Syllabus
On

Lift Technician Assistant (Electro-Mechanical Sector)

Under Skill Development Initiative (SDI) Scheme

Based on

Modular Employable Skill (MES)

Designed in 2011

By

Government of India
Ministry of Labour & Employment
(DGE&T)

List of members attended the Trade Committee Meeting to design curricula on "Lift Technician Assistant" in Electro-Mechanical Sector under Modular Employable Skills (MES) held at Indian Institute of Lift Technology, Bangalore, on 25th & 26th March '2011.

Sl. No.	Name & Designation	Representing Organisation	Remarks
1.	B.S.Kumaraswamy, G.M.	Monteferro India, Bangalore	Chairman
2.	V.Jagadish Kumar	Lavenir Lift Consulting, Bangalore	Member
3.	Solly Francis	SAS Elevator Company, Bangalore	Member
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5.	S.Alagesh	ECE Elevators, Bangalore	Member
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7.	A.N.Prasad, Sr.Manager	TKEI, Bangalore	Member
8.	B.G.Hareesh, Manager	TKEI Installation, Bangalore	Member
9.	K.Rajkumar	Garuda Elevator, Bangalore	Member
10.	Sarath Sasi	Hinus Elevator, Bangalore	Member
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12.	Parag Kumar Jana	Indian Institute of Lift Technology, Bangalore	Member
13.	Hari Bhat	Thyssen Krupp Elevator, Bangalore	Member
14.	Manjanath Hegde	Thyssen Krupp Elevator, Bangalore	Member
15.	Srinivas Rao	Thyssen Krupp Elevator, Bangalore	Member
16.	Suresh	Garuda Elevators, Bangalore	Member
17.	Harish	SAI Elevator, Bangalore	Member
18.	Prabhakar	TGS Elevator, Bangalore	Member
19.	Krishnaswamy	Atlanta Elevators, Bangalore	Member
20.	Ashwees	Atlanta Elevators, Bangalore	Member
21.	Prabha Chandra	Atlanta Elevators, Bangalore	Member
22.	Arun	Surya Elevators, Bangalore	Member
23.	Abhi Suban	Tuscan Elevators, Bangalore	Member
24.	Vasudev	Concept Elevator, Bangalore	Member
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Course Curricula under Skill Development Initiative Scheme (SDIS) Based on Modular Employable Skills (MES) on Lift Technician Assistant in Electro-Mechanical Sector

CONTENTS

Skill Development based on Modular Employable Skills (MES)

1. Background :

The need for giving emphasis on Skill Development, especially for the educated unemployed youth (both for rural & urban) has been highlighted in various forums. Unfortunately, our country's current education system does not give any emphasis on development of skills. As a result, most of the educated/uneducated unemployed youths are found wanting in this area, which is becoming their Achilles heel.

As India is on the path of economic development and the share of service sector's contribution to the GDP of the country is increasing (54% of GDP) it is becoming imperative that Government of India along with other nodal agencies play an important role in providing employable skills, with special emphasis on Skills.

Hence, need of the hour is some policy change at Apex level which will address the needs of the changing economy and look at providing mandatory skills training to all educated unemployed youths, with a view to have them gainfully employed. This shift in policy will ultimately benefit all the stake holders, namely the individuals, industry, Government and the economy by way of providing employment, increasing the output/productivity and ultimately resulting in a higher GDP for the nation.

2. Frame work for skill development based on 'Modular Employable Skills (MES)'

Very few opportunities for skill development are available for the above referred groups (educated unemployed youth). Most of the existing skill development programmes are long term in nature. Poor and less educated persons cannot afford long term training programmes due to higher entry qualifications, opportunity cost, etc. Therefore, a new framework for skill development has been evolved by the DGET to address the employability issues.

The **key features of new framework for skill development** are:

- Demand driven short term training courses based on modular employable skills decided in consultation with Industries.
- Flexible delivery mechanism (part time, weekends, full time)
- Different levels of progranmmes (foundation level as well as skill up gradation) to meet demands of various target groups
- Central Government will facilitate and promote training while vocational training providers (VTP) under the Govt. and Private Sector will provide training.
- Optimum utilization of existing infrastructure to make training cost effective.
- Testing of skills of trainees by independent assessing bodies who would not be involved in conduct of the training programme, to ensure that it is done impartially.
- Testing & certification of prior learning (skills of persons acquired informally)

The Short Term courses would be based on "Modular Employable Skills (MES)".

The **concept for the MES** is:

- ✓ Identification of minimum skills set. Which is sufficient to get an employment in the Labour market.
- ✓ It allows skills up gradation, multi skilling, multi entry and exit, vertical mobility and life long learning opportunities in a flexible manner.
- ✓ It also allows recognition of prior learning (certification of skills acquired informally) effectively.
- ✓ The modules in a sector when grouped together could lead to a qualification equivalent to National Trade Certificate or higher.
- ✓ Courses could be available from level 1 to level 3 in different vocations depending upon the need of the employer organisations.
- ✓ MES would benefit different target groups like:
    - Workers seeking certification of their skills acquired informally
    - Workers seeking skill up gradation
    - Early school drop-outs and unemployed
    - Previously child Labour and their family

3. INTRODUCTION

Economic growth in India is increasingly supported by robust industrial growth. **Lift Technician in Electro-Mechanical Sector** is one of the relatively lesser known but significant sectors that support almost all industrial/ commercial activities. However, notwithstanding its importance and size (INR 4 trillion), it has traditionally not been accorded the attention it deserves as a separate sector in itself. The level of inefficiency in **Lift Technician** activities in the country has been very high across all modes.

The required pace of efficiency and quality improvement will demand rapid development of capabilities of service providers. And with these **Lift Technician** activities being a service oriented sector, skill development will emerge as a key capability.

This lack of focus on developing manpower and skills for the sector has resulted in a significant gap in the numbers and quality of manpower in the **Lift Technician in Electro-Mechanical Sector**. This gap, unless addressed urgently, is likely to be a key impediment in the growth of the sector in India and in consequence, could impact growth in industry and commercial/ manufacturing sectors as well. This underscores the need identifying areas where such manpower and skill gaps are critical, and developing focused action plans to improve the situation.

A look at the required initiatives for manpower development in the **Lift Technician in Electro-Mechanical Sector** makes it clear that sustainable development of the sector's manpower requires a collaborative public private effort. The level of commitment demonstrated by each stakeholder would largely determine the direction that the sector heads towards.

4. Age of Participants

The minimum age limit for persons to take part in the scheme is 16 years for module-1 of Elevator Installation which is in the mechatronics sector but there is no upper age limit.

5. Curriculum Development Process :

Following procedure is used for developing course curricula

• Identification of Employable Skills set in a sector based on division of work in the Labour market.

• Development of training modules corresponding to skills set identified so as to provide training for specific & fit for purpose

• Development of detailed curriculum and vetting by a trade committee and by the NCVT

(Close involvement of Employers Organizations, State Governments and experts, vocational Training providers and other stakeholders are ensured at each stage).

6. Development of Core Competencies :

Possession of proper attitudes is one of the most important attributes of a competent person. Without proper attitudes, the performance of a person gets adversely affected. Hence, systematic efforts will be made to develop attitudes during the training programme.

The trainees deal with men, materials and machines. They handle sophisticated tools and instruments. Positive attitudes have to be developed in the trainees by properly guiding them and setting up examples of good attitudes by demonstrated behaviors and by the environment provided during training.

Some important core competencies to be developed are:

Core Competencies:

The core competencies developed by the candidates in Level - I are :

(i) Safety Consciousness and safe working practises
(ii) Learn continuously
(iii) Ability to work in a team
(iv) Proper Communication Skills
(v) Ability to Analyze and take decisions from GAD
(vi) Ability to identify the right materials for installation
(vii) Care for tools and equipments
(viii) First Aid proficiency
(ix) Ability to co-ordinate work from other agencies to ensure smooth progress of work at site
(x) Mechanical Proficiency
(xi) Punctuality, discipline and honesty
(xii) Respect for rules and regulations
(xiii) Quality Consciousness
(xiv) Positive Attitude and Behavior
(xv) Responsibility & Accountability
(xvi) Technical proficiency in installation of elevators

(xvii) Enhancing the Ride Comfort
(xviii)Troubleshooting Issues with ease
(xix) Site Management
(xx) Leadership
(xxi) Motivating the work force and ensuring maximum productivity
(xxii) Identifying and developing the skills of the work force under him.

7. Duration of the Programmes:

Time taken to gain the qualification will vary according to the pathway taken and will be kept very flexible for persons with different backgrounds and experience. Duration has been prescribed in hours in the curriculum of individual module, which are based on the content and requirements of a MES Module. However, some persons may take more time than the prescribed time. They should be provided reasonable time to complete the course.

8. Pathways to acquire Qualification:

Access to the qualification could be through:

An approved training Programme.

9. Methodology

The training methods to be used should be appropriate to the development of competencies. The focus of the programme is on "performing" and not on "Knowing". Lecturing will be restricted to the minimum necessary and emphasis to be given for learning through practical on-site training for the installation of elevators & escalators.

The training methods will be individual centered to make each person a competent one. Opportunities for individual work will be provided. The learning process will be continuously monitored and feedback will be provided on individual basis. Demonstrations using different models, audio visual aids and equipment will be used intensively.

10. Instructional Media Packages

In order to maintain quality of training uniformly all over the country, instructional media packages (Imps) will be developed by the National Instructional Media Institute (NIMI), Chennai

11. Assessment :

DGE&T will appoint assessing bodies to assess the competencies of the trained persons. The assessing body will be an independent agency, which will not be involved in conducting the training programme. This, in turn, will ensure quality of training and credibility of the scheme. Keeping in view, the target of providing training/testing of one million persons through out the country and to avoid monopoly, more than one assessing bodies will be appointed for a sector or an area.

12. Certificate :

Successful persons will be awarded competency-based certificates issued by **National Council for Vocational Training (NCVT).**

NOTE- The trainer must have either minimum 2 years work experience as an engineer or 5 years work experience as Contractor in MNC/'s and must be recruited only after assessing his eligibility through a technical interview.

Course Matrix :

(i) Lift Technician Assistant : Level - 1
(Electro – Mechanical Sector)

Module – 1:	Junior Assistant – Elevator Installation (EMS101)

(ii) Lift Technician Assistant : Level - 2
(Electro – Mechanical Sector)

Module – 1:	Assistant Elevator Installer (EMS202)

(ii) Lift Technician Assistant : Level - 3
(Electro – Mechanical Sector)

Module – 1:	Elevator Installer (EMS303)

Level - 1

Module-1

1. Name of the Module **: Junior Assistant – Elevator Installation**

2. Sector : **Electro-Mechanical Sector**

3. CODE : **EMS101**

4. Entry Qualification : Minimum 8th Standard Pass

5. Age : 16 yrs & above.

6. Terminal Competency : After completion of this training the trainees would be able to:

(i) Safety Consciousness and Ability to adopt Safe Working Practices at site
(ii) Ability to identify Tools & Tackles and knowledge of materials
(iv) Assist the Technician in installation of lift
(vi) Knowledge of First Aid

7. Duration **: 150 Hours**

8. Contents :

Practical Training	Theory
The practical and theory training shall comply with IS 14665 standards which is specifically meant for elevators.	
1. Basic Safety Training – Elevators : **(a) Use of Personal Protective Equipments (PPE) :** Inspection and Proper Usage Training of Helmet (Hard Hat), Safety Shoes, Safety Goggles, Safety Harness, Safety Gloves, Safety Mask, Safety Ear Plug, Respiratory Mask. **(b) First Aid Training :** Demonstration of the techniques used to provide immediate relief to affected people at site. **(c) Use of Tools & Tackles :** **Mechanical Tools :** Measurement Tape, Spanner Set (Ring and Double Spanners of different sizes), Screw Driver Set, Ball Peen Hammer, Hack Saw Frame, Cutting Plier, Nose Plier, Ratchet Set, Insulation Tape, Chain Pulley, Spirit Level, Water	- Introduction to Elevator and Types - Diagrammatic representation & Introduction to Elevator Shaft, Pit, Car Top, Head Room & Machine Room - Proper Use and inspection of Personal Protective Equipments which include Helmet (Hard Hat), Safety Shoes, Safety Goggles, Safety Harness, Safety Gloves, Safety Mask, Safety Ear Plug, Respiratory Mask. - Basic procedure to be followed in case of any accident / incident at site.

Level, Guide Rail Alignment Gauge. **Electrical Tools :** Tester, Tong Tester, Megger, Multimeter, Rotary Hammering Machine. **(d) Material Handling & Storage Training** Identification of different materials used for lift erection at Site which include: (i) Different types of nuts, bolts & washers (ii) Guide Rail, Bracket, Buffer, Over Speed Governor, Tension Pulley, Entrance	- Tools & Tackles Used in Elevator Installation and safe usage techniques **Mechanical Tools :** Measurement Tape, Spanner Set (Ring and Double Spanners of different sizes), Screw Driver Set, Ball Peen Hammer, Hack Saw Frame, Cutting Plier, Nose Plier, Ratchet Set, Insulation Tape, Chain Pulley, Spirit Level, Water Level, Guide Rail Alignment Gauge. **Electrical Tools :** Tester, Tong Tester, Megger, Multimeter, Rotary Hammering Machine. - Materials Used for Elevator Erection. - Power Point presentation of different materials used for elevator erection such as Nuts, Bolts, Washers, Guide Rail, Bracket, Buffer, Over Speed Governor, Entrance
Practical Training (On-Site)	**Theoretical Training (Underpinning Knowledge)**
Frame Assembly, Counter Weight Frame, Motor, Landing Door Assembly, Elevator Car Car Assembly, Car Top Barricade, Safety Barricade, Compensating Chain, Controller, Landing Push Box Assembly, Fire Man Switch Assembly, Alarm, Car Top Junction Box, Sensor, Limit Switch, Stop Switch, etc. **(e) Scaffolding Safety :** Demonstration of different types of Scaffolding Demonstration of how to check whether the Erected Scaffolding is Safe for Work which include how to check the vertical and horizontal correctness of the scaffolding, arresting appropriateness of the scaffolding, etc. **(f) Safety Barricade:** Demonstration of how to fix the Safety Barricade Demonstration on the Procedure of Locking the Barricade Gates **(g) Shaft Entry:** Inspection of the Elevator Shaft to ensure safe Access Demonstration of how to enter into the elevator shaft by using safety harness, safety helmet and	Frame Assembly, Counter Weight Frame, Motor, Landing Door Assembly, Elevator Car Car Assembly, Car Top Barricade, Safety Barricade, Compensating Chain, Controller, Landing Push Box Assembly, Fire Man Switch Assembly, Alarm, Car Top Junction Box, Sensor, Limit Switch, Stop Switch, etc. to be shown in Power Point Presentation - What is Scaffolding ? - Different Types of Scaffolding (Wooden & Steel) - Checking procedure whether the erected scaffolding is safe for work which includes Checking the vertical and horizontal rigidity, height & strength. - Method of arresting the scaffolding - What is Safety Barricade? - Why it is used? - Fixing procedure of Safety Barricades - Locking Procedure of the Safety Barricades - Points to be considered to ensure that there is safe access to the elevator shaft - Method of using Safety Harness, Safety Shoes and Safety Helmet. - Procedure of fastening the safety harness

safety shoes. Demonstration on how to fasten the safety harness on to the scaffolding Demonstration on how to stand on the scaffolding in the elevator shaft and work.	in the scaffolding - Precautions to be taken while working on the scaffolding
(h) Elevator Pit Entry Inspection Points to be considered to ensure the safe access to the elevator pit Demonstration of the materials fixed in the Elevator pit which include pit ladder, stop Switch, Two-way Switch, etc. Demonstration on how to enter the elevator pit before putting the elevator on power Demonstration on how to enter the elevator pit when the elevator is run in Slow Speed or Service mode. Demonstration on how to enter into the lift pit when the elevator is run in Normal Speed or Rated Speed by checking the Landing Door Circuit, Car Operating Panel (COP) Circuit, Pit Stop Switch, Two-way Switch, Pit Ladder, etc. **(i) Car Top Entry :** Demonstration on Points to Inspect to ensure the safe access to the elevator car top. Demonstration of the materials installed in the Elevator Car Top and their function Demonstration of how to enter the elevator Car Top when the elevator is running in Slow Speed or Service Mode Demonstration on how to enter the elevator Car Top for an elevator running in Normal Speed / rated Speed by checking the Landing Door Circuits, Car Operating Panel (COP) Circuits, Car Door Circuit, Car Top Stop	- Points to be considered to ensure that there is safe access to the elevator pit - Materials assembled in the elevator pit which include Pit Ladder, Stop Switch, Two- way Switch, etc. and their function. - Method of checking the Landing Door, Pit Ladder, Pit Two Way Switch, etc. - Method of checking Car Top Stop Switch, Car Top Normal / Inspection Toggle Switch, Pit Stop Switch, Landing Doors, Pit Two Way Switch, etc. - Method of checking the Landing Door Circuits, Car Operating Panel (COP) Circuits, Pit Stop Switch, Two-way Switch, Pit Ladder, etc. - Points to be considered to ensure the safe access to the elevator car top - Materials installed in the Car Top which include Car Top Safety Barricade, Car Top junction Box, Magnet Switch, Control Panel etc. and their function - Method of operating the elevator from the Control Panel and bringing the Car Top to floor level, Method of checking car top safety barricade. - Procedure of Checking the Landing Door Circuits, Car Operating Panel (COP) Circuits, Car Door Circuit, Car Top Stop Switch and Car Top
Switch and Car Top Inspection / Normal Toggle Switch **(i) Machine Room Safety:** Demonstration of Points to inspect to ensure Safe access to Machine Room	Inspection / Normal Toggle Switch Points to ensure the safe access to elevator Machine Room

Demonstration of how to enter into the Elevator Machine Room	Method of checking the power supply, m/c room lock, ventilation, etc.
Demonstration of the materials installed in the Machine Room which include Motor, Controller, Over Speed Governor, Trunking, etc. and their function	Materials installed in Machine Room which include Motor, Controller, Over Speed Governor, Trunking, etc.
(j) Electrical Safety:	
Demonstration of safety points to be checked in the shaft which include appropriateness of the erected scaffolding, shaft lighting, shaft whitewashing, shaft width and depth, etc.	Safety Points to be checked in the shaft which include scaffolding, shaft lighting, shaft whitewashing, shaft width and depth, etc.
Demonstration of safety points checked in the Elevator pit which include pit waterproofing, Pit Lighting, Pit Depth, Pit Stop Switch, Pit Ladder, etc.	Safety Points to be checked in the elevator pit which include pit waterproofing, pit lighting, pit depth, Pit Stop Switch, Pit Ladder, etc.
Demonstration of safety points to be checked in the elevator Machine Room which include Machine Room Lighting, Machine Room Locking Procedure, Machine Room Lock Out Tag Out Procedure, etc.	Safety Points to be checked in the Machine Room which include Machine Room Lighting, Machine Room Locking, Machine Room Lock Out Tag Out Procedure, etc.
Demonstration on how to safely use electrical tools like Megger, Multimeter, Rotary Hammer Drill Machine, Tester, Blower, etc.	Introduction to Electricity, Points to ensure safety while using electrical tools like Megger, Multimeter, Rotary Hammering Drill Machine, Tester, Blower, etc.
Demonstration on how to work safely in places where electrical wiring has been done or where electrically wired equipments are used.	Safety measures to be observed while working on connected wires or wired equipments

List of Tools & Equipments for the Module of Junior Assistant – Elevator Installation (For a batch of 20 Trainees)

Tool Kits

Sl.No.	Items	Quantity
1.	Full Spanner Set (Double end & ring spanners) (5-6 to 34-36)	1 Set
2.	Full Screw Driver Set (6” to 10”)	1 Set
3.	Full Allen Key Set	1 Set
4.	Ball Peen Hammer	2 nos.
5.	Cutting Plier	1 no.
6.	Nose plier	1 no.
7.	Tester	1 no.
8.	Hacksaw	1 no.
9.	Wire Stripper	1 no.

11.	Measurement Tape – 5 Meters	1 no.
12.	Measurement Tape – 3 Meters	1 no.
13.	Rotary Hammering Machine	1 no.
14.	Blower	1 no.
15.	Tube Level - Spirit	1 no.
16.	Tube Level - Water	1 no.
17.	Multimeter	1 no.
18.	Plumb Bob	1 no.
19.	Pipe Wrench	1 no.
20.	Punch Center	1 no.
21.	Crimping Tool	1 no.
22.	First Aid Box	1 no.
23.	Personal Protective Equipment	1 Set
24.	Dummy Static Model of the Elevator	1 no.

INFRASTRUCTURE REQUIRED

FOR IMPARTING CLASS ROOM TRAINING FOR A BATCH OF 20 TRAINEES:

1.	All Tools as mentioned above	1 set
2.	White Board	1 no.
3.	Chairs with writing pad rest	20 nos.
4.	Projector	1 no.
5.	Laptop	1 no.
6.	Instructors Table & Chair	1 set
7.	White Board Marker	1 no.
8.	Duster	I no.

Level - 2

Module-2

1. Name of the Module **: Assistant Elevator Installer**

2. Sector : **Electro-Mechanical Sector**

3. CODE : **EMS202**

4. Entry Qualification : Minimum 8th Standard Pass & Successful Completion of Module-I(EMS101)

5. Age : 16 yrs and above.

6. Terminal Competency : After completion of this training the trainees would be able to:

(i) Read & Understand the General Arrangement Drawing (GAD).

(ii) Installation of Template, Marking, Brackets for Car & Cwt, Guide Rails, Motor, Landing Entrance, Car Sling Assembly, Cwt Frame, Car – Cwt Roping, OSG – Tension Pulley Fixing & roping,etc.

7. Duration **: 400 Hours**

8. Contents :

Practical Training	Theory
1. Absolutes Prior to the Start of Elevator Installation Demonstration at site regarding the absolutes which includes elevator shaft measurements, elevator pit measurements , elevator head room measurements, machine room measurements. The parameters include civil and electrical works.	**- Five Absolutes to be ensured before start of elevator installation** **- Shaft Takeover Procedure** **- Minor Builder Works (Client's Scope)** **- Introduction to BIS & IS**
2. Stage -1 Installation Training : **(i) Template readiness as per General Arrangement Drawing (GAD)** **(ii) Template Fitting & Setting, Plumb Dropping & Arresting.** Demonstration of template fixing and	**- GAD explaining regarding measurements to be considered for the manufacture of template** **- Template fixing & Positioning procedure** **- Plumb Dropping & Arresting Method**

positioning. Plumb Dropping & Arresting Technique.	
(iii) Shaft Marking & Shaft Reading Car & Cwt Bracket Marking, Entrance Marking, Landing Box Marking. Taking Shaft Readings.	**- Method of Marking & Obtaining Shaft Readings as per GAD**
(iv) Machine Room Marking Car & Counter center, OSG Holes, Trunking, & Controller Marking	**- Method of Machine Room Marking**
(v) Template Permanent Fixing Demonstration of finalizing the position of the template by analyzing shaft readings as per GAD. Determining & Certifying Shaft confirmation to GAD. (Rectify / Modify is required as per site condition)	**- Comparison of obtained readings as per GAD and certifying shaft confirming to GAD**
(vi) Bracket Fixing & Alignment Marking & Drilling Holes for Fixing Brackets for Car and Counter Side. Proper Fixing Techniques of Chemical Bolt / Anchor Fasteners / grouting to enable fixing of bracket as per GAD based on site condition. Bracket Alignment as per GAD	**- Method of fixing and aligning brackets in the Car and counter Side**
(vii) Rail Hoisting for Car And CounterWeight Demonstration of fixing rails using join plates. Demonstration of Rail Hoisting.	**- Rail Fixing Procedure** **- Rail Hoisting Procedure**
(vii) Guide Rail Alignment Re-checking of the Plumb as per GAD Demonstration of rail alignment by using alignment gauge considering technical parameters as per GAD.	**- Guide Rail Alignment Procedure wrt GAD**
(ix) Motor Hoisting & Alignment Demonstration of Setting I Beams on Casted Bed Blocks in Machine Room as per GAD (for MR Elevators).	**- Different Techniques Used For Supporting the Motor**

Demonstration of Setting Machine Bed / I Beam in the Head Room as per GAD (For MRL Elevators) Demonstration of Motor Hoisting & Motor Alignment as mentioned in the GAD	**- Motor Hoisting & Alignment Procedure as per GAD**
3. Stage – 2 Installation Training **(i) Landing Entrance Frame Fixing & Alignment** Demonstration of the procedure of fixing Landing Entrance Assembly which consists of Landing Sill, Jamb Panels, Landing Header & Brackets as per GAD. **(ii) Buffer Assembly Fixing** Demonstration of the procedure of fixing Car and Counter Weight Buffer Assembly as per GAD and site condition . **(iii) Counter Frame Hoisting and Alignment** Demonstration of Cwt Frame Hoisting & Alignment **(iv) Car Sling Assembly & Alignment** Demonstration of Car Sling Assembly & Alignment which includes assembling and aligning the Bottom Sling, Intermediate Vertical Slings and Top Sling. Demonstration of the fixing & alignment of Safety Block	**- Procedure of Fixing & Aligning Landing Entrance Assembly** **- Procedure for Fixing Buffer Assembly** **- Procedure for Hoisting & Aligning Cwt Frame** **- Procedure of Assembling & Aligning the Car Sling & Safety Block**
(v) Car – Cwt Roping Demonstration of method of laying the ropes, rope cutting, and roping by using proper anchoring systems, gripping systems and equalizing rope tensions as per GAD. **(vi) Overspeed governor(OSG) – Tension/Pit Pulley Fixing & Roping** Demonstration of fixing OSG and Tension Pulley and Roping as per GAD and site condition. **(vii) Landing Door Assembly & Alignment** Demonstration of Landing Door Fixing & Alignment which includes aligning the coupler & roller, doors, installing the door weights, and	**- Rope Measurement as per site condition, Method and types of roping.** **- Method of OSG – Tension Pulley Roping** **- Method and Technical Parameters to be**

aligning landing doors as per GAD	**considered for Landing Door Alignment**
(viii) Elevator Car Cabin Assembly and Alignment Demonstration of Car Cabin Assembly & Alignment which includes Assembly and Alignment of Platform, Car Sill, Car Panels which include Front, Rear, Car Operating Panel (COP) & Side Panels, Car Ceiling, False Ceiling, Steadying of the Car Cabin, Fixing & Alignment of Car Door , door drive system & Car Header Unit , Fixing of the Car Top Barricade and Fixing of the Car Top junction Box as per GAD.	**- Method of Fixing & Aligning Car Cabin Assembly, Car Top Barricade & Car Top Junction Box**
(ix) Counter Weight Filling Demonstration of procedure of filling counterweights for startup	**- Method of Filling of Counterweight and No-Load Balancing**
(x) Controller & Drive Installation Demonstration of Fixing of the Controller Unit at Top Most Floor / Machine Room and Drive Unit as Required as per GAD.	**- Method of Fixing Controller & Drive Unit**
4. Inspection Method Demonstration of the Points to be checked after the completion of each stage (1^{st} & 2^{nd} Stage)	**- Basic Inspection Points**

List of Tools & Equipments for the Module of Assistant Elevator Installer (For a batch of 20 Trainees)

Tool Kits

Sl.No.	Items	Quantity
1.	Full Spanner Set (Double end & ring spanners) (5-6 to 34-36)	1 Set
2.	Full Screw Driver Set (6" to 10")	1 Set
3.	Full Allen Key Set	1 Set
4.	Ball Peen Hammer	2 nos.
5.	Cutting Plier	1 no.
6.	Nose plier	1 no.
7.	Tester	1 no.
8.	Hacksaw	1 no.
9.	Wire Stripper	1 no.
11.	Measurement Tape – 5 Meters	1 no.
12.	Measurement Tape – 3 Meters	1 no.
13.	Rotary Hammering Machine	1 no.

14.	Blower	1 no.
15.	Tube Level - Spirit	1 no.
16.	Tube Level - Water	1 no.
17.	Multimeter	1 no.
18.	Plumb Bob	1 no.
19.	Pipe Wrench	1 no.
20.	Punch Center	1 no.
21.	Crimping Tool	1 no.
22.	First Aid Box	1 no.
23.	Personal Protective Equipment	1 Set
24.	Dummy Static Model of Elevator	1 no.

In addition to the above tools dummy GAD Sheets are also required to be present so as to ensure basic understanding of the drawing.

The candidate also may be given Hands-On Training On-Site in the site of the nearest elevator company so as to ensure the practical technical competence is met with.

Infrastructure Required

for Conducting Class Room Training for the Module of Assistant Elevator Installer

(For a batch of 20 Trainees)

1.	All Tools as mentioned above	1 set
2.	White Board	1 no.
3.	Chairs with writing pad rest	20 nos.
4.	Projector	1 no.
5.	Laptop	1 no.
6.	Instructors Table & Chair	1 set
7.	White Board Marker	1 no.
8.	Duster	I no.

Level - 2

Module-1

1. Name of the Module **: Elevator Installer**

2. Sector : **Electro-Mechanical Sector**

3. CODE : **EMS303**

4. Entry Qualification : Minimum 8th Standard Pass & Completion of Level 1(EMS202)

5. Age : 16 yrs. And above

6. Terminal Competency : After completion of this training the trainees would be able to:

(i) Complete comprehensive knowledge on Safeties associated with elevators and escalators
(ii) Complete knowledge of Elevator and Escalator Installation
(iii) Quality Consiousness
(iv) Use Management Skills

7. Duration **: 450 Hours**

8. Course Content :

Practical Training (On-Site Training)	**Underpinning Knowledge (Theoretical Knowledge)**
1. Stage -3 Installation Training **(i) Electrical Installations Prior to Start Up** **(a) Car Top Wiring** Demonstration of Dropping & Fixing of Traveling Cable, Car Top Junction Box Wiring, Car Operating Panel (COP) Wiring, Overload Switch Fixing & Wiring, Car Door Wiring, Magnet Switch Fixing & Wiring, Sensor Fixing & Wiring, Car Lighting & Fan Wiring. **(b) Shaft & Machine Room / Head Room Wiring** Fixing and Setting of Top Terminal Limit Switch and Bottom Terminal Limit Switch , Motor & Drive Wiring to Controller,	**- Introduction to Electricity.** **- Introduction to Electrical & Electronics of Elevators** **- Electrical Safety** **- Purpose , Function and Installation Procedure of electrical components in the Car Top** **- Purpose , Function and Installation Procedure of electrical components in the Elevator Shaft, Machine Room & Head**

Controller to Shaft Wiring, Customer Panel to Controller Wiring, Fixing and Setting of Stop Switch, Fixing and Setting of Door Zone Vanes, Landing Door Wiring, Landing Push Box Fixing & Wiring, Fire Man Switch Fixing & Wiring, Automatic Rescue Device (ARD) Fixing & Wiring, Buffer Wiring, OSG – Tension Pulley Wiring, Shaft & Machine Room Earthing	**Room**
(v) Slow Speed Commissioning Demonstration of Electrical & Mechanical Safety Checks, Drive Parameters Setting & Start up.	**- Points to be checked prior to Slow Speed Commissioning & Procedure for Start Up.**
2. Stage – 4 Installation Training	
(a) Mechanical Installations:	
(i) Compensation Chain Fixing (ii) Counter Weight Screen Guard Fixing (iii) Car and Landing Toe Guard Fixing (iv) Counter Weight Frame Full Loading And Locking procedure (v) Running Clearance & RunBy Clearance Adjustments (vi) Brake Adjustment	**- Purpose, function and Installation procedure of all mechanical components required to be installed prior to Normal Run**
(b) Electrical Checks Checking of all electrical circuits which include Stop Switch, Top Terminal Limit Switch, Bottom Terminal Limit Switch, OSG Switch, Buffer Switch, Overload Switch, Landing Push Box & Indicator	**- Electrical Checks to be conducted prior to Normal Run**
(c) Normal Speed Commissioning & Inspection	
Demonstration of checks related too normal run and parameter setting and commissioning for normal run	**- Adjustments before Normal Run**
Inspection and Adjustment of all Electrical and Mechanical Installations as required	
(d) Final Inspection	
Demonstration of stage wise checks and safety checks related to all mechanical and	**- Final Inspection Procedure as per BIS**

electrical installations as mentioned above and inspection of client points as required to be completed, Leveling, Oiling & greasing of Rails, Guide Rail Filing, Guide Shoe Adjustment, Rope Adjustment, Door Freeness, Fine Tuning & Ensuring Ride Comfort, etc.	**Standards**
(3) Site Administration Demonstration of Site Administration procedures which include procedure to be followed during client co-ordination, project tracking, control and review methods. **(4) Basic Trouble Shooting** Demonstration of troubleshooting issues arising from landing doors, car doors and running elevator. Demonstration of rescue procedure to be adopted for people stuck in elevators	**- Site Administration Techniques** **- Basic Trouble Shooting & Rescue Procedures**

List of Tools & Equipments for the Module of Elevator Installer – Level - II (For a batch of 20 Trainees)

Tool Kits

Sl.No.	Items	Quantity
1.	Full Spanner Set (Double end & ring spanners) (5-6 to 34-36)	1 Set
2.	Full Screw Driver Set (6” to 10”)	1 Set
3.	Full Allen Key Set	1 Set
4.	Ball Peen Hammer	2 nos.
5.	Cutting Plier	1 no.
6.	Nose plier	1 no.
7.	Tester	1 no.
8.	Hacksaw	1 no.
9.	Wire Stripper	1 no.
11.	Measurement Tape – 5 Meters	1 no.
12.	Measurement Tape – 3 Meters	1 no.
13.	Rotary Hammering Machine	1 no.
14.	Blower	1 no.
15.	Tube Level - Spirit	1 no.
16.	Tube Level - Water	1 no.
17.	Multimeter	1 no.
18.	Plumb Bob	1 no.
19.	Pipe Wrench	1 no.
20.	Punch Center	1 no.

21.	Crimping Tool	1 no.
22.	First Aid Box	1 no.
23.	Personal Protective Equipment	1 Set
24.	Dummy Static Model of Elevator	1 no.

In addition to the above tools dummy GAD Sheets are also required to be present so as to ensure basic understanding of the drawing.

The candidate also may be given Hands-On Training On-Site in the site of the nearest elevator company so as to ensure the practical technical competence is met with.

Infrastructure Required

for Conducting Class Room Training for the Module of Elevator Installer – Level - II

(For a batch of 20 Trainees)

1.	All Tools as mentioned above	1 set
2.	White Board	1 no.
3.	Chairs with writing pad rest	20 nos.
4.	Projector	1 no.
5.	Laptop	1 no.
6.	Instructors Table & Chair	1 set
7.	White Board Marker	1 no.
8.	Duster	I no.