Electronics Units in Series/Parallel Circuits.

Objective: This module covers the skills and knowledge required to Measure Electrical Current and Resistance, Perform Voltage Measurement, Calculate Electrical Power, Perform capacitance and inductance measurement/Test, Perform Low voltage(step-down) transformer test and Construct DC regulated power supply circuit

Duration: 150 Hours **Theory: 30 Hours** **Practice: 120 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Measure Electrical Current and Resistance	• Arrange tools, material and equipment for measurement of electric current • Construct series arrangement of resistances in a closed loop circuit • Construct Parallel arrangement of resistances in a closed loop circuit • Perform measurement of Electrical resistance in a series / Parallel circuit • Perform measurement of Alternating current in a series / Parallel circuit • Perform measurement of Direct Current in a series / Parallel circuit	• Knowledge of Resistance and current of electrical/electronic circuits • Construction techniques of parallel and series close loops circuits • Types of multi-meters • Measuring techniques of current and resistance • Knowledge of Ohm's Law	Theory-08 Hrs. Practical-30 Hrs. Total- 38 Hrs.	Nil	Class Room and workshop

LU2. Perform Voltage Measurement	• Arrange tools, material and equipment for measurement of Voltage • Perform measurement of AC Voltage in a series / Parallel circuit • Perform measurement of DC Voltage in a series / Parallel circuit	• Identification of measuring tools and equipment. • Knowledge of AC and DC voltage • Use of multi-meter for AC and DC voltage measurements • Knowledge Voltage Drop	Theory- 06 Hrs. Practical-18 Hrs. Total- 24 Hrs.	Nil	Class Room and workshop
LU3. Calculate Electrical Power	• Calculate Electrical Power for Parallel circuit • Calculate Electrical Power for series circuit	• Knowledge of Electrical Power and Energy • Techniques for calculating electrical power	Theory- 03 Hrs. Practical-16 Hrs. Total- 19 Hrs.	Nil	Class Room and workshop
LU4. Perform capacitance and inductance measurement/Test	• Arrange tools, material and equipment for measurement of Capacitance / Inductance • Perform measurement of Capacitance/ Inductance with LCR meter • Perform Open circuit / Short Circuit test for the Capacitor	• Knowledge of capacitance and inductance. • Types of capacitor and inductors • Techniques for measuring of capacitance and inductance	Theory- 02 Hrs. Practical-12 Hrs. Total- 14 Hrs.	Nil	Class Room and workshop

LU5. Perform Low voltage(step-down) transformer test	• Arrange tools, material and equipment for the transformer test • Perform Open circuit / Short Circuit test for the Low voltage Transformer	• Knowledge of transformer • Types of transformer • Testing techniques of open/short circuit low voltage(step-down) transformer	Theory- 03 Hrs. Practical-14 Hrs. Total- 17 Hrs.	Nil	Class Room and workshop
LU6. Construct DC regulated power supply circuit	• Arrange tools, material and equipment required for construction of the Rectifier circuit • Construct half wave / Full wave rectifier circuits • Construct bridge Rectifier circuit • Measure Output voltage of rectifier with Oscilloscope. • Construct 5 volt regulated DC power supply. • Measure Output voltage of regulated DC power supply with Oscilloscope.	• Knowledge of conductor, semi-conductor, insulator, diode and transistor • Types of diode and transistor • Techniques for the Construction of rectifier circuit • Types of rectifier circuits • Basic functions of Oscilloscope • Knowledge of regulated power supply • Measuring techniques of output voltage of rectifier circuit	Theory- 08 Hrs. Practical-30 Hrs. Total- 38 Hrs.	conductor, semi-conductor, insulator, diode and transistor	Class Room and workshop

List of Personal Protective Equipment

(FOR A CLASS OF 25 STUDENTS)

Name of Trade	**Mobile Phone Technician**	
Duration of Course	**3 Months**	
Sr. #	Description	Quantity
1.	Safety gloves,	30
2.	Appropriate safety glasses,	30
3.	Breathing apparatus,	30
4.	Fire extinguishers,	30
5.	Fire blankets,	30
6.	Respirators, masks,	30
7.	Fire hoses,	04

Complete List of Tools, Equipment, Machines and Consumables

Tools

S#	Description	Quantity
1.	Precision screw driver	25
2.	Screw driver kit	25
3.	Tweezers	25
4.	Brushes	25
5.	Blade cutter	25
6.	Nose cutter	25

7.	Point cutter	25
8.	Cutter plier	25
9.	Long Nose plier	25
10.	PCB holder	25
11.	Hard tweezers	25
12.	Magnifying glass	25
13.	Opener's kit	25
14.	Suction openers	25
15.	Magnifying lamp	25
16.	Wrist wire	25
17.	Clipping tools(clips)	25
18.	seizer	25
19.	Steel wire	25
20.	Rubber pads	25
21.	Glass openers	25

Equipment for Hardware

S#	Description	Quantity
1.	Digital Multi meter	25
2.	Oscilloscope	5
3.	Soldering Iron	25
4.	Soldering Station/SMD work station	25
5.	Digital variable Power supply	5
6.	B. G. A. Kit	25
7.	Ultrasonic PCB Cleaner	5

Equipment for Display repair

S#	Description	Quantity
1.	Hot gun	25
2.	Smoke Absorber	5
3.	Hot air blower	5
4.	Hot plate display separator	5
5.	Freezer for separation of OLED	5
6.	Flex binding machine	5
7.	Mini electric grinder kit (EMC)	5
8.	UV lamp	5
9.	Glass laminating machine	5
10.	De-bubbler machine	5
11.	PCB Owen	5

Equipment for Software

S#	Description	Quantity
1.	Octopus Box (with cable Samsung + LG)	5
2.	J Tag	5
3.	EFT Dongle	5
4.	CM2 Dongle	5
5.	Sigma Key	5
6.	ATF Dongle	5
7.	ZXW (Hardware) Schematic diagram Dongle	5

Consumables

S#	Description	Quantity
1.	Soldering wire	25 rolls
2.	Gloves	25 Nos
3.	Jumper wire	
4.	IC Paste	
5.	Solder paste	
6.	Cleaning sponge	25
7.	Paste flux	
8.	Cleaning cloth	
9.	Chemical for washing mobile phone	
10.	UV Gum	
11.	Double tape	
12.	Heat resistance tape	
13.	Adhesive Glue	
14.	Thinner	
15.	CTC	
16.	Shiner	
17.	Rubber adhesive glue	
18.	WD-40	
19.	Thinner	
20.	Cotton	

List of Stationary

S#	Description	Quantity
1.	Handbooks	5
2.	Design books	5
3.	Pencils	30
4.	Rubber	30
5.	Sharpeners	30
6.	Paper Cutter	5
7.	Seizers	5
8.	Colors	5 each color (Read, Green, Yellow, Blue, white and Black)
9.	White charts	50 Nos
10.	Brown sheets	100 Nos
11.	White board markers	5 Dozen
12.	Permanent markers	2 Dozen
13.	File cover and files	50 Nos.

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