

**Diploma in  
Telecom Basics  
(Mobile Repairs)**



# Diploma in Telecom Basics (Mobile Repairs)

## 1 Year Diploma Course

Document History - Versions			
Sl.No	Description	Version	Date
1	Diploma in Telecom Basics (Mobile Repairs)	1.0	14.11.14
2	Diploma in Telecom Basics (Mobile Repairs)	2.0	25.11.14

### Course Focus:

This course is aimed at training candidates for the job in the sector of mobile handset repairs, in the telecom industry. It trains the candidates to perform handset repairs (mobile phones and tablets) including hardware and software components.

### Objectives of the Course:

#### The specific objectives are:

- Understand the basics of how electronic instruments work
- Understand the functioning and components of mobile phones (both feature phones and smart phones)
- Efficiently diagnose hardware faults in mobile phones and rectify them using appropriate repair techniques
- Efficiently diagnose hardware and software faults in tablets and rectify them using appropriate repair techniques
- Enhance communication and work effectively within a team

### Curriculum:

#### Name of Papers

#### Vocational Theory Papers

- Electronics Basics
- Introduction to Mobile Networks
- Introduction to Mobile Phones
- Handset Repair (Feature Phones and Smart Phones) – Hardware
- Handset Repair (Feature Phones and Smart Phones) – Software
- Tablet Repair

#### Vocational Practical Papers

- Practical Paper 1 (based on)
- Practical Paper 2 (based on)

#### General Papers

- Communication Skills
- Life Skills



**Theory Syllabus:**

Paper Name	Topics Covered	Key Outcomes	Credits
Electronics - Basics	Logic Gates	Fundamental knowledge of electronics	3
	Numbering Systems (binary octal, hexa decimal)		
	Circuits and their Types		
	Introduction to Resistors, Semi-Conductors, Transistors, Diodes, Rectifiers & Filter Circuits		
	Triode, Fiber Optics , Microwave Oscillators, Modulation Techniques and Digital Modulation		
	Multimeter and their Usage		
	Introduction to Cell and Battery		
	Details of: - Transmission & Receiving System - Microwave link - Satellite Communication - Frequency multiplier - Antenna, UHF & VHF		
Introduction to Mobile Networks	Concept of Cellular Network Communication Through Cellular Network	Introduction to the work principles of mobile networks	3
	Introduction to Mobile Networks		
	Networking, Types Of Networking and Networking Theorem		
	Network Capabilities		
	Mobile Switching Centre, Call Processing, Operation and Maintenance Support		
	Home area and Roaming, Handoff		
Introduction to Mobile Phones	Mobile technologies like GSM & CDMA	Knowledge of functioning and components of mobile phones (both feature phone and smart phones)	3
	Feature Phones: - Architecture - Functionality - Features		
	Smart Phones: - Block Diagram of Apple, Android, Windows and Blackberry Phone - Introduction to Mobile Software: Operating Systems (Android, Windows, iOS and BB OS) - Introduction to Mobile Hardware: Introduction to Hardware Architecture		
	Testing of various parts with multimeter		
	Touch Screen Functioning		
Handset Repair (Feature Phones and Smart Phones) – Hardware	Functionality of hardware components in a handset like chipsets, processor, screen, touchpad etc.	Skills to effectively diagnose hardware faults in mobile phones and rectify them using	3
	Procedure to dismantle and assemble handset and handset components		
	Fault diagnosis		

Paper Name	Topics Covered	Key Outcomes	Credits
	Tools and testing equipment (multimeters, frequency generators etc.) available and their functionality Techniques for Troubleshooting Network Issues Techniques for Troubleshooting Audio Issues Techniques for Troubleshooting Charging Issues Techniques for Troubleshooting Power on failure Electrostatic discharges (ESD) hazards and their effect on electronic components Post repair activity to ensure optimal performance Report and document the status at the end of repair activity	appropriate repair techniques	
Handset Repair (Feature Phones and Smart Phones) – Software	Handset specific operating system, their versions and user interface Undertake fault diagnosis on software components Software applications used in feature and smart phones Formatting and Installing of OS Range of handset software related problems and their possible solutions Handset manufacturer specific technical database for optimal rectification options Tools and diagnostic equipment for software repair Standard fault-finding (troubleshooting) techniques Standard software testing techniques Standard repairing process	Skills to effectively diagnose software faults in mobile phones and rectify them using appropriate repair techniques	3
Tablet Repair	Functional Differences between Computer, Laptop, Smartphone and Tablet Basic Circuit Board / Motherboard Introduction Components of Motherboard of Tablets Peculiarities of OS and User Interface in Tablets Functionality of Hardware Components in a Tablet like Touchscreen, LCD, Screen, Camera, Speakers and PCB Formatting and Installing Of OS and Drivers and Application Installation in Tablets Tablet Assembling and Disassembling Formatting and Installing Of OS in Tablets Tools and Diagnostic Equipment for Software Repair in Tablets Range Of Tablet Related Problems and Their Possible Solutions (Touch Panels, Audio, Cases, Camera, Power Failure etc.)	Skills to effectively diagnose hardware and software faults in tablets and rectify them using appropriate repair techniques	3

**Practical Syllabus:**

Paper Name	Topics Covered	Credits
Practicals based on Theory Papers 1-3	Block Diagram of Apple, Android, Windows and Blackberry Phone	6
	Hardware Architecture	
	Cleared Circuits	
	Logic Gate ICS	
	Diodes	
	Multimeter Usage	
	Operating Systems (Android, Windows, iOS and BB OS)	
	Touch Screen Functioning	
Practicals based on Theory Papers 4-5	Procedure to dismantle and assemble handset and handset components	6
	Techniques for Troubleshooting Network Issues	
	Techniques for Troubleshooting Audio Issues	
	Techniques for Troubleshooting Charging Issues	
	Techniques for Troubleshooting Power on failure	
	Standard fault-finding (troubleshooting) techniques	
	Standard software testing techniques	
	Tablet: Assembling – Disassembling: - Voltage measurement in Tablet PC - Troubleshooting power on failure in Tablet - Replacing Touch panel on Tablet - Troubleshooting No audio - Installing O.S. in Tablet - Troubleshooting Tablet Repair Case - Installation of Power Interface Unit - Installation of Switched Mode Power Supply - Installation of Battery Bank - Installation of DG Set	

**General Papers Syllabus:**

Paper Name	Topics Covered	Key Outcomes	Credits	
Communication Skills	<b>Communication: What is it?</b>	Basics of Communication	3	
	Purpose of Communication			
	Elements of Communication			
	Communication Types: Verbal and Non Verbal			
	Principles of Communication			
	<b>Effective Communication</b>	Guidelines for effective communication		
	Guidelines for Effective Communication			
	Barriers in Effective Communication			
	Listening Skills: - Listening and Understanding - Traits of a good or bad Listener	Skills for improving speaking skills in a work environment		
	<b>Speaking Skills</b>			
	Definition			
	Components: - Punctuation - Articulation			
	Public Speaking			
	Knowing What You Want To Say			
	Speaking to Team mates			
	Telephone etiquette			
	<b>Reading Skills</b>			Importance of reading in communication
	Definition of Reading			
	Levels of Reading			
	Requirements of Reading			
	Techniques of Reading	Skills for improving written communication skills in a work environment		
	<b>Writing Skills</b>			
	Writing and Expressing			
	Sentences and Phrases			
	Parts of Speech			
	Use of Articles			
	Constructing Meaningful Sentences			
Writing Emails	Skills to communicate between team members during a discussion			
<b>Team Communication</b>				
Group Participation				
Formal and Informal Groups				
Open and Closed Groups				
Influences on group performance				
Guidelines for group discussion				
Adopting an Open Attitude	Skills to improve presentation skills in the work environment			
<b>Presentation Skills</b>				
Making Effective Presentations				
Analysing audience and locale				
Organizing content and preparing an outline				



Paper Name	Topics Covered	Key Outcomes	Credits
Life Skills	<b>Self-Awareness:</b> - Recognition of Self-character - Self-confidence - Self-worth - Self-esteem - Self-development - Self-assessment	Skills for self-awareness	3
	<b>Empathy and its Importance:</b> - Importance of relationship - Understanding ourselves and others - Effective communication for good relationship - Presentation of thoughts and ideas - Tackling issues and need fulfilment - Learning and respecting value system	Understanding the importance of empathy and its use in a work environment	
	<b>Manners:</b> - Importance of Good manners - Greetings - Introducing people - Talking etiquette	Awareness and importance of good manners	
	<b>Decision Making:</b> - Analysing Information - Constructive Decision Making - Action for Decision Making	Skills to take decisions in a work environment	
	<b>Problem Solving:</b> - Identifying Problems - Analysing - Prioritizing - Solving Problem	Steps to solve work related problems	
	<b>Creative Thinking:</b> - Generating new ideas - Flexible Perspective	Understanding the concept of creative thinking	
	<b>Work Ethics :</b> - Punctuality - Dependability - Efficiency - Discipline	Importance of work ethics	
	<b>Stress and Time Management:</b> - Recognizing the sources of Stress - Effects of Stress - Managing Stress - Importance of Time Management	Skills to manage stress. Steps for effective time management	
	<b>Coping with Emotions:</b> - Influence of Emotion on Behaviour - Self-motivation and Self-satisfaction - Coping with Anger - Coping with Fear	Understanding the importance of coping with emotions in work environment	

**Topic Mapping with QP-NOS Handset Repair Engineer (Level II)**

Paper Name	Topics Covered	NOS Mapping
Electronics - Basics	Logic Gates	
	Numbering Systems (binary octal, hexa decimal)	
	Cleared Circuits and their Types	
	Introduction to Resistors, Semi-Conductors, Transistors, Diodes, Rectifiers & Filter Circuits	
	Triode, Fiber Optics , Microwave Oscillators, Modulation Techniques and Digital Modulation	
	Multimeter and their Usage	
	Introduction to Cell and Battery	
	Details of: - Transmission & Receiving System - Microwave link - Satellite Communication - Frequency multiplier - Antenna, UHF & VHF	
Introduction to Mobile Networks	Concept of Cellular Network Communication Through Cellular Network	
	Introduction to Mobile Networks	
	Networking, Types Of Networking and Networking Theorem	
	Network Capabilities	
	Mobile Switching Centre, Call Processing, Operation and Maintenance Support	
	Home area and Roaming, Handoff	
Introduction to Mobile Phones	Mobile technologies like GSM & CDMA	
	Feature Phones: - Architecture - Functionality - Features	
	Smart Phones: - Block Diagram of Apple, Android, Windows and Blackberry Phone - Introduction to Mobile Software: Operating Systems (Android, Windows, iOS and BB OS) - Introduction to Mobile Hardware: Introduction to Hardware Architecture	
	Testing of various parts with multimeter	
	Touch Screen Functioning	
Handset Repair (Feature Phones)	Functionality of hardware components in a handset like chipsets, processor, screen, touchpad etc.	TEL/N2203: Perform handset repair -hardware

Paper Name	Topics Covered	NOS Mapping
and Smart Phones) – Hardware	Procedure to dismantle and assemble handset and handset components	
	Fault diagnosis	
	Tools and testing equipment (multimeters, frequency generators etc.) available and their functionality	
	Techniques for Troubleshooting Network Issues	
	Techniques for Troubleshooting Audio Issues	
	Techniques for Troubleshooting Charging Issues	
	Techniques for Troubleshooting Power on failure	
	Electrostatic discharges (ESD) hazards and their effect on electronic components	
	Post repair activity to ensure optimal performance	
	Report and document the status at the end of repair activity	
Handset Repair (Feature Phones and Smart Phones) – Software	Handset specific operating system, their versions and user interface	TEL/N2204: Perform handset repair – software
	Undertake fault diagnosis on software components	
	Software applications used in feature and smart phones	
	Formatting and installing of OS	
	Range of handset software related problems and their possible solutions	
	Handset manufacturer specific technical database for optimal rectification options	
	Tools and diagnostic equipment for software repair	
	Standard fault-finding (troubleshooting) techniques	
	Standard software testing techniques	
	Standard repairing process	
Tablet Repair	Functional Differences between Computer, Laptop, Smartphone and Tablet	TEL/N2205: Tablet Repair – Hardware & Software
	Basic Circuit Board / Motherboard Introduction	
	Components of Motherboard of Tablets	
	Peculiarities of OS and User Interface in Tablets	
	Functionality of Hardware Components in a Tablet like Touchscreen, LCD, Screen, Camera, Speakers and PCB	
	Formatting and Installing Of OS and Drivers and Application Installation in Tablets	
	Tablet Assembling and Disassembling	
	Formatting and Installing Of OS in Tablets	
	Tools and Diagnostic Equipment for Software Repair in Tablets	
	Range Of Tablet Related Problems and Their Possible Solutions (Touch Panels, Audio, Cases, Camera, Power Failure Etc)	

