

DRAFT SYLLABUS
FOR
PROPOSED COURSE OF

TELEPHONE-MOBILE
PHONE REPAIRING

UNDER
G.C.V.T. PATTERN

DIRECTORATE OF EMPLOYMENT & TRAINING
Block No. 1/8, 3rd Floor, Dr. Jivraj Mehta Bhavan,
Gandhinagar, Gujarat State. India

Proposed Course: Telephone-Mobile Phone Repairing

Eligibility	: Minimum 10 th Pass under 10+2 System
Fees	: As per Departmental Norms.
Duration of course	: 6 Months (26 Weeks)
Theory House	: 4 Hours per Week (Total 104 Hours)
Practical	: 15 Hours per Week (Total 390 Hours)
Extra Activity	: 4 Hours per Week (Total 104 Hours)
No. of Trainee	: 16 trainees per Batch

Proposed Course: Telephone- Mobile Phone Repairing

Objectives of the Course:

- 1 To know complete electrical fundamentals.
- 2 To know complete electronics fundamentals.
- 3 To repair & operate the corded/ cordless/ mobile phone.
- 4 To know latest telecommunication systems.

Course contents & syllabus :

1. Details of course contents including project work & practical work have been provided to I.T.I. & based on which source material in Gujarati.
2. The course is based on various applications software & there exists. A possible of fresh & improved version being introduced by respective software company in the near future.
In such an event D.E.T would upgrade the Version of various software packages presently shown in course content list & I.T.I. would be required to install the upgraded version & teach accordingly.
3. Introduction of Basic Electronics, Tool kit, Diagram Books, Hardware repairing of PCB level, Software training with software utilities with Data & Flasher Cable, Dongles, M-Bus, Software Manual.

Time for the topics

Time may be allotted to the topics as given under:

Sr. No.	Name of topics	Theory Hours	Practical Hours
1	Basic Electricity	15	
2	Fundamental of Electronics	35	
3	Basic telephone contents	20	
4	Introduction to Mobile communication.	20	
5	Future trends in communication	14	
Total Hours		104	

List of Theory Topics

Chapter-1

Time: 15 Hours

BASIC ELECTRICITY.

1. Nature of electricity, types of supply system.
2. Ohm's law, law of resistance, circuits, parallels.
3. Magnet & magnetism.
4. Measuring Instruments.
5. Fundamentals terms of electrical, conductor, Insulators.
6. Soldering, soldering materials
7. Electrical sign & symbols,
8. Transformer.

Chapter –2

Time: 35 hours

FUNDAMENTALS OF ELECTRONICS

- 1 Identification, specification, uses and maintenance of all hand tools.
- 2 Logic gates, binary octal, hexa decimal numbering system.
- 3 Circuits. Flip flop jk-rs
- 4 Classification of resistors, color code testing, measuring,
- 5 Use of multimeter, cell & battery, charging system.
- 6 Explanation of capacitor.
- 7 Define semi conductor, transistor, diode, rectifier, filter circuits,
- 8 Types of amplifier, AF.RF. Power supply, regulated-UPS stabilizers.
- 9 Explanation of sound propagation. Microphone, speakers, capsules
- 10 Types of modulation, AM.FM.
- 11 Difference types of switches. Explanation of tuning section, IF generation, RF amplifier,
- 12 Use & Characteristics of U.J.T., F.E.T., M.O.S.FET, Diac, triac IC
- 13 Explanation of transmission system & receiving system, micro wave link & satellite communication. Frequency multiplier, antenna, UHF, VHF, Microwave Radar, satellite system.
- 14 History of radio, television, Telex, Fax,
- 15 Types of Communication.
- 16 Digital & analog system.

Chapter-3

Time: 20 Hours

BASIC TELEPHONE CONTENTS

- 1 Principle of switching in telephone,
- 2 Classification of Tele exchange like strawger, cross bar, electronic PLCC.
- 3 Components of subscriber set & its function,
- 4 Basic intercom block diagram & circuits,
- 5 Tones used in automatic telephony system. Like dial tone, Busy tone, ring tone, NU tone,
- 6 Telephone components, like crystal, IC`
- 7 Testing of components,
- 8 Basic phone circuits & its fault finding, cause remedies,
- 9 Cordless telephone system,

Chapter-4

Time: 20 hours

INTRODUCTION OF MOBILE COMMUNICATION

- 1 Types of communication,
- 2 Key player is GSM-cell & sector terminology,
- 3 SLM architecture. RF Power class. Power level adjustments
- 4 Cell frequency & channel discussion,
- 5 GSM Radio,
- 6 Geographical area coverage Getting a call, making call,
- 7 Hand over CDMA, CDMA vs. GSM (TDMA), GSM description, codes-
call diverting.

Chapter-5

Time: 14 hours

FUTURE TRENDS IN COMMUNICATION

- 1 Blue tooth
- 2 WAP.
- 3 GPRS,
- 4 General precautions,
- 5 Opening a mobile,
- 6 Physical study,
- 7 Block diagram,
- 8 Circuit diagrams

Proposed Course: Telephone-Mobile Phone Repairing

List of Practical

Sr.No.	Name of Practical	Time allotted in Hours
1	Introduction to Basic electronics.	13
2	Soldering- Disordering	14
3	Assembling & testing of components	6
4	Study of service manual,	6
5	Study of all types of telecom instruments	17
6	Basic phone, fault finding, causes & remedies.	50
7	Cordless phone, fault finding, causes & remedies	35
8	Introduction to Mobile phone.	3
9	Introduction to Mobile phone operating	6
10	Changing of body.	2
11	Display (LCD) speakers, mic etc	2
12	SMD disoldering-soldering.	28
13	BGA Architecture BGA disoldering & fixing	7
14	Working of mobile, block diagram, functions reading of circuit diagram.	9
15	Case study, NOKIA-Samsung, Panasonic-Motorola.	14
16	Diff. Parts of mobile phone, faultfinding & diagnosis.	35
17	Data cable & flasher code. Check sum. Locks-4types.	6
18	Unlocking-flashing partial & full.	4
19	DCT-3DCT-4.	4
20	Mobile hardware problem.	10
21	Software problem, connection with computer inter face.	20
22	Ti or Using software,	6
23	Introduction to Diff. Software & use of it Logo manager.	8
24	Tracing of circuit.	35
25	Voltage & current measurement fault-cause-remedies-etc.	60
TOTAL HOURS----->----->----->		390

LIST OF HAND TOOLS

<i>SR.NO.</i>	<i>NAME OF ITEM</i>	<i>REQ. QTY/BATCH</i>
1	Combination pliers 15 cm insulated.	17
2	Long nose pliers 15 cm insulated	17
3	Diagonal cutter 15 cm insulated	17
4	End cutting nipper 15 cm insulated	17
5	Tweezers 10 cm insulated	17
6	Heat sink pliers 15 cm insulated	17
7	IC tweezers / puller	17
8	Neon glow tester	17
9	Magnifying Glass with lamp	17
10	Needle file	17
11	Knob screwdriver 10 cm	17
12	Screw driver set of 6	17
13	Watch maker screwdriver	17
14	Knife double blade 3 INCH	17
15	Wire stripper.	17
16	Allen key set	17
17	Soldering iron-Micro solder, 12 operated	17
18	Soldering hot air gun	17
19	Equipment soldering iron-10 w & 35 w	17
20	Soldering & desoldering pump	17
21	Cleaning brush– soft & hand	17
22	Instrument file set of 12.	17

LIST OF EQUIPMENT

<i>Sr.No.</i>	<i>NAME OF ITEM</i>	<i>REQ. QUT/BATCH.</i>
1	Temperature controlled soldering station 15 watts.	2 Nos.
2	Analog multimeter.	2 Nos.
3	Digital multimeter.	2 Nos.
4	GSM tester.	2 Nos.
5	Transistor tester.	2 Nos.
6	IC tester.	2 Nos.
7	Signal tracer/ injector.	2 Nos.
8	Regulated Power supply. 0-30 V DC.	2 Nos.

LIST OF MACHINERY

Sr.No.	NAME OF ITEM	REQ. QUT/BATCH.
1	Computer, P-4 with multi media & modem.	2NOS.
2	Inter com system.	1SET.
3	Different types of Basic telephone instrument.	10 NOS.
4	Different types of Mobile instrument.	20 NOS.
5	Laser printer A-4 size.	1 NOS.

LIST OF CONSUMABLE ITEMS

SR NO. NAME OF ITEM

1. Components various types.
2. Flux liquid copper.
3. Nylon brush.
4. PCB cleaner.
5. Switch cleaner.
6. Soldering core. 60:40.
7. Desoldering Wire.
8. Microphone assorted.
9. Speakers assorted.
10. Line cord.
11. Coil cord.
12. Different type of laces.
13. Different type of hook switches.
14. Different type of Micro switches.
15. Different type of LED'S
16. Assorted Resistor.
17. Assorted Capacitor.
18. Assorted Transistor.
19. Different type of Mobile charger.
20. Computer connecting cords all types.
21. Different type of LCD'S.
22. Software for fault finding of mobile.
 - Using of DCT3/DCT4 cable.
 - Using of Dongla M-Bus.
 - Using of Different Mobile Cable Connector.
 - Unlocking with Nokiya unlocking tools, Panasonic tools. Sam sung tools and other Companies mobile Unlocking tools.
 - Different Companies mobile flashing tools & use of Flashing.
23. Servicing manuals for most & widely used Basic Telephone models.
24. Servicing manuals for most & widely used Cordless Telephone models.
25. Servicing manuals for most & widely used Mobile Telephone models.

Minimum Furniture's and infrastructural facility
Required to conduct training

Infrastructure
For Practical Room

Sr.No.	Details.	Requirement	Remark
1	Area in Sq. Feet.	Minimum 225 Sq.Ft.	
2	Table.	17 NOS.	
3	Computer Table.	2 NOS.	
4	Revolving Chair.	17 NOS.	
5	White board/Glass board.	1 NO.	
6	Air conditioner 1.5 ton.	2 NOS.	

For Theory Room

Sr.No.	Details.	Requirement.	Remark.
1	Area in Sq. Feet.	Minimum 100 Sq.Ft.	
2	Chair with arm rest and writing pad.	16 NOS.	
3	White board/Glass board.	1 NO.	
4	Audio system of good sound quality OR Public Address System within the classroom.	1 NO.	
5	Overhead Projector with high quality inbuilt thermostat condenser & twin Lamp & teaching aids.	1 NO.	

Other Required & Necessary Facilities

1	Neat & clean Premises duly painted.
2	Cold drinking water facility should be provided.
3	Classroom and laboratory facility should be available as per the requirements of course.
4	Proper lighting and ventilation should be provided.
5	Proper storage facility should be available to store the components, meters, etc. be provided.
6	"A" class electrical line laying done with proper Earthing to avoid hazards.