



TELECOM

Handset

(Repair Engineer)

(Participants Manual)

REFERENCE ID: TEL/Q2201





PREFACE

India's telecom sector underwent a high pace of market liberalization and growth since the 1990s and now has become the world's most competitive and one of the fastest growing telecom markets.

Telecommunication has supported the socioeconomic development of India and has played a significant role to narrow down the rural-urban digital divide to some extent. It also has helped to increase the transparency of governance with the introduction of e-governance in India. The tremendous user demand led growth of the telecom sector has created enormous prospect for job growth in the country. Some of the Job Roles in the sector which are suitable for entry level job seekers are: customer care executive (at the call centre, relationship centre and repair centre), in-store promoter, field sales executive, etc. at the sales and customer care segments. In the manufacturing segment job prospects are in application/product development, application testing, system administration, network planning, data networking, BSS engineering, mobile repairing, mobile application development and value-added services, etc.

Welcome to this course on mobile cell phone repair and maintenance. A mobile cell phone is a hand held mobile device that can perform several communication functions. 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. India saw the fastest growth in new mobile-phone connections with 18 million net additions in the third quarter of 2014, followed by China with 12 million new additions, according to a report by Swedish mobile network equipment maker Ericsson.

This widespread ownership and use of mobile phones has created a need for professionals who can repair and service mobile phones. This course has been developed to address that need. The course targets people who would like to start and run a mobile repair and servicing business. By the end of this course you should be able to disassemble and assemble a mobile phone, diagnose the problem, service and repair a mobile phone with the help of proper tools and instruments.

This Student Handbook will help you learn and practice the skills required to become a Handset Repair Engineer. You can highlight the important points and make notes too. The more you interact with the handbook, the more you learn.

It contains Activities to be performed in class and at home as well as Study Material for you to read.

This handbook will help you to learn better during the course and be useful later as a reference.

You will find this course material useful both for studying and as future reference. We welcome your feedback on any issue relating to this course and wish you all the best. Happy Learning!



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Unit 1 - Introduction to the Programme

Learning Objectives

- Explain overview of the program
- Define basic elements of a telecommunication system
- Explain the job description and personal attributes of a handset repair engineer
- Focus on Personality Development & Self Grooming
- To integrate Organizational Standards and Policies in your daily conduct

Objectives of the Programme

Upon completion of this course, you will be able to:

- Identify different types of mobile cell phones
- Recognise potential hazards in the repair of mobile cell phones
- Identify the parts of a mobile cell phone
- Use the correct hardware tools to repair mobile cell phones
- Assembly and disassembly a mobile cell phone
- Identify mobile cell phone faults and solve them

Introduction to Telecom Industry

Major sectors of the Indian telecommunication industry are telephony (includes mobile telephony), internet (includes broadband data) and television broadcasting. India's telecommunication network is the second largest in the world based on the total number of telephone users (both fixed and mobile phone).

The Telecom sector in the country, which is in an ongoing process of transforming into next generation network, employs an extensive system of modern network elements such as digital telephone exchanges, mobile switching centres, media gateways and signalling gateways at the core, interconnected by a wide variety of transmission systems using fibre-optics or Microwave radio relay networks.

The access network, which connects the subscriber to the core, is highly diversified with different copper-pair, optic-fibre and wireless technologies. Direct to Home (DTH), a relatively new broadcasting technology has attained significant popularity in the Television segment. The introduction of private FM has given a fillip to the radio broadcasting in India.

Telecommunication in India has greatly been supported by the INSAT system of the country, one of the largest domestic satellite systems in the world. India possesses a diversified communications system, which links all parts of the country by telephone, Internet, radio, television and satellite.



Market Size

Driven by strong adoption of data consumption on handheld devices, the total mobile services market revenue in India is expected to touch US\$ 37 billion in 2017, registering a Compound Annual Growth Rate (CAGR) of 5.2 per cent between 2014 and 2017, according to research firm IDC.

According to a study by GSMA, smartphones are expected to account for two out of every three mobile connections globally by 2020 making India the fourth largest smartphone market.

The broadband services user-base in India is expected to grow to 250 million connections by 2017, according to GSMA.

International Data Corporation (IDC) predicts India to overtake US as the second-largest smartphone market globally by 2017 and to maintain high growth rate over the next few years as people switch to smartphones and gradually upgrade to 4G.

In spite of only 5 per cent increase in mobile connections in 2015, overall expenditure on mobile services in India is expected to increase to US\$ 21.4 billion in 2016, led by 15 per cent growth in data services expenditure, as per research firm Gartner.

The Indian telecom sector is expected to generate four million direct and indirect jobs over the next five years according to estimates by Randstad India. The employment opportunities are expected to be created due to combination of government's efforts to increase penetration in rural areas and the rapid increase in smartphone sales and rising internet usage.

Government Initiatives

The government has fast-tracked reforms in the telecom sector and continues to be proactive in providing room for growth for telecom companies. Some of the other major initiatives taken by the government are as follows:

- With a view to encourage consolidation in the telecom sector, the Government of India has approved the rules for spectrum trading that will allow telecom companies to buy and sell rights to unused spectrum among themselves, aimed to improve spectral efficiency and quality of service, based on the recommendations of the Telecom Regulatory Authority of India (TRAI).
- The Government of India plans to roll out free high-speed wi-fi in 2,500 cities and towns across the country over the next three years. The program entails an investment of up to Rs 7,000 crore (US\$ 1.06 billion) and will be implemented by state-owned Bharat Sanchar Nigam Ltd (BSNL).

Road Ahead

India will emerge as a leading player in the virtual world by having 700 million internet users of the 4.7 billion global users by 2025, as per a Microsoft report. With the government's favourable regulation

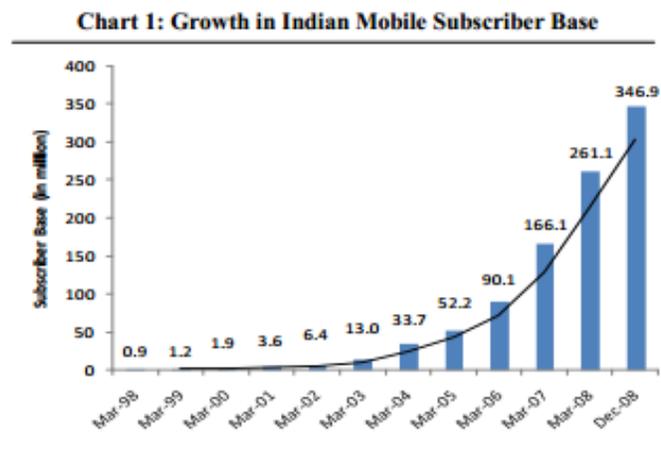
policies and 4G services hitting the market, the Indian telecommunication sector is expected to witness fast growth in the next few years.

References: Media Reports and Press Releases, Cellular Operators Authority of India (COAI), Telecom Regulatory Authority of India (TRAI), Department of Telecommunication (DoT), Department of Industrial Policy and Promotion (DIPP)

Analyzing the Trends of Business in Telecom Industry

1) India is among the Fastest Growing Mobile Markets in the World: India is the second largest mobile market in the world, is also among the fastest growing mobile markets globally. The total number of mobile subscribers in India (i.e., the subscriber base) has increased from 6.4 million in March 2002 to around 350 million in December 2008, at a compounded annual growth rate (CAGR) of 81%, aided by a significant increase in network coverage and a continual decline in tariffs and handset prices.

India, a relatively late entrant into mobile services, has benefited from a significant decline in mobile network costs during the last few years. Low cost advantage and the added benefit of mobility have led to stagnation in the total fixed line subscriber base, which along with the significant growth in the mobile base has translated into India having one of the highest ratios globally of mobile subscribers to total telecom subscribers.



Source: Telecom Regulatory Authority of India (TRAI) Database

2) Despite the Growth, Mobile Penetration Remains Moderate:

As on end September 2008, India had a mobile penetration of around 27%, which is relatively lower as compared to other countries. Given the moderate penetration levels at present, mobile growth in India is expected to continue in the short to medium term albeit at a lower level because of the larger base effect.

3) Growth expected to be led by B and C Class circles: The growth in the domestic telecom industry has largely been concentrated in the Metros and Class A circles in the past decade, with coverage reaching around 90% and 35%, respectively. However, coverage in the Class B and Class C cities is still low at 15-25%. Moreover, within these circles growth has largely been concentrated in the urban areas while penetration in the rural areas remains lower. Thus future growth is likely to come largely from Class B and C circles and rural areas.

Keeping this in view, larger players like Bharti Airtel Limited, Reliance Communications Limited, and Bharat Sanchar Nigam Limited (BSNL) are largely focusing on increasing their geographical coverage in Class B and C circles.



Regulatory Authorities in the Indian Telecom Industry

1) Telecom Regulatory Authority of India (TRAI)

The Telecom Regulatory Authority of India (TRAI) was established with effect from 20th February 1997 by an Act of Parliament, called the Telecom Regulatory Authority of India Act, 1997, to regulate telecom services, including fixation, revision of tariffs for telecom services which were earlier done by Central Government. TRAI' mission was to create an environment needed for growth of telecommunication at a pace that will enable Indian to play a major role in emerging global information society. One of the main objectives to provide a fair and transparent policy that facilitates fair competition. On 24th January 2000, TDSAT was set up to adjudicate any dispute between a licensor and a licensee, between two or more service providers, between a service provider and a group of consumers, add to hear and dispose of appeals against any direction, decision or order of TRAI.

2) New Telecom Policy

The most important milestone and instrument of telecom reforms in India is the New Telecom Policy 1999 (NTP 99). The New Telecom Policy, 1999(NTP 99) was approved on 26th March 1999, to become effective from 1st April 1999. MTP-99 laid down clear roadmap for future reforms, thinking the opening up of all the segments of the telecom sector participation.

3) The Department of Telecommunications (DOT)

It acts as a license body, formulates and enforces policies, allocates and administers resources such as spectrum and number, and coordinates matters in relation to telecommunication services in India. The DOT also promotes standardization, research and development, private investment and the international co-operation in the matters relating to telecommunications services.

4) Telecom Dispute Settlement Appellate Tribunal (TDSAT)

It is a special body set up exclusively to judge any dispute between the DOT and a licensee, between two or more service providers, or between a service provider and a group of consumers etc. An appeal against any of the TDSAT shall be filled before the Supreme Court of India within a period of ninety days. No appeal shall lie when the decision or order was made with the consent of parties.

5) Cellular Operators Association of India (COAI)

The COAI was set up in 1995 as a registered non-governmental and non-profit society. COAI is the official voice for the cellular industry in India and it interacts on its behalf with the licensor, the telecom industry associations, the man agreement spectrum agency and the policy makers. The core members are Aircel, Airtel, Idea, Vodafone, Videocon, Loop and ice of US \$ 50 billion exports this year, according to NASSCOM President, Som Mittal.

The domestic market is also slotted to witness 12% growth, this year. Potential size of India's off shoring industry is estimated at US \$ 120 to 180 billion by 2015. The industry currently employs around 1 million people and provides indirect employment to around 2.5 million people. It is expected to add another 1, 50,000 jobs in the next fiscal according to NASSCOM.



Major Players in Indian Telecom Industry

S.No	Name of the Company
1	Bharti Airtel
2	Reliance Communications
3	Vodafone Essar
4	Idea Cellular
5	BSNL
6	Tata Teleservices
7	Aircel
8	Uninor
9	Videocon
10	MTNL

Source: <http://www.siliconindia.com/news/enterpriseit/Top-10-Telecom-Companies-nid-129362-cid-7html>

Personality Development & Grooming

This section comprises a few activities and exercises that will help the participants in personality development and grooming.

Participants are suggested to actively take part in these activities as this will help them to stand out in the crowd professionally, clearing job interviews as well as in professional growth in their current job.

FACE OF THE COMPANY



1 - Slam Sheets

Fill up the Slam Sheet

Who am I?
My Qualifications
My favorite subject
My experience
I like doing
People I like
My hobbies
My likes
My dislikes



My strengths
My weaknesses
My attitude in life

My Introspection about this Activity

- This activity made you introspect about _____.
- When you deliberately think about yourself you begin to _____ yourself better.
- I have also identified some of my _____ & _____.



2 - Alladin ka Chirag

What am I going to be?

A Chirag (lamp) shaped paper is given to you. Write down what do you want to become immediately after this training program, after 2 years and 5 years from now.

My immediate wish is

Within 2 years I want to become

By the 5th year I must be

I will take advantage of my _____

Activity

3 - "The Boat Race"

1. Why was it difficult to take the whole company (boat) along?
 _____ because everyone
 was working in a _____ direction.

2. To represent a company means -
- To _____ your goals to the _____ goals
 - To work towards the _____ of the company
 - To put our _____ interests before our interests
 - To give a picture of _____ and trust to our customers
 - It is easier when everyone works in the same _____
 - It is essential to be _____

(Note: For Q 2 - Choose from the following words -integrity, company, align, direction, benefit, focused)

Activity

4 - Write an Essay on the Topic

"Company's future in my hands - My future in Company's hands - Synergistic Relationship"

OHE HOUR PRACTICE SESSION:

KNOW YOUR PARTNER

Activity - team of 2 participants needed

- **Stage I** - Individually do yourself analysis. Think and write your strengths and weaknesses i.e. your positives and areas of improvement quoting examples from your past life experiences.
- **Stage II**- Exchange your Self- study sheets with your partner. Now each participant has access to their partner's sheet.
- **Stage III**- Now each participant has to give suggestions on strengthening the positives and means to develop areas of improvement of their partner's sheet.
- The analysis should not be biased and strictly on the basis of your partner's analysis of himself/ herself.
- **Stage IV**- The participants will again exchange their sheets and go through their assessments.

PERSONALITY DEVELOPMENT & GROOMING – SESSION 1

What makes up My Personality?

Our _____

make up our total personality and give us an aura.

WORDPOOL

Confidence, mannerism,
optimism, Attitude,
etiquettes,

Learning's from the Thirsty Crow

- The crow was _____ and _____ in his approach that the water will ultimately come up
- Little _____ increases our optimism and you feel the target is
- We should be _____ about our self, our work, about life and pursue things till we succeed

WORDPOOL

Optimistic, Persistent,
Success, Achievable

What is optimism?

Optimism is a _____ outlook towards life

Optimists take _____ and take active steps to change.

Pessimist vs. Optimist

The **glass** is half empty or half full

Pessimist people see _____

Optimistic people see _____



Doughnut

Pessimist people see _____

Optimistic people see _____

Pessimistic people see difficulties in every opportunity

Optimistic people see opportunities in every difficulty



Game - I am an Optimist

What did I learn?

- Throughout the game the person was made to remain _____ and at the end he could reach his goal.
- Success in _____ increases our optimism and you feel the target is achievable.
- So break your goal into many _____ units and achieve them one by one till you reach all.

Optimism gives us:

- right _____
- builds our _____
- energy to pursue the _____

WORDPOOL

confidence,
direction, target

Application of Optimism

The customers are just round the corner. They are everywhere.

You must be optimistic that you will find them

Keep pursuing and you will be able to get customers and business



What is Positive Thinking?

Read & Write

- Positive thinking is a mental attitude that admits into the mind thoughts, words and images that are conducive to growth, expansion and success.
- It is a mental attitude that expects good and favorable results.
- A positive mind anticipates happiness, joy, health and a successful outcome of every situation and action. Whatever the mind expects, it finds.
- Positive thinking is a mental attitude that admits into the _____
- It is an attitude that expects _____
- A positive mind anticipates _____

Positive Thinking Game

Statement - It has been raining all day here..."

Positive Twist - But it makes all the pretty flowers grow."

Statement: _____

Positive Twist: _____

Statement _____

Positive Twist: _____

Statement: _____