



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
DIRECTORATE GENERAL OF TRAINING

COMPETENCY BASED CURRICULUM

DRIVER CUM MECHANIC (LMV)

(Duration: Six Months)

CRAFTSMEN TRAINING SCHEME (CTS)
NSQF LEVEL - 3



SECTOR – AUTOMOBILE

DRIVER CUM MECHANIC (LMV)

(Non-Engineering Trade)



CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL - 3

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Developed By

Ministry of Skill Development and Entrepreneurship

Directorate General of Training

CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE

EN-81, Sector-V, Salt Lake City,

Kolkata – 700 091

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List of Expert members participated/ contributed for finalizing the course curriculum of Mechanic Auto Body Repair trade held on 20.02.18 at Advanced Training Institute - Chennai			
S No.	Name & Designation Shri/Mr./Ms.	Organization	Remarks
1.	P. Thangapazham, AGM-HR, Training	Daimler India Commercial Vehicles Pvt. Ltd., Chennai	Chairman
2.	A. Duraichamy, ATO/ MMV	DET- Chennai, Govt. ITI, Salem	Member
3.	W. Nirmal Kumar Israel, TO	Gov. ITI, Manikandam, Trichy	Member
4.	S. Venkata Krishna, Dy. Manager	Maruti Suzuki India Ltd., Chennai	Member
5.	S. Karthikeyan, Regional Training Manager	MARuti Suzuki India Ltd., Tamilnadu	Member
6.	N. Balasubramaniam	ASDC	Member
7.	P. Murugesan,	TVS TS Ltd., Ambattur Industrial Estate, Chennai	Member
8.	R. Jayaprakash	Ashok Leyland Driver Training Institute, Namakkal	Member
9.	Mr. Veerasany, GM, E. Sakthivel	Maruti Suzuki India Ltd.	Member
10.	M. Madasaniy, Principal	Ramco ITI, Rajapalayam, Tamil Nadu	Member
11.	Sankar S., TO	ATI-Chennai	Member
12.	K. Thaniyaraju, Principal I/C	Gov. ITI, Virali Malai, DET-Chennai	Member
13.	S. Mathivanan, Jt. Director	ATI, Chennai	Member
14.	R. Rajesh Kanna, T.O	ATI, Guindi, Chennai	Member
15.	Dinesh Babu K.K., Chief Instructor	Carriage & Wagon Works, Southern Railway	Member
16.	Suresh Awaji, Manager- Service Training	Ashok Leyland Ltd, Chennai	Member
17.	N. Ramesh Kumar, TO	ATI, Chennai	Member
18.	R. Senthil Kumar, Director	ATI/MSDE/CTI Campus, DGT, Gundia, Chennai	Member
19.	C. Yuvraj	ATI- Chennai	Member
20.	Balajirao. S, Body shop In charge	CUU romotors, 15/16, Thiruvika Industrial Estate, Guindy, Chennai	Member
21.	Nirmalya Nath, Asst. Director	CSTARI, Kolkata	Coordinator/ Member
22.	Akhilesh Pandey, Training Officer	CSTARI, Kolkata	Coordinator/ Member

S No.	Topics	Page No.
1.	Course Information	1
2.	Training System	2-5
3.	Job Role	6
4.	General Information	7-8
5.	NSQF Level Compliance	9
6.	Learning/ Assessment Outcome	10
7.	Learning Outcome with Assessment Criteria	11-15
8.	Trade Syllabus	16-26
9.	Syllabus - Core Skill (Employability Skill)	27-29
10.	Annexure I	
	List of Trade Tools & Equipment	30-31
	List of Tools & Equipment for Employability Skill	32
11.	Annexure II - Format for Internal Assessment	33

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1. COURSE INFORMATION

During the Six Months duration a candidate is trained on Professional Skill, Professional Knowledge and Employability Skill. In addition to this a candidate is entrusted to make/do project work and Extra Curricular Activities to build up confidence. The broad components covered under Professional Skill & Professional Knowledge subjects are as below:

After completion of this course the trainee will be able to drive Light Motor Vehicle drive safely on the assigned route without Company of a senior driver and will Ensure Road worthiness of the vehicle through pre-operational checks also the trainee will Drive in conformance to standard driving practices and follow Traffic Regulations and maintenance of good road conduct. Apart from driving the vehicle the trainee will also be able to Carry out the Basic Servicing of vehicle, Carry out checks of steering and suspension system for its road worthiness, Basic Servicing of front and rear wheels, brake, Check ignition circuit for proper functioning.

Also the trainee will be able to Communicate with required clarity and understand technical English. Sensitive to environment, self-learning and productivity.



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2. TRAINING SYSTEM

2.1 GENERAL

Directorate General of Training (DGT) under Ministry of Skill Development & Entrepreneurship offers range of vocational training courses catering to the need of different sectors of Labour market. The vocational training programmes are running under aegis of National Council of Vocational Training (NCVT). Craftsman Training Scheme (CTS) and Apprenticeship Training Scheme (ATS) are two pioneer programmes under NCVT for propagating vocational training.

Driver cum Mechanic (LMV) trade under CTS is one of the popular courses delivered nationwide through a network of ITIs. The course is of six months (01 semester) duration. It mainly consists of Domain area and Core area. In the Domain area (Trade Theory & Practical) impart professional skills, and Professional knowledge, while Core area (Employability Skills) imparts requisite core skills and life skills. After passing out of the training programme, the trainee is awarded National Trade Certificate (NTC) by NCVT which is recognized worldwide.

Candidates need broadly to demonstrate that they are able to:

- Read & interpret technical parameters/documentation, plan work, identify necessary materials and tools;
- Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations;
- Apply professional knowledge, core skills & employability skills while performing the job.
- Check the job/assembly as per drawing for functioning, identify and rectify errors in job/assembly.
- Document the technical parameters related to the task undertaken.

2.2 CAREER PROGRESSION PATHWAYS:

- Can join Apprenticeship programme in different types of industries leading to National Apprenticeship certificate (NAC).

2.3 COURSE STRUCTURE:

Table below depicts the distribution of training hours across various course elements during a period of six months (01 semester): -

S No.	Course Element	Notional Training Hours
1.	Professional Skill (Trade Practical)	720
2.	Professional Knowledge (Trade Theory)	144
3.	Employability Skills	55
4.	Library & Extracurricular activities	41
5.	Revision & Examination	80
	Total	1040

2.4 ASSESSMENT & CERTIFICATION

The trainee will be tested for his skill, knowledge and attitude during the period of the course and at the end of the training program as notified by the Government of India (GoI) from time to time.

a) The **Internal Assessment** during the period of training will be done by **Formative Assessment Method** by testing for assessment criteria listed against learning outcomes. The training institute has to maintain an individual trainee portfolio as detailed in assessment guideline. The marks of internal assessment will be as per the template (Annexure – II).

b) The final assessment will be in the form of summative assessment method. The All India Trade Test for awarding NTC will be conducted by NCVT at the end of each semester as per the guideline of Government of India. The pattern and marking structure is being notified by Govt. of India from time to time. **The learning outcome and assessment criteria will be the basis for setting question papers for final assessment. The examiner during final examination will also check** the individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

2.4.1 PASS REGULATION

The minimum pass percentage for practical is 60% & minimum pass percentage of theory subjects is 40%.

2.4.2 ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking the assessment. Due consideration should be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/waste as per procedure, behavioral

attitude, sensitivity to the environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising the following:

- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work

Evidences of internal assessments are to be preserved until forthcoming semester examination for audit and verification by examining body. The following marking pattern to be adopted while assessing:

Performance Level	Evidence
(a) Weightage in the range of 60%-75% to be allotted during assessment	
For performance in this grade, the candidate should produce work which demonstrates attainment of an acceptable standard of craftsmanship with occasional guidance, and due regard for safety procedures and practices	<ul style="list-style-type: none"> • Demonstration of good skill in the use of hand tools, machine tools and workshop equipment. • Below 70% tolerance dimension achieved while undertaking different work with those demanded by the component/job. • A fairly good level of neatness and consistency in the finish. • Occasional support in completing the project/job.
(b) Weightage in the range of 75%-90% to be allotted during assessment	
For this grade, a candidate should produce work which demonstrates attainment of a reasonable standard of craftsmanship, with little guidance, and regard for safety procedures and practices	<ul style="list-style-type: none"> • Good skill levels in the use of hand tools, machine tools and workshop equipment. • 70-80% tolerance dimension achieved while undertaking different work with those demanded by the component/job. • A good level of neatness and consistency in the finish. • Little support in completing the project/job.
(c) Weightage in the range of more than 90% to be allotted during assessment	
For performance in this grade, the candidate, with minimal or no support in organization	<ul style="list-style-type: none"> • High skill levels in the use of hand tools, machine tools and workshop equipment.

and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.

- Above 80% tolerance dimension achieved while undertaking different work with those demanded by the component/job.
- A high level of neatness and consistency in the finish.
- Minimal or no support in completing the project.



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Brief description of Job roles:

Driver Cum Mechanic (LMV) To drive Light Motor Vehicle safely & efficiently on public & private roads, following all Rule and regulations in force & giving no room for accidents that causing damage to other road users, public & private properties, passengers and goods being carried. Strictly maintaining scheduled times for passengers embarking/disembarking & goods loading /unloading.To collect passenger or goods as per information received from office. Maintain politeness with passengers and follow all the safety/security measures. Calculate appropriate fares communicating/collecting the same from passengers. Calculate the freight costs based goods weight & volumes and the distance and communicate / collect from the consigner. Proper discharge of passenger or goods at the appropriate place as per instruction and time schedules. Communicate & handover the passenger fare / freight amounts with relevant information to office / owner. Always keep statutory documents / records pertaining to self, the vehicle, passengers & goods & to present when demanded by the concerned authorities. Understand & follow the regulation while transporting the Hazardous goods. To know about the vehicle & various system available and use them judiciously. Maintain the vehicle in good working condition, doing pre-checks before starting the vehicle. Plan & carry out timely recommended services by manufacturers. Maintain operating vehicle economically by achieving good KMPL & better tyre life.

To maintain good relationship with other crew members and be courteous with other road users. Maintain physical & mental fitness all the times though stress releasing methods.

Reference NCO-2015: 8322.0501

4. GENERAL INFORMATION

Name of the Trade	DRIVER CUM MECHANIC (LMV)
NCO - 2015	8322.0501
NSQF Level	Level – 3
Duration of Craftsmen Training	Six Months (One Semester)
Entry Qualification	Passed 8 th Class Examination & should have completed 18 yrs. of age
Unit Strength (No. Of Student)	16 (Max. supernumeraries seats: 5)
Space Norms	56 sq. mtr.
Power Norms	6.82 KW
Instructors Qualification for	
1. Driver cum Mechanic (LMV) Trade	<p>Diploma in Mechanical/ Automobile Engineering From recognized board of technical education with two years experience in the relevant field with LMV Driving license.</p> <p style="text-align: center;">OR</p> <p>NTC/ NAC passed in the Trade of "Driver Cum Mechanic (Light Motor Vehicle)" with 3 Years post qualification experience in the relevant field with LMV Driving license.</p> <p>Desirable: - Preference will be given to a candidate with CIC (Craft Instructor Certificate) in Driver cum Mechanic (LMV) trade.</p> <p><i>Out of two Instructors required for the unit of 2(1+1), one must have Degree/Diploma and other must have NTC/NAC qualifications.</i></p>
2. Employability Skill	<p>MBA OR BBA with two years experience OR Graduate in Sociology/ Social Welfare/ Economics with Two years experience OR Graduate/ Diploma with Two years experience and trained in Employability Skills from DGT institutes.</p> <p style="text-align: center;">AND</p> <p>Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above.</p> <p style="text-align: center;">OR</p> <p>Existing Social Studies Instructors duly trained in Employability Skills from DGT institutes</p>
List of Tools and Equipment	As per Annexure – I

Distribution of training on Hourly basis: (Indicative only)

Total hours /week	Trade practical	Employability Skill	Trade theory	Extra-curricular activity
40 Hours	30 Hours	2 Hours	6 Hours	2 Hours



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5. NSQF LEVEL COMPLIANCE

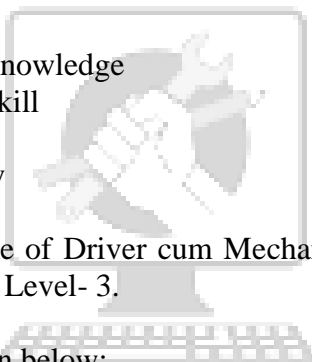
NSQF level for Driver cum Mechanic (LMV) trade under CTS: **Level - 3**

As per notification issued by Govt. of India dated- 27.12.2013 on National Skill Qualification Framework total 10 (Ten) Levels are defined.

Each level of the NSQF is associated with a set of descriptors made up of five outcome statements, which describe in general terms, the minimum knowledge, skills and attributes that a learner needs to acquire in order to be certified for that level.

Each level of the NSQF is described by a statement of learning outcomes in five domains, known as level descriptors. These five domains are:

- a. Process
- b. professional knowledge
- c. professional skill
- d. Core skill and
- e. Responsibility



The Broad Learning outcome of Driver cum Mechanic (LMV) trade under CTS mostly matches with the Level descriptor at Level- 3.

The NSQF level-3 descriptor is given below:

Level	Process Required	Professional Knowledge	Professional Skill	Core Skill	Responsibility
Level 3	Person may carry put a job which may require limited range of activities routine and predictable	Basic facts, process and principle applied in trade of employment	recall and demonstrate practical skill, routine and repetitive in narrow range of application	Communication written and oral, with minimum required clarity, skill of basic arithmetic and algebraic principles, personal banking, basic understanding of social and natural environment	Under close supervision Some Responsibility for own work within defined limit.

6. LEARNING/ ASSESSABLE OUTCOME

Learning outcomes are a reflection of total competencies of a trainee and assessment will be carried out as per the assessment criteria.

6.1. GENERIC LEARNING OUTCOME

1. Recognize & comply safe working practices, environment regulation and housekeeping.
2. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.
3. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.

6.2 SPECIFIC LEARNING OUTCOME

4. Comply environment regulations and housekeeping in the workshop (5S / Kaizen)
5. Identify Vehicle Components
6. Drive in conformance to standard driving practices.
7. Ensure Road worthiness of the vehicle thru pre-operational checks, checks in-between journey and end of the Journey
8. Drive vehicle following Traffic Regulations and maintenance of good road conduct.
9. Perform Daily Maintenance/Daily Inspection on Vehicle.
10. Carry out checks of Vehicle aggregates
11. Check ignition circuit for proper functioning.
12. Check wheel alignment and Perform Wheel Rotation
13. Carry out the general servicing of vehicle components.

7. LEARNING OUTCOME WITH ASSESSMENT CRITERIA

GENERIC LEARNING/ ASSESSABLE OUTCOME	
LEARNING/ ASSESSABLE OUTCOME	ASSESSMENT CRITERIA
1. Recognize & comply safe working practices, environment regulation and housekeeping.	1. 1. Follow and maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements.
	1. 2. Recognize and report all unsafe situations according to site policy.
	1. 3. Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures.
	1. 4. Identify, handle and store / dispose off dangerous/unsalvageable goods and substances according to site policy and procedures following safety regulations and requirements.
	1. 5. Identify and observe site policies and procedures in regard to illness or accident.
	1. 6. Identify safety alarms accurately.
	1. 7. Report supervisor/ Competent of authority in the event of accident or sickness of any staff and record accident details correctly according to site accident/injury procedures.
	1. 8. Identify and observe site evacuation procedures according to site policy.
	1. 9. Identify Personal Productive Equipment (PPE) and use the same as per related working environment.
	1. 10. Identify basic first aid and use them under different circumstances.
	1. 11. Identify different fire extinguisher and use the same as per requirement.
	1. 12. Identify environmental pollution & contribute to avoidance of same.
	1. 13. Take opportunities to use energy and materials in an environmentally friendly manner
	1. 14. Avoid waste and dispose waste as per procedure
	1. 15. Recognize different components of 5S and apply the same in the working environment.
2. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available	2.1 Explain the concept of energy conservation, global warming, pollution and utilize the available recourses optimally & remain sensitive to avoid environment pollution.

resources.	
	2.2 Dispose waste following standard procedure.
3. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.	3.1 Explain personnel finance and entrepreneurship.
	3.2 Explain role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmes & procedure & the available scheme.
	3.3 Prepare Project report to become an entrepreneur for submission to financial institutions.



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SPECIFIC LEARNING/ ASSESSABLE OUTCOME	
LEARNING/ ASSESSABLE OUTCOMES	ASSESSMENT CRITERIA
4. Comply environment regulations and housekeeping in the workshop (5S / Kaizen)	4.1 Identify environmental pollution and contribute to the avoidance of instances of environmental pollution
	4.2 Carryout maintenance and cleaning of work shop and lifting equipment environmentally friendly manner.
	4.3 Avoid waste and dispose waste as per procedure the working environment.
	4.4 Recognize different components of 5S and apply the same in the working environment.
5. Identify Vehicle Components	5.1 Comply with safety rules when performing the following operations.
	5.2 Locate and identify the various components in a vehicle.
6. Ensure Road worthiness of the vehicle thru pre-operational checks.	6.1 Check for vehicle meets Legal, organizational, CMVR/RTA, other safety, Security & Environmental guidelines.
	6.2 Check vehicle service record indicative of any history of defects or immediate service needs.
	6.3 Record deviations observed
	6.4 Record any other deviations observed during the trip.
	6.5 Report actual or possible defects on vehicle clearly for diagnosis/rectifications by technical staff.
	6.6 Consult with superiors conclude about roadworthiness of the vehicle & if found unfit to decide on using another vehicle.
7. Drive in conformance to standard driving practices.	7.1 Conform to standard driving practices
	7.2 Conform to traffic regulations.
8. Drive vehicle following Traffic Regulations and maintenance of good road conduct.	8.1 Maintain good road conduct.
	8.2 Maintain defensive driving practices
	8.3 Apply best driving practices to maintain fuel economy.
	8.4 Maintain road discipline & extend courtesy to other road users.
9. Perform Daily Maintenance/Daily Inspection on Vehicle.	9.1 Follow and maintain procedure to achieve a safe working environment in line with general servicing of two & three wheeler.

	9.2 Identify & locate the parts of two & three wheeler.
	9.3 Comply with safety rules when performing the operation.
	9.4 Select tools, equipment's and material required for servicing of vehicle.
	9.5 Wash the vehicle with washer with appropriate pressure required for each parts.
	9.6 Change and maintain the oil level as required.
	9.7 Lubricate the components which are necessary.
12. Carry out checks of Vehicle aggregates.	10.1 Select tools, equipment's, measuring instruments and material required for servicing of overhauling head assembly.
	10.2 Comply with safety rules when performing the operation.
	10.3 Plan, organize work and Comply with safety rules when performing job.
	10.4 Identify the parts of steering and suspension system.
	10.5 Check shock absorber for proper functioning and replace if necessary.
	10.6 Remove front and rear wheel, dismantle and check for truing, alignment.
	10.7 Inspect the brake drum, Brake shoe for worn out and replace if necessary.
	10.8 Check tire for wear and tube for puncture.
	10.9 Check and inflate tire for correct pressure as per specification.
	10.10 Check wheel bearing and grease it. (Understand specific grease requirement)
	10.11 Check adjust front and rear brake lever free play as per manual.
13. Check ignition circuit for proper functioning.	11.1 Ascertain and select tools and materials for the job.
	11.2 Comply with safety rules when performing the following operations.
	11.3 Plan and select different methods for charging the battery.
	11.4 Perform battery testing as per the operating procedure.
	11.5 Identify the parts of ignition circuits.
	11.6 Check ignition system components for proper functioning.
	11.7 Inspect and adjust ignition timing.
	11.8 Set and check emission as per standard
14. Check wheel alignment and Perform Wheel Rotation	12.1 Select tools, equipment's, measuring instruments and material required for servicing of overhauling head assembly.

	12.2 Comply with safety rules when performing the operation.
	12.3 Carryout Wheel Rotation
15. Carry out the general servicing of vehicle components.	13.1 Select tools, equipment's, and material required for the job.
	13.2 Plan, organize work and Comply with safety rules when performing job.
	13.3 Identify the parts of vehicle to be service and maintain.
	13.4 Carry out servicing and maintenance of vehicle as per mfg.'s schedule.



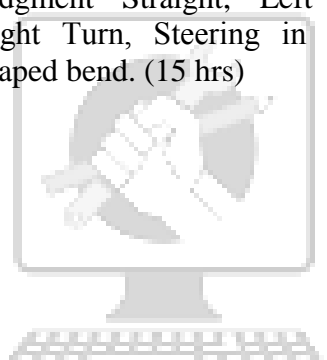
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SYLLABUS FOR DRIVER CUM MECHANIC (LMV)

Course Duration- Six Months

Week No.	Ref. Learning Outcome	Professional Skills with Indicative Hours	Professional Knowledge
1	Comply environment regulations and housekeeping in the workshop (5S / Kaizen)	<ol style="list-style-type: none"> 1. Importance of trade training, List of tools & Machinery used in the trade. (5 hrs) 2. Health, Safety and Environment guidelines, legislations & regulations as applicable. Disposal procedure of waste materials like cotton waste, metal chips/burrs etc. Basic safety introduction. (5 hrs) 3. Basic injury prevention, Basic first aid, Hazard identification and avoidance, safety signs for Danger, Warning, caution & personal safety message. (5 hrs) 4. Preventive measures for electrical accidents & steps to be taken in such accidents. (5 hrs) 5. Practice Use of Fire extinguishers. (5 hrs) 6. Practice yoga, Stress management. (5 hrs) 	<p>Importance of safety and general precautions observed in the in the industry/shop floor. All necessary guidance to be provided to the new comers to become familiar with the working of Industrial Training Institute system including stores procedures.</p> <p>Soft Skills: its importance and Job area after completion of training. Introduction of First aid. Operation of electrical mains. Introduction of PPEs. Introduction to 5S concept & its application. Response to emergencies e.g.; power failure, fire, and system failure.</p> <p>DRIVING THEORY: Qualities required for a good driver: Good behavior, Patience, Responsibility, Self Confidence, Anticipation, Concentration, Courtesy, Consideration for other Road Users, Defensive Driving, Knowledge of Road Rules and Regulations, Knowledge of Vehicle Controls, Maintenance, simple mechanism and effect of Competitiveness, Over-Confidence, impatience. Introduction to yoga and stress management and importance of Health .</p>
2	Identify Vehicle	7. Perform Preliminary checking /	Simple introduction to Automobile

	<p>Components</p>	<p>identification of various vehicle parts / aggregates. (10 hrs)</p> <p>8. Identify various gauges & Tell-tale Lamps in the instrument panel & interpretation of readings. (10 hrs)</p> <p>9. Perform Identification & use of different types electrical switches. (10 hrs)</p> 	<p>Engines and their working. Location of VIN plate / Engine serial Number.</p> <p>Vehicle Controls and its Response: Foot Control – Accelerator, Brake, Clutch Hand Control – Steering Wheel, Gear Shifting Lever, Hand Brake, Switches for direction Indicators, Head Lights, Horns, Ignition Switch, Dim-Bright Switch, and Wiper switch – Speed Control etc. Other Controls – Rear View mirrors – Types- adjustments, Instrument Cluster, Description of Speedo meter/Trip meter, RPM Gauge, Oil pressure Gauge, Temp Gauge, Fuel Gauge, and Ammeter other Gauges and Dials, Tell-tale lamps, Audio warnings, Wind Screen – their purpose & Working. Adjustment of seat and knowledge on seat belts, door locks. Fuse carrier location, Fuse layout.</p> <p>Knowledge on Latest Information systems: On Board Diagnosis system. Intelligent transport system. Air Bags, Audio warning systems Automated Manual Transmission, Dual power mod(Power or Economy Mode)</p>
3	<p>Drive in conformance to standard driving practices.</p>	<p>10. Practice in Simulator. (15 hrs) 11. Practice Initial freeway Driving. (15 hrs)</p>	<p>Introduction to Driving Simulator</p>
4	<p>Ensure Road worthiness of the vehicle thru pre-operational checks, checks in-between journey and end of the Journey</p>	<p>12. Perform Pre – Driving Checks: Before sitting on driver seat, After sitting on driver seat. (6 hrs) 13. Checking the document pertains to the driver and vehicle. (3 hrs) 14. Perform Adjustment of seat, Rear View mirrors and wearing seat belt. (5 hrs) 15. Carryout Vehicle Starting</p>	<p>Pre – Driving Checks:</p> <ul style="list-style-type: none"> - Before sitting on driver seat, Leakage of Fuel, Oil, water, Air, Battery etc - After sitting on driver seat, Guages etc. - Checking the document pertains to the driver and vehicle. <p>Starting:</p>

		<p>Practice. (6 hrs)</p> <p>16. Check the leaks of tyres in between the journey. (5 hrs)</p> <p>17. Ensure Main Switch off, windows, doors are closed, apply wheel chokes and complete paper work. (5 hrs)</p>	<p>Precautions and Procedure to be followed while starting. Clutch down start Accelerator: Proper use of Accelerator. Moving: Precautions to be followed while moving. Use of first gear.</p>
5	Drive in conformance to standard driving practices.	<p>18. Perform Clutch Practice: Biting and Balance point. (15 hrs)</p> <p>19. Perform Steering practice: In basic yard - In bare land and between tyres to develop Judgment Straight, Left and Right Turn, Steering in '8' shaped bend. (15 hrs)</p> 	<p>Use of Clutch: Correct Leg position on the Clutch pedal Biting Point, Balance Point.</p> <p>Steering - Holding Steering Wheel:</p> <ul style="list-style-type: none"> - Push and pull method - On the move - While gear changing - While turning - While sounding Horn - While operating dash board switches - While Signaling <p>On emergency</p>
6	Drive in conformance to standard driving practices.	<p>20. Perform Gear Practice: Practice Selection of gears, up shifting, down shifting. (15 hrs)</p> <p>21. Brake practice: In level ground and in Slope and Braking and Stopping Practice. (15 hrs)</p>	<p>Gear Shifting - Up shifting, Down Shifting – Procedures. Use of Over Drive Gear. Gear shift pattern on different vehicles. Pressure point shifting method in synchromesh & AMT Vehicle.</p> <p>Stopping: Normal stopping, Emergency stopping, use of Engine Brake. Stopping distance= Reaction Distance +Braking Distance</p>
7	Drive in conformance to standard driving practices.	<p>22. Practice Driving on the Road. (15 hrs)</p> <p>23. Perform Overtaking Practice: (5 hrs)</p> <p>24. Practice Overtaking stationary and Moving vehicles from Left and Right Side. (10 hrs)</p>	<p>Driving on the Road: Anticipation, Judgment, Positioning the Vehicle according to other Road users.</p> <p>Use of IPDE(Identification, Prediction, Decision, Execution) principles while Driving MSPSL(Mirror Signal Maneuver)</p>

			<p>– Routine</p> <p>Use of Indicators. Defensive Driving Techniques: Judgment, Anticipation, Escape route.</p> <p>Priority for certain Vehicles: Emergency Vehicles, Fire Engines and Ambulance.</p> <p>Overtaking: Overtaking stationary vehicle, Moving vehicle in Left and right side – IPDE principle. Traffic Education MV Act Section 118.</p>
8	Drive in conformance to standard driving practices.	<p>25. Practice 3 Point Turn, 5 Point Turn, 'U' Turn. (15 hrs)</p> <p>26. Practice on following distance. (15 hrs)</p>	<p>Other Maneuvers: Merging, Diverging, Turning to left and Right, 3 point Turn, 5 point turn, Passing, Crossing, Cornering. Following Distance: Meaning, Distance Method, Car length Method, 2 seconds time rule method, Distance between cars while driving at Railway crossing.</p>
9	Drive in conformance to standard driving practices.	<p>27. Perform Reverse Practice: Straight, Left, right and Reverse practice in '8' shaped bend. (15 hrs)</p> <p>28. Perform Parking Practice: Angular Parking, Perpendicular parking, Parallel Parking – Forward Entry and Reverse Entry. Parking facing Uphill and Parking facing downhill. (15 hrs)</p>	<p>Reversing: Locating Reverse gear, Confidence, Speed control, Steering Control, Weaving in '8' shaped Bend.</p> <p>Parking: Parallel, Angular, Perpendicular, Parking facing uphill, Parking facing downhill.</p>

10	Drive in conformance to standard driving practices.	<p>29. Practice Night Driving. (6 hrs)</p> <p>30. Practice Driving According to Lanes: Single, Two, Four and Six lane Roads. (6 hrs)</p> <p>31. Practice Village Road Driving & Perform Highway Driving. (6 hrs)</p> <p>32. Practice Driving in Crowded Street. (6 hrs)</p> <p>33. Perform Cross country Driving. (6 hrs)</p>	<p>Night Driving: Location of Head light switch, Use of Head light, Use of Dipper at night- Procedure.</p> <p>Lane Selection and lane Discipline: Single, double, 4 and 6 lanes Village and Highway Driving: Procedures and precautions.</p> <p>Driving under Special Condition: In wet weather, In dawn, dusk and misty road, In dense traffic, Cross country driving - Knowledge on Ground Clearance.</p>
11	Drive in conformance to standard driving practices.	<p>34. Practice Hill Driving: Driving uphill, Driving downhill, Driving in Hairpin bend. 4 WD Drive Practice. (20 hrs)</p> <p>35. Perform Vehicle Towing Practice. (10 hrs)</p>	<p>Hill Driving: Starting in hill using parking brake method and slipping the clutch method – Procedures. Selection of gear – uphill and downhill – procedures.</p> <p>Towing a disabled Vehicle: Procedures, Precautions, Limitations under road rule regulations 1989, Identification of Towing Eye. Speed limit, ‘ON Tow’ board.</p>
12	Drive in conformance to standard driving practices.	<p>36. Practice on stopping the vehicle using Handbrake. (10 hrs)</p> <p>37. Perform Simulator Driving Practice: With Simulation of extreme conditions. (20 hrs)</p>	<p>Emergency Manoeuvres: Skidding, Horn Stuck, Fire, Wheels Coming out, Brake failure, Broken Stub axle, Burst of front tyre, Sudden steering wobbling, Snapping of steering linkage, Jamming of accelerator pedal, Snapping of clutch linkage, under special circumstances of collision with disabled vehicle. Brake failure during downhill, sudden obstruction in front of vehicle etc. – Prevention is better than cure.</p>
13-14	Drive vehicle following Traffic Regulations and maintenance of good	38. Practice Driving on Various road as per Road Rule Regulation 1989. (40 hrs)	<p>TRAFFIC EDUCATION: Motor Vehicle Act, Important definitions and salient features of</p>

road conduct.	39. Practice Demo on Hand Signals of a Driver. (20 hrs)	<p>motor vehicle Act.</p> <p>Vehicle registration and insurance of motor vehicle. Learner's license and its particulars, Driving License particulars and its renewal.</p> <p>Knowledge about log book and different Forms and papers related to vehicles. Vehicle fitness certificate, Permit and Tax and production of documents on demand by checking officers. Knowledge on seating Capacity and load limit. Knowledge on loading and load distribution on vehicle while loading of goods.</p> <p>Driving Regulations: Road Rule Regulations made under sec 118 of Motor Vehicle Act 1988, Hand Signals of a driver, Traffic & Road Signs, Hand signals of traffic constable and traffic wardens, Introduction to Automatic Light Signals, Introduction to Road markings, Speed regulation on city road and highways.</p> <p>Know your Road: Functional classification, Design Speed, Road Geometrics, Surface types and characteristics, Slopes and Elevation.</p> <p>Sight Distance: At bends, At intersections</p> <p>Road Junctions: Principles and Types, T junction, Y junction, 4-Arm junction, Staggered Junction, Controlled Junction, Uncontrolled Junction.</p> <p>Traffic Islands: Types of roundabouts, Channelisers,</p>
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		 <p style="font-size: 2em; opacity: 0.5; text-align: center;">Skill India</p> <p style="font-size: 1.5em; opacity: 0.5; text-align: center;">कौशल भारत - कुशल भारत</p>	<p>Median</p> <p>Bye-Pass, Subway, Over-bridge and fly-overs: Purpose, precautions and procedures</p> <p>Driving according to other Road Users Characteristics: Pedestrians, drunkards, Children, blind, deaf, dump, youth, aged, women with children, Slow-moving vehicles, Mopeds, Motor cycles, Autos, Tempos, Vans, Buses, Trucks, VIP, Ambulance, Fire Engine and Animals etc..</p> <p>Accidents: Types, Causes, Preventive methods, Drivers duties and responsibilities on the occurrence of accidents.</p> <p>Symbols on the vehicle which is carrying Hazardous goods: Panel Board, Class Labels.</p> <p>Important provision of motor vehicle Act section 122,125,126,128,131,132,133,134, 135,136 & 139. Legal awareness.</p> <p>Traffic offences and penalties stipulated under the act and rules. Driving Test: Sub rule 3 of Rule 15 of Central Motor Vehicle Rules 1989.</p>
15-16	Perform Daily Maintenance/Daily Inspection on Vehicle.	<p>ENGINE BASICS:</p> <p>40. Identification of different types of vehicle and engine components. (10 hrs)</p> <p>41. Familiarization of operator manual. Check / replenish / top up – lubricating oil, engine coolant, power steering hydraulic oil, wind screen wiper water, battery electrolyte and</p>	<p>VEHICLE MECHANISM:</p> <p>Nomenclature of different parts of vehicle and their locations. Classification of vehicle & load carrying capacities. Pattern of loading various goods. E C & I C Engine – Types, engine terminologies, parts description & functions. Types of fuels used in vehicle.</p>

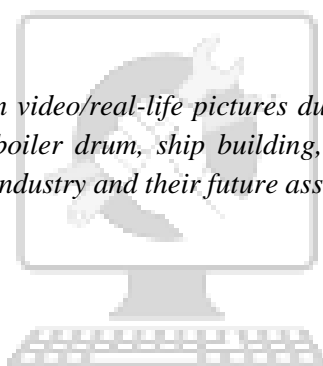
		<p>transmission oil. (10 hrs)</p> <p>42. Replace – air cleaner, oil filter & fuel filter. (20 hrs)</p> <p>43. Apply Grease to parts / through greasing points (if necessary). (20 hrs)</p>	<p>Working principle of 4 stroke SI & CI engines.</p> <p>Differences between 2 strokes & 4 strokes engine, petrol & diesel engines. Concept of MPFI, CRDI, Turbo Chargers, EDC Fuel supply layouts in diesel engines, Injection systems. Brief introduction on injectors.</p> <p>Lubrication system, types of filters & lubricants.</p> <p>Types of Greases & greasing points.</p> <p>Recommended vehicle maintenance schedules.</p>
17	Carry out checks of Vehicle aggregates	<p>TRANSMISSION SYSTEM:</p> <p>44. Check / replenish / transmission oil.(6 hrs)</p> <p>45. Check breathers and Clutch Pedal Play. (6 hrs)</p> <p>BRAKE SYSTEM</p> <p>46. Check and top up Brake fluid in the Reservoir.(6 hrs)</p> <p>47. Perform Brake Bleeding.(6 hrs)</p> <p>48. Perform Adjustment of brake padle play. (6 hrs)</p>	<p>Layout of power flow from Engine to wheels.</p> <p>Purpose of clutch, Types of Clutch, Knowledge on Clutch play, Types of gear box- Gear Shifting procedures General defects in clutch, manual gearbox Knowledge on Automatic transmission and Automated Manual Transmission. Propeller Shafts, & Knowledge on differential. Knowledge on 2 and 4 wheel drive.</p> <p>Types of Brake systems – working principle of drum and disc brakes General defects in brake systems. Tandum Master Cylinder Procedure to be followed in case of brake failure. Antilock Brake System</p>
18	Carry out checks of Vehicle aggregates	<p>STEERING SYSTEM</p> <p>49. Check level of power steering oil in the reservoir. (5 hrs)</p> <p>SUSPENSION SYSTEM</p> <p>50. Grease the points in suspension system. (25 hrs)</p>	<p>Types of steering System and its working, Power assisted steering, Steering linkages.</p> <p>Types of suspension system, Greasing points Effect of tampering the suspension system. Brief on suspension and its effects on steering.</p>

19-20	Check ignition circuit for proper functioning.	<p>BATTERY AND IGNITION SYSTEM:</p> <p>51. Remove and refit of Fuses, head lamp, Signal lamps, Parking lamp bulbs. (5 hrs)</p> <p>52. Check and adjust Head Lamp High Beam, Low Beam, Pass by beam. (5 hrs)</p> <p>53. Check Combination switches, Directional indicators, Wiper-Intermittent operation, low & high speed operations. (15 hrs)</p> <p>54. Perform Cleaning and topping up of a lead acid battery. (5 hrs)</p> <p>55. Remove and refit lead acid battery. (10 hrs)</p> <p>56. Carry out checks on Alternator unit, Battery and Power units. (20 hrs)</p>	<p>Ignition system circuit & components.</p> <p>Actions to be taken when Ignition key lost.</p> <p>Spare/Duplicate key information & location.</p> <p>Definition of Fuses & need for fuses in electrical circuits.</p> <p>Brief introduction on ignition</p> <p>Description of chemical effect, Batteries and cells, lead acid batteries & stay maintenance free (SMF) batteries.</p> <p>Fuse Ratings.</p>
21	Check wheel alignment and Perform Wheel Rotation	<p>TYRE REPAIR/INSPECTION:</p> <p>57. Practice Removal & re-fitting of wheel from vehicle. (6 hrs)</p> <p>58. Perform Measurement of tread wear. (6 hrs)</p> <p>59. Carryout Inflating the tyres with compressed Air /Nitrogen from Tyre inflator. (6 hrs)</p> <p>60. Repair a Puncture Tyre using Tubeless puncture Repair kit. (6 hrs).</p> <p>61. Practice on Tyre rotation as per vehicle manufacturers recommendation. (6 hrs)</p>	<p>Types of wheels, designation, construction.</p> <p>Types of tyres & tubes (solid & pneumatic tyre – Cross ply & Radial ply, desirable properties component & function, designation, tyre ratings for temperature & traction.</p> <p>Maintenance of tyre & tubes.</p> <p>Reasons for defects of tyre. Tread patterns & their applications.</p> <p>Inspection procedure.</p> <p>Tyre pressure monitoring system.</p> <p>Procedure for retreading the Tyre.</p> <p>Procedure for tyre rotation for Different make of vehicle.</p> <p>Tubeless Tyres.</p> <p>Thread wear Indicator. DOT (Manf. Date code)</p> <p>Importance of Two wheel & four wheel alignment.</p> <p>Reasons for Alignment problems – steering pull, off-center steering, steering shimmy, excessive steering effort, poor self-centering</p>

			<p>and memory steer, bump steer, torque steer & steering harshness-alignment diagnostics chart & steering problem diagnostic chart.</p> <p>Meaning of balance, causes & effects of imbalance, vibration. Identification of source, transfer path & responder of vibration(can be felt & can be heard) Steering wheel shake – shimmy, wobble & waddle</p> <p>Brief on static balance, dynamic balance, Mounting errors (radial & lateral) & excessive (Tyre & rim) run out-lateral & radial and mismatches.</p>
22-24	Carry out the general servicing of vehicle components.	<p>Maintenance of Vehicle Systems:</p> <p>62. Perform Air bleeding in diesel vehicle. (6 hrs)</p> <p>63. Check and replacing wiper blades. (6 hrs)</p> <p>64. Checking thermostat valve in cooling system. (6 hrs)</p> <p>65. Checking coolant reservoir tank. (6 hrs)</p> <p>66. Perform Air bleeding in diesel vehicle. (13 hrs)</p> <p>67. Practice Cleaning air cleaner and exhaust manifold. (10 hrs)</p> <p>68. Perform Cleaning and adjusting injectors, Silencer pipe, cooling motor. (15 hrs)</p> <p>69. Carryout Emission testing and adjustment of air fuel ratio. (10 hrs)</p> <p>70. Check the Air conditioner and heater unit. (6 hrs)</p> <p>JACKS & HAND TOOL KITS:</p> <p>71. Practice on using different type of vehicle jacks. (6 hrs)</p> <p>72. Practice on using vehicle hand tool kit. (6 hrs)</p>	<p>Cooling system & types of Anti-freeze /Anti rust solutions use. Air intake and Exhaust System Knowledge about CNG & LPG Gas kit. Cooling and lubrication system. Air Intake System. Exhaust system, Different types of fuel. Fuel Properties, Stoichiometric Ratio. Introduction to HVAC system.</p> <p>Specification, types and uses of different kinds of vehicle jacks. Description, care and maintenance of Mechanical & Hydraulic jacks.</p> <p>Description, care and maintenance of vehicle tools in kit.</p> <p>Identification of Jacking Points. Basics of computer, Email operation system. Fluency in reading and writing Writing of Reports Mathematical calculations on loads/freight/fares/KMPL.</p> <p>Management of personal expenses. Need to Cultivate habit of Savings</p>

			<p>for future needs. Knowledge on various general and personal Insurance Knowledge on Various saving schemes available with nationalized bank.</p>
25	Revision		
26	Examination		

Note: - *More emphasis to be given on video/real-life pictures during theoretical classes. Some real-life pictures/videos of welded items like boiler drum, ship building, heavy welded structures etc., may be shown to the trainees to give a feel of Industry and their future assignment.*



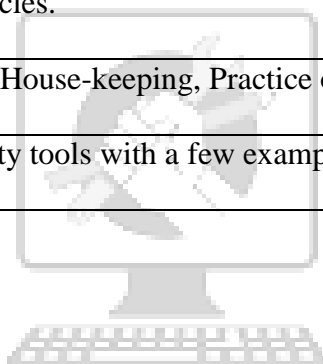
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9. SYLLABUS - CORE SKILLS

EMPLOYABILITY SKILLS (Duration: - 55 Hours)	
1. English Literacy	
Duration : 10 Hrs. Marks : 09	
Reading	Reading and understanding simple sentences about self, work and environment.
Writing	Construction of simple sentences Writing simple English.
Speaking / Spoken English	Speaking with preparation on self, on family, on friends/ classmates, on know, picture reading gain confidence through role-playing and discussions on current happening job description, asking about someone's job habitual actions. Cardinal (fundamental) numbers ordinal numbers. Taking messages, passing messages on and filling in message forms Greeting and introductions office hospitality, Resumes or curriculum vita essential parts, letters of application reference to previous communication.
2. I.T. Literacy	
Duration : 10 Hrs. Marks : 09	
Basics of Computer	Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of computer.
Word processing and Worksheet	Basic operating of Word Processing, Creating, opening and closing Documents, use of shortcuts, Creating and Editing of Text, Formatting the Text, Insertion & creation of Tables. Printing document. Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets. Use of External memory like pen drive, CD, DVD etc.
Computer Networking and Internet	Accessing the Internet using Web Browser, Downloading and Printing Web Pages, Opening an email account and use of email. Social media sites and its implication.
3. Communication Skills	
Duration : 08 Hrs. Marks : 07	
Introduction to Communication Skills	Communication and its importance Principles of Effective communication Types of communication - verbal, non verbal, written, email, talking on phone. Non verbal communication -characteristics, components-Para-language Body language, Barriers to communication and dealing with barriers.
Listening Skills	Listening-hearing and listening, effective listening, barriers to effective listening guidelines for effective listening.

Motivational Training	Characteristics Essential to Achieving Success. The Power of Positive Attitude. Self awareness, Importance of Commitment Ethics and Values, Ways to Motivate Oneself Personal Goal setting and Employability Planning.
Facing Interviews	Manners, Etiquettes, Dress code for an interview Do's & Don'ts for an interview.
4. Entrepreneurship Skills	
Duration : 07 Hrs. Marks : 06	
Concept of Entrepreneurship	Entrepreneur - Entrepreneurship - Enterprises: - Conceptual issue Source of business ideas, Entrepreneurial opportunities, The process of setting up a business.
Institutions Support	Role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmes & procedure & the available scheme.
5. Productivity	
Duration : 05 Hrs. Marks : 05	
Benefits	Productivity, Definition, Necessity. Improvement in living standard.
Affecting Factors	Skills, Working Aids, Automation, Environment, Motivation - How improves or slows down.
Personal Finance Management	Banking processes, Handling ATM, KYC registration, safe cash handling, Personal risk and Insurance.
6. Occupational Safety, Health and Environment Education	
Duration : 07 Hrs. Marks : 06	
Safety & Health	Introduction to Occupational Safety and Health importance of safety and health at workplace.
Occupational Hazards	Basic Hazards, Chemical Hazards, Vibro-acoustic Hazards, Mechanical Hazards, Electrical Hazards, Thermal Hazards. Occupational health, Occupational hygienic, Occupational Diseases/ Disorders & its prevention.
Accident & safety	Basic principles for protective equipment. Accident Prevention techniques - control of accidents and safety measures.
First Aid	Care of injured & Sick at the workplaces, First-Aid & Transportation of sick person.

7. Labour Welfare Legislation		Duration : 03 Hrs. Marks : 03
Welfare Acts	Benefits guaranteed under various acts- Factories Act, Apprenticeship Act, Employees State Insurance Act (ESI), Employees Provident Fund Act.	
8. Quality Tools		Duration : 05 Hrs. Marks : 05
Quality Consciousness	Meaning of quality, Quality characteristic.	
Quality Circles	Definition, Advantage of small group activity, objectives of quality Circle, Roles and function of Quality Circles in Organization, Operation of Quality circle. Approaches to starting Quality Circles, Steps for continuation Quality Circles.	
House Keeping	Purpose of House-keeping, Practice of good Housekeeping.	
Quality Tools	Basic quality tools with a few examples.	



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LIST OF TOOLS AND EQUIPMENT			
DRIVER CUM MECHANIC (LMV) (For batch of 16 candidates)			
A. TRAINEES TOOL KIT (For each additional unit trainees tool kit Sl. 1-18 is required additionally)			
Sl. No.	Name of the Tool & Equipments	Specification	Quantity
1.	Hammer ball Peen	0.75 Kg.	17 Nos.
2.	Chisel Cold Flat	19 mm.	17 Nos.
3.	Centre Punch	10 mm. Dia x 100 mm.	17 Nos.
4.	Steel Rule 15 cm English and Metric		17 Nos.
5.	Screw Driver	30 cm x 9 mm. Blade	17 Nos.
6.	Screw Driver	20 cm x 9 mm. Blade	17 Nos.
7.	Spanner DE Set of 12 pieces	6 mm - 32 mm	17 Nos.
8.	Plier Combination	15 cm	17 Nos.
9.	Hand File 20 cm second cut		17 Nos.
10.	Feeler gauge 20 blades (Metric)		17 Nos.
11.	Ring spanner set of 12 pieces	6 mm - 32 mm	17 Nos.
12.	Steel tool box with Lock and Key (folding type)	size 400 x 200 x 150 mm.	17 Nos.
13.	Allen Key set of 12 pieces	2 mm.-14 mm	4 sets
14.	Circlip Plier (Ext. and Int.)	150 mm. and 200 (two each)	8 sets
15.	Philips screw driver type set of 5 pieces 100 mm.	300 mm.	4 sets
16.	Socket spanner (1 set of 12 nos.)	6mm to 32mm	4 sets
17.	Jack light & heavy type		1 each
18.	Wheel wrench single & cross bar		1 each
B. GENERAL SHOPOUTFITS			
TOOLS AND EQUIPMENTS			
19.	Light Motor Vehicle	With double clutch and double brake pedal	1 No.
20.	Driving Simulator		1 No
21.	Light Motor Vehicle	Running condition	1 No.
22.	Traffic Signal Board		1 No.

23.	Fire Extinguisher		2 Nos.
24.	Fire brackets with stand		4 Nos.
25.	Safety Cones		10 No.
26.	Battery charger	12v to 36v, 10 AMPs	1 no.
27.	Oil Can	500 ml	2 nos.
28.	Adjustable spanner	10” and 12”	2 nos. each
29.	Grease gun	1.5 kg capacity	1 no.
30.	Safety stand		1 no.
31.	Desktop computer latest configuration and related MS office software		1 No.
32.	Laser printer		1 No.
33.	Oil syringe	500 ml	1 No.
34.	Multi plug Drain Spanner		1 No.
35.	Tyre Lever		1 No.
36.	Valve Die		10 No.
C. WORKSHOP FURNITURE			
37.	Discussion Table		1 No.
38.	Tool Cabinet		2 Nos.
39.	Trainees locker		Required to accommodate 16 lockers
40.	Book shelf (glass panel)		1 No.
41.	Storage Rack		2 Nos.
42.	Storage shelf		2 Nos.
43.	Computer table		1 No.
44.	Computer chair		2 Nos.
45.	Printer table		1 No.
46.	Online UPS	2 KVA	1 No.

TOOLS & EQUIPMENT FOR EMPLOYABILITY SKILLS		
S No.	Name of the Equipment	Quantity
1.	Computer (PC) with latest configurations and Internet connection with standard operating system and standard word processor and worksheet software	10 nos.
2.	UPS – 500Va	10 nos.
3.	Scanner cum Printer	1 no.
4.	Computer Tables	10 nos.
5.	Computer Chairs	20 nos.
6.	LCD Projector	1 no.
7.	White Board 1200mm x 900mm	1 no.

Note: Above Tools & Equipment not required, if Computer LAB is available in the institute.



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FORMAT FOR INTERNAL ASSESSMENT

Name & Address of the Assessor:						Year of Enrollment:								
Name & Address of ITI (Govt./Pvt.):						Date of Assessment:								
Name & Address of the Industry:						Assessment location: Industry / ITI								
Trade Name:			Semester:			Duration of the Trade/course:								
Learning Outcome:														
S No.	Maximum Marks (Total 100 Marks)		15	5	10	5	10	10	5	10	15	15	Total Internal Assessment Marks	Result (Y/N)
	Candidate Name	Father's/Mother's Name	Safety Consciousness	Workplace Hygiene	Attendance/ Punctuality	Ability to follow Manuals/ Written Instructions	Application of Knowledge	Skills to Handle Tools & Equipment	Economical use of Materials	Speed in Doing Work	Quality in Workmanship	VIVA		
1														
2														