

**THE NATIONAL COUNCIL FOR TECHNICAL AND VOCATIONAL
EDUCATION AND TRAINING**



***MANUALS FOR ESTABLISHING A VET CENTRE
FOR
AUTOMOTIVE SECTOR***

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LIST OF ABBREVIATIONS

CBET	-	Competence Based Education and Training
FTC	-	Full Technician Certificate
TT	-	Trade Test
VET	-	Vocational Education and Training
NACTVET	-	National Council for Technical and Vocational Education and Training
VTC	-	Vocational Training Centre
VTTC	-	Vocational Teachers Training College

PREAMBLE

Vocational Education and Training in Tanzania is governed by the National Council for Technical and Vocational Education and Training, established under the National Council for Technical and Vocational Education and Training Act, Cap. 129. This act empowers NACTVET to oversee and coordinate the provision of technical and vocational education in non-university institutions across the country. This manual therefore, gives guiding parameters so as to meet the minimum required standards set by the NACTVET Governing Council having in mind that one of its major roles is to ensure that vocational education and training provision satisfies the demands of the labour market with employees who have the required knowledge, skills and attitudes in order to improve production and productivity of our economy. When preparing the manual the following key areas were considered as essential for establishing Vocational Training Centres.

- A clearly defined organisation structure showing all the key positions for the efficient and effective operation of the Centre.
- NACTVET has set the standard required qualifications and competences which must be met by Vocational Teachers. The vocational teachers will be licensed and categorised by NACTVET according to their qualifications and experiences.
- This manual also provides criteria for a standard Vocational Training Centre (VTC) which will allow them to be registered and categorised accordingly. If the standards are not met, then the VTC will not be registered and Training Programmes will not be allowed.
- For the purpose of proper financial control of Centre funds, each VTC must keep proper records of all financial transactions showing the incomes and expenditures of the centre.
- Standard floor area requirements for workshops, classrooms, hostels, dining hall, offices, stores, library, toilets, playing fields etc, must be maintained. External and internal environment must also be conducive for training.
- Basic machines, equipment, tools and furniture must be provided to workshops and classrooms. Inventories must be well kept and updated. The items mentioned above must appear by proper name and specification in the inventory. Architectural drawings for all buildings, drawings for electrical wiring and drainage systems must be well kept by the Principal of the Centre.

NACTVET being vested with the role of overseeing and regulating the provision of Vocational Education and Training of other Providers will strictly observe these guidelines during the process of registration and categorisation of Vocational Training Centres.

Finally, it is believed that a VTC operating under these guidelines will produce the right outputs for the labour market, thereby increasing the productivity of our economy. It is also hoped that this manual will not remain static but is subject to updating when the conditions require so.

PART ONE

1. INTRODUCTION

The kind of VET system that is needed to spearhead socio-economic development in Tanzania will demonstrate itself in the kind of VTCs it will establish. There will be a close relationship between quality VTCs and products (trainees and services) it will produce. Countries with properly established VET centres are invariably placed to produce quality products.

This manual is intended to provide necessary information regarding requirements for the establishment of VTCs. In this manual quality parameters are defined. This will help to maintain consistency in training delivery.

Quality parameters are defined basing on three major areas which seek to address implementation of the Competence Based Education and Training (CBET) concept. These key areas are quality and sufficiency of tools and equipment, governance of the centre and infrastructure.

Vocational education and training is offered in 12 sectors which cover National vocational Award 1-3. The sectors include Civil and Building Engineering, Commercial and Business Support, Hospitality and Tourism, Automotive, Agriculture and Food Processing, Mining, Clothing and Textile Technology, Cosmetology, Transport, Mechanical and Printing. However, this manual focuses on the Agriculture and Food Processing occupations.

To ensure that each registered centre offers training according to its capacity. Registration of VET centres will be done according to the following categories:

1.1. Categorization of VTCs.

A Centre will be registered under any of the categories listed in Table R1.

Table R1: Criteria for Categorization of VTCs

CATEGORIZATION	CRITERIA	CATEGORY A	CATEGORY B	CATEGORY C	CATEGORY D
1. Occupation.	1.1. Number of occupations.	Minimum eight (8) occupations for multi-sectoral Centres or four (4) for sector specific Centres.	Minimum five (5) occupations for multi-sectoral Centres or two (2) for sector specific Centres.	Minimum one (1) occupation.	Minimum one (1) occupation.
	1.2. Qualifications levels.	Minimum of four (4) occupations offered above level II.	Minimum of two (2) occupations offered above level II.	Minimum of one (1) occupation offered up to level II.	Minimum of one (1) occupation up to level I.
2. Staff Qualifications 1.1 Principal	1.1.1 Academic qualifications	Minimum Form VI or equivalent.	Minimum Form VI or equivalent.	Minimum Form VI or equivalent.	Minimum Form IV or equivalent.
	1.1.2 Professional qualifications.	1 st Degree in technical/vocational education or equivalent for VTCs with training up to level IV and Master above level IV.	1 st Degree in technical/vocational education or equivalent for VTCs with training up to level IV and Master above level IV.	1 st Degree in technical/vocational education or equivalent for VTCs with training up to level IV and Master above level IV.	Certificate in technical education or equivalent
	1.1.3 Work Experience in relevant field.	Minimum three (3) years.	Minimum three (3) years.	Minimum three (3) years.	Minimum five (5) years.
1.2 Vocational teacher	1.2.1 Academic qualifications.	Minimum Form IV.	Minimum Form IV.	Minimum Form IV.	NA
	1.2.2 Professional qualifications.	Minimum one level above the level taught in a relevant occupation or field. TEACHER MINIMUM LEVEL III.	Minimum one level above the level taught in a relevant occupation or field. TEACHER MINIMUM LEVEL III.	Minimum one level above the level taught in a relevant occupation or field. TEACHER MINIMUM LEVEL III.	National vocational certificate of competence or equivalent
	1.2.3 Teaching qualifications.	Minimum Teacher Certificate in education.	Minimum Teacher Certificate in education.	Minimum Teacher Certificate in education.	Minimum Instructional Methods Certificate (IMC).
	1.2.4 Work Experience in relevant field.	Minimum three (3) years.	Minimum three (3) years.	Minimum three (3) years.	Minimum five (5) years in relevant field.
1.3 Training Coordinator/ Registrar	1.3.1 Academic qualifications.	Minimum Form IV.	Minimum Form IV.	Minimum Form IV.	NA
	1.3.2 Professional qualifications.	Minimum Ordinary Diploma in technical field or equivalent for VTCs with training up to level IV and 1 st Degree above level IV.	Minimum Ordinary Diploma in technical field or equivalent for VTCs with training up to level IV and 1 st Degree above level IV.	Minimum Ordinary Diploma in technical field or equivalent for VTCs with training up to level IV and 1 st Degree above level IV.	NA
	1.3.3 Work Experience in training	Minimum three (3) years.	Minimum three (3) years.	Minimum three (3) years.	NA
1.4 Accountant	2.4.1. Academic qualifications.	Minimum Form VI.	Minimum Form IV.	Minimum Form IV.	NA
	2.4.2. Professional qualifications	Minimum Diploma or equivalent in relevant field	Minimum Diploma or equivalent in relevant field	Certificate equivalent in relevant field	NA
	2.4.3. Work Experience in relevant field	Minimum three (3) years.	Minimum three (3) years.	Minimum three (3) years.	NA

CATEGORIZATI ON	CRITERIA	CATEGORY A	CATEGORY B	CATEGORY C	CATEGORY D
2. Centre Capacity.	2.1 Teacher trainee's ratio per class.	1:20	1:20	1:20	1:5
	2.2 Infrastructure.	As per Manual for establishing VET Centres.	As per Manual for establishing VET Centres.	As per Manual for establishing VET Centres.	Enough for five (5) trainees as per programme requirements
	2.3 Tools and equipment.	As per Manual for establishing VET Centres.	As per Manual for establishing VET Centres.	As per Manual for establishing VET Centres.	Enough for five (5) trainees as per programme requirements

We hope that the guidelines will be useful not only to those who would like to establish a VTC for specific occupations but also to providers who wish to improve their existing VTCs for the purpose of registration.

The manual is divided into five main parts, namely: centre governance, staffing, centre financial management, infrastructure, tools and equipment.

PART TWO

2. VOCATIONAL TRAINING CENTRE GOVERNANCE

Good governance is an important aspect in establishing a VET centre. It ensures accountability, participation, transparency, equity and rule of law in operation of the VET centre. This will also play part in making the centre sustainable. Involvement of stakeholders in governing the centre is imperative. It is therefore mandatory for a VET centre with categories A - C to have an Advisory Board/Board of Trustees.

The composition of the Board will have the following representation:

- i. Centre owner;
- ii. Parents;
- iii. Employers;
- iv. Government at District /division level;
- v. Centre employees; and
- vi. Principal-Secretary to the Board.

PART THREE

3. STAFFING

Staffing of a Centre will consist of the following personnel:

(a) Principal

The Principal is the Chief Executive of the centre. He/she will develop strategies and policy matters that included soliciting donor fund, centre and VET promotion, sensitize stakeholders with view to meet the centre goals and plan. For the centre with categories A-C, he/she will be the secretary to the Centre Advisory Board/Centre Board of Trustees.

Under these categories the Principal will be assisted by the following titles- Training Coordinator, Centre Administrator, Accountant, Entrepreneurship and Short course coordinator.

Minimum Qualifications of a Centre Principal:

For category A, B and C VET centres

- i. Degree in Technical / Vocational Education or equivalent.
- ii. Three (3) years work experience in the relevant field.

For category D VET centres

- i. Certificate in Technical / Vocational Education or equivalent.
- ii. Five (5) years work experience in the relevant field.

(b) Training Coordinator

The functions of a training coordinator in a VTC will be those activities related to training which include trainees' enrolment, coordination of trainees' assessment, monitoring training, discipline, guidance and counselling, Trainees' welfare in general and preserving centre

environment. The coordinator will be supported by Head of departments, warden/matron and head cook.

Minimum Qualifications of a Training Coordinator

- i. Ordinary Diploma or equivalent in any technical education field;
- ii. Certificate in teaching;
- iii. Three (3) years experience in training.

(c) Human Resource Officer

The Human Resource Officer will provide support for day to day administrative activities which include; staff welfare, staff development, security matters and stores.

Minimum Qualifications of a Human Resource Officer

- i. Certificate in Human Resources Management;
- ii. Three (3) years experience in relevant field.

(d) Accountant

The Accountant will keep all financial and accounts records of the centre.

Minimum Qualifications of the Accountant

- i. Diploma in accountancy;
- ii. Three (3) years experience in relevant field.

(e) Secretary

The secretary will be a personal assistant to the Principal and will perform all duties related to secretarial responsibilities.

Minimum Qualifications of the Secretary

- i. Form IV education;
- ii. Stage III certificate.

(f) Teaching staff

Vocational teachers have the central role of making the training relevant. Vocational teachers are the first-line practitioners of vocational training. A befitting vocational teacher to carryout vocational training within the Tanzanian VET system will have the following attributes:

- i. Critically alert;
- ii. Imaginative, innovative, proactive, creative;
- iii. A cultivated person with the courage and ability to face and solve problems;
- iv. Active in the pursuit of truth and goodness within the overall accepted aspirations of a nation at large; and
- v. Willingness to learn.

To ensure efficiency and effectiveness in training delivery, the maximum vocational teacher – trainee’s ratio will be 1:20.

Minimum Qualifications of a Vocational Teacher

Vocational teachers shall be licensed and categorised according to their qualifications and the level (s) in which they are allowed to teach. The required qualifications for vocational teachers are as described hereunder:

Vocational teachers for level I-III shall have the following qualifications:

- i. Holders of FTC, Diploma or other equivalent qualifications in the relevant field;
- ii. Teaching certificate obtained from VTTC or any other recognised institution; and
- iii. At least three (3) years of post training relevant practical work experience in his/her field of specialisation.

Vocational teachers for level I-II shall have the following qualifications:-

- i. Form IV secondary certificate;
- ii. Vocational Certificate of Competence or equivalent;
- iii. Teaching certificate obtained from VTTC or any other recognised institution; and
- iv. At least five (5) years of post training relevant work experience in his/her field of specialization.

Competences of a vocational teacher

A Vocational Teacher must possess the following competences:

- i. Able to interpret occupational training standards into learning process;
- ii. Evaluate training process and outcomes;
- iii. Compare training offered and the demand from the labour market;
- iv. Prepare report on training implementation in his/ her own workshop;
- v. Prepare maintenance schedule for training tools and equipment;
- vi. Counsel and guide trainees in the workshop; and
- vii. Ability to maintain a conducive environment for learning.

NB : Permanent teachers should be two thirds ($\frac{2}{3}$) of all teachers in the centre.

PART FOUR

4. CENTRE FINANCIAL MANAGEMENT

Proper management of centre finances is very important. It is therefore advised for anyone who aspires to establish a VET centre at categories A-C has to ensure that proper systems for managing finances are in place. These will ensure stability and sustainability of a VTC in a long run.

The following are important pre requisites:

- a) Bank account;
- b) Qualified staff;
- c) Reliable sources of funds; and
- d) Management of Cash Flow

PART FIVE

5. INFRASTRUCTURE

Infrastructure of a VTC with categories A-C include, among other things, workshops, classrooms, trainees hostel, conference hall, storage facilities, staff houses, and external environment. All building infrastructure should be able to accommodate people with special needs.

For the VTC with category D should have proper premises to facilitate practical and theoretical training. It should have some storage facilities and provision facilities for hygiene.

In deriving the size of the area suitable for training, the following factors have been taken into account:

- i. The number of trainees in one workshop;
- ii. Type of equipment;
- iii. Air circulation in a room; and
- iv. Movement of users within a room and around the building for various activities.

The provided schematic drawings demonstrate how a workshop or a training space should look like. It is not obligatory to use the same design but one should adhere to specifications provided in the Table 1. Users are strongly advised to seek for technical expertise from professionals who will help them translate information contained in this work into proper architectural and engineering drawings required for erection of buildings.

In this respect, construction of centres should consider standards as elaborated in the Table 1.

TABLE 1: INFRASTRUCTURE SPECIFICATIONS

S/N	ITEM/DESCRIPTION	NORM/SPECIFICATIONS
1.	Vocational teacher– Trainee Ratio.	1:16 -20 (Capacity for a single class/workshop is between 16 to 20 trainees).
2.	Area per trainee. <ul style="list-style-type: none"> Workshops (without offices). Classrooms (without offices). Conference Hall (without offices). Dining Hall (without kitchen). Library. Kitchen facility. 	<ul style="list-style-type: none"> 5 -14sqm per Trainee (workshop with light equipment like tailoring, computer applications – 5sqm/trainee; those with large equipment e.g. machinery fitter, etc. 12 – 14sqm/trainee can be used). 2.5 – 3 sq m per trainee. 1.5 – 2.5 sq m per trainee. 1.5 – 2.5 sq m per trainee. 2.5 – 3.5 sq m per trainee. 0.2 – 0.3 sq m per trainee.
3.	Areas for other general facilities. <ul style="list-style-type: none"> Administration Block. Office (for a teacher, officer etc). Office for Head of section/department 	<ul style="list-style-type: none"> 200 – 250 sq m. 10 – 16 sq m. 16 – 25 sq m.
4.	Toilets and change rooms. <ul style="list-style-type: none"> Number of persons per toilet Unit. Minimum unit area. Change rooms. 	<ul style="list-style-type: none"> 4 - 5 persons per toilet unit (staff). 8 -10 trainees per toilet unit (trainees). 1.5 – 2 sq m. 1 – 1.5 sq m per trainee (it is advised that each workshop should have a change room, which must be gender sensitive. Provision of washing basin and showers in a change room will depend on the type of occupation).
5.	Storage facilities. <ul style="list-style-type: none"> General store. Office store. Workshop store. 	<ul style="list-style-type: none"> 12 - 30 sq m. 2 – 6 sq m. 10 – 30 sq m (the shape of which has to depend on the type and nature of materials to be stored).
6.	Trainees Hostel. <ul style="list-style-type: none"> 4 trainees per room. 	<ul style="list-style-type: none"> 16-24 sq m per room with height 3.0m Provide study room for at least 20 trainees.
7.	Staff house.	100 – 200 sq m per single family house.

S/N	ITEM/DESCRIPTION	NORM/SPECIFICATIONS
8.	Location.	Suitable location of the training facilities required; workshop with heavy duty equipment preferably to be located on the ground floor. Location should consider other surrounding activities.
9.	Floors.	Strong floors capable of withstanding operations of a particular occupation
10.	Structure condition.	The structure and materials to be used should be durable, sound, safe, strong, Impurities free, attractive and available at local market.
11.	Internal environment.	<ul style="list-style-type: none"> • Should be smoke/dust free; well ventilated/air conditioned; enough natural and artificial lighting; appropriate colours in walls and ceiling necessary furniture and fixtures should be available. • Height of head room to be not less than 3m and above • Room relationship to be considered to minimize unnecessary movement. • Type of floor finish to match with the nature of activity performed.
12.	External environment	Provide access roads landscaping, walkways to allow movement people with disability.
13.	Utilities.	Proper electrical installation and power supply ² ; enough water supply; adequate sewerage disposal system; adequate solid waste disposal system; well functioning telecommunication facilities; fire fighting/prevention facilities as per regulations; dust/smoke removing mechanism for dust/smoke generating workshops.
14.	First – Aid facilities and safety gears.	Standard first-aid box with basic medication installed in a conspicuous position; safety gears must be available for both vocational teacher and trainees.
15.	<p>Legality of VET Centre in guidelines and Council Regulations.</p> <ul style="list-style-type: none"> • Birds class layer type • Broiler birds 	<p>NACTVET plays a role of establishing and monitoring guideline to VET provider and not authorizing permission to commence construction activities. The respective regulatory Body is obliged to administer their regulations.</p> <ul style="list-style-type: none"> • Brooding space 20-30 birds/m² • Growing space 10-20 birds/ m² • Layer's birds 5-6 birds/ m² • Brooding space 20-30/ m² • Growing space 10-12 birds/ m²
16.	Space for seedling production (horticulture)	<ul style="list-style-type: none"> • Extra 1-5 Acres required for horticulture practical • Provide reliable source of water for irrigation purposes. • Head room height not less than 3.6 m high.
17.	Chick space:	38cm ² per layer chick, 52cm ² per broiler chick
18.	Size of foundation	The depth of the foundation to be determined at/in site, also nature of soil water table and the load to be imposed. But also the materials to be used
19.	Safety awareness	Adherence to occupational health and safety should be taken on board to enhance high productivity and keep good working

S/N	ITEM/DESCRIPTION	NORM/SPECIFICATIONS
		environment
20.	Others.	Master timetable placed at conspicuous area; at least one wall clock in each workshop; at least one suggestion box for each VTC. Each VTC has to have indoor or outdoor sports areas.

PART SIX

6. BASIC TOOLS AND EQUIPMENT

The minimum requirements of tools and equipment for a VTC with categories A-C for each occupation are provided. The same specifications of tools and equipment can be used for category D, but quantity and type will depend on curriculum contents to be covered.

The purpose of this list is to provide guidance and help management and authorities of vocational institutions to plan their equipment requirements with accuracy and produce precisely defined technical specifications.

It is advisable when purchasing tools and equipment to consider their durability, serviceability, accuracy, versatility and low operating costs.

APPENDIX 1
LIST OF TOOLS AND EQUIPMENT

BASIC TOOLS AND EQUIPMENT FOR AGROMECHANICS (FOR 16 TRAINEES)

A. A. EQUIPMENT

S/ N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Hand grinding machines, (with accessories)	3600rpm Weight 5kg Maximum disc 180mm diameter	Sets	1:4	√	√	√
2.	Power hacksaw machines	Capacity 210mm diameter Blade size 350x38x2mm	Pcs	1:16		√	√
3.	Countersink drills for hand drill machines	6-12mm Diameter	Set	1:4		√	√
4.	Honing machine	Range 50-100mm Diameter	Sets	1:8		√	√
5.	Welding machine	Arc 380-450V 3phase	Pcs	1:4	√	√	√
6.	Bench drill machine	6 – 20mm Churck Diameter	Sets	1:4	√	√	√
7.	Tractor wheel weights	standard, cast iron 125kg-600kg	Pcs	1:16		√	√
8.	Tractor front weights	30- 100kg	Pcs	1:16	√	√	√
9.	Coupling fitting equipment	All types	Pcs	1:16		√	√
10.	Wheel front alignment tool	Magnetic camber gauge -3 — +3 camber +7 — - 5 caster	Pcs	1:16		√	√
11.	Heavy duty hydraulic bottle jack	10tons	Pcs	1:8	√	√	√
12.	Seat valve redressing machine	Rated amps (120V) No load (rpm 1300)	Set	1:16	√	√	√
13.	Spring tension testing machine	Maximum opening 100mm	Pcs	1:16		√	√
14.	Fire extinguishers	Liquid form 2cylinders Powder form 2 cylinders	Cyl.	1:4	√	√	√
15.	Valve refacing	3phase 220/380V-50Hz	Pcs	1:16		√	√

S/ N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
	machine						
16.	Injector Pump Tester (Machine)	Diesel with all accessories	Set	1:16		√	√
17.	Nozzle tester	Pop test and pressure tester 50-600kpa	Pcs	1:16		√	√
18.	Tractor	80HP with implements: <ul style="list-style-type: none"> • Mould board plough. • Disc plough • Disc harrow • Reciprocating mower • Rigers • Planter • Fertilizer spreader or tractor model 	Pcs	1:16		√	√

B. TOOLS

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Center punch	4 – 10mm diameters	Sets	1:4	√	√	√
2.	Chisel	Flat Length 150mm Width 20mm	Pcs	1:1	√	√	√
3.	Files	Bastard single cut 300x20x 5.5mm	Pcs	1:1	√	√	√
4.	Bench vices	Size 5 Inches	Pcs	1:1	√	√	√
5.	Screw driver	Flat screwdriver and Star screwdriver of various sizes	Set	1:8	√	√	√
6.	Try squares	Size 90°X300mm	Pcs	1:1	√	√	√
7.	Feeler gauges	Size 0.05- 1.0mm	Pcs	1:8	√	√	√
8.	Drill gauges	Size 0.1 – 10mm diameter Plate thickness 2mm	Pcs	1:8	√	√	√
9.	Vernier height gauges	Height 100mm Scale 20 x 16mm Base 170 x 120mm	Pcs	1:8	√	√	√
10.	Vernier calipers	0-300mm	Pcs	1:8	√	√	√
11.	Steel rules	0-300mm	Pcs	1:1	√	√	√
12.	Chipping hammers	Weight 150grams	Pcs	1:4	√	√	√
13.	Tongs	Length 280mm Gap depth 70mm Width 90mm	Pcs	1:4	√	√	√
14.	Taps and die	6mm-20mm	Set	1:4	√	√	√
15.	Center drills	Diameter = 2.5mm Shank diameter = 6.3mm	Set	1:4	√	√	√
16.	Reamers	Diameter 12-34mm reamer no. 9	Set	1:4	√	√	√
17.	Bench vice	Size 5 inches	Pcs	1:4	√	√	√
18.	Set of drill bits (twist drills)	Diameter 1-13mm	Set	1:4	√	√	√
19.	Set of files (needle)	Length - 160mm	Set	1:1	√	√	√
20.	Scriber – double ended type	Length – M 175mm Diameter 6.5mm	Pcs	1:1	√	√	√
21.	Riveting tool pliers	Length - 75mm	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		Diameter of rivet 2.4 – 5mm					
22.	Rivet punch/gun	Width 3.2- 4.8mm adapter of rivet	Pcs	1:4	√	√	√
23.	Wire brush	200mm	Pcs	1:1	√	√	√
24.	Welding shield	Length 100X60mm External diameter = w x h	Pcs	1:4	√	√	√
25.	Anvil	Length 575mm Weight 75kg	Pcs	1:8	√	√	√
26.	Heavy duty mechanical jack	Maximum load 15 tons Lift height 300mm	Pcs	1:8	√	√	√
27.	Heavy duty hammer double square face	Weight = 6.6kg Handle length = 320mm	Pcs	1:8	√	√	√
28.	Wheel spanners Hexagon socket	Size 17 x 19 x 22 x 13/16 Inches	Pcs	1:4	√	√	√
29.	Tyre lever	Length 610mm	Pcs	1:4	√	√	√
30.	Compressor	Maximum bars 12 Maximum bars 175 PSI	Pcs	1:16	√	√	√
31.	Piston rings pliers	Diameter 50 – 100mm	Pcs	1:4	√	√	√
32.	Wheel blocks	Heavy duty vehicles	Pcs	1:4	√	√	√
		Light duty vehicles	Pcs	1:4	√	√	√
33.	G. Clamp	Jaw opening 400mm Throat depth 250mm	Pcs	1:4	√	√	√
34.	Hydraulic jack	5tons Maximum lift 220mm	Pcs	1:8	√	√	√
35.	Wheel bearing spanner	Socket 36 – 45mm	Pcs	1:8	√	√	√
36.	Welding torch	2m length	Set	1:8	√	√	√
37.	Presser machine	10 tons	Pcs	1:8		√	√
38.	Compressed air hose	Diameter 3/4 Inches Length 10m	Pcs	1:16	√	√	√
39.	Valve spring compressor	C- type Width 45 – 225mm Length 290mm	Pcs	1:8	√	√	√
40.	Scraper electrical drill	Drill capacity 13mm	Pcs	1:8		√	√
41.	Piston ring compressor	Width 57- 125mm	Pcs	1:4		√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
42.	Trolley jack	5 tons	Pcs	1:4	√	√	√
43.	Drifts hand press	5 tons	Pcs	1:8		√	√
44.	Hand drill machine	Capacity 13mm Spindle speed 600 – 1600r/m	Pcs	1:8	√	√	√
45.	Wheel alignment gauge	Optical Width 200 – 900mm	Pcs	1:16		√	√
46.	Craw bar	Size 24mm Length 600mm	Pcs	1:8	√	√	√
47.	Micrometers	Range 0- 100mm	Set	1:4		√	√
48.	Dial and cylinder bore gauges	Range 50 -150mm Measure depth 300mm	Set	1:4		√	√
49.	Vee block and surface table	Groove length 95mm	Pcs	1:8	√	√	√
50.	Straight edge	Length 600mm Width 3-5mm	Pcs	1:8	√	√	√
51.	Optical wheel alignment gauge	Width 200 -900mm	Pcs	1:16		√	√
52.	Drill reamers	Diameter 7.8 –32mm length 75-291mm	Pcs	1:4		√	√
53.	Puller	Two legged gear type - Maximum reach 200mm - Maximum spread 200 - 250mm	Pcs	1:4	√	√	√
		Three legged gear type - Maximum reach 250mm - Maximum spread 200- 250mm	Pcs	1:4	√	√	√
54.	Safety gears	Boots	Pair	1:1	√	√	√
		Clear goggles	Pcs	1:1	√	√	√
		Hand shield	Pcs	1:4	√	√	√

BASIC TOOLS AND EQUIPMENT FOR AUTO BODY REPAIR (FOR 16 TRAINEES)

EQUIPMENT

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Oxy-Acetylene Welding Plant	High pressure welding system consist of: Trolley cylinders reducing valves, Hose pipe, welding torch and different sizes of welding nozzle	Plant	1:8	√	√	√
2.	Arc Welding Machine	LDE 400 -380 3 Phase 12KVA	Kit	1:8	√	√	√
3.	Disc grinding Machine	RPM – 3600 Maximum Disc diameter 180mm (9) Inches	Kit	1:8	√	√	√
4.	Pneumatic Grinding machine	Maximum Capacity 100 PSI	Kit	1:16	√	√	√
5.	Hand sanding Machine	Power input 220V- 240V Sanding paper 6 inches diameter	Pcs	1:8		√	√
6.	Sanding machine	160mm width, 240mm length	Pcs	1:16		√	√
7.	Air compressor plant	3 HP – 5 HP (300L)	Plant	1:16	√	√	√
8.	Angle grinding Machine	Disc diameter 180mm spindle threads 14mm diameter idling speed 3600 rpm	Pcs	1:16	√	√	√
9.	Bending and Folding machine (Hand operated)	<ul style="list-style-type: none"> • Working length 1020 mm • Maximum sheet metal thickness 1.5 mm • Range of top formal 100 mm • Range of bottom former 60 mm 	Each	1:16	√	√	√
10.	Rolling Machine (Hand operated)	L 1880XW 1550X H 760mm <ul style="list-style-type: none"> • Thick 1.5 mm 	Set	1:16	√	√	√
11.	Bench Grinder machine	<ul style="list-style-type: none"> • Power input 1 phase (0.9 HP) • Grinding wheel diameter 	Pcs	1:8	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		200x40 32 mm <ul style="list-style-type: none"> Distance between wheel 428 mm 					
12.	Bench Drill machine	Drill bit cap 3 - 24 mm diameter (Single/3 phase)	Pcs	1:8	√	√	√
13.	Hand drill Machine	Drill bit cap 0 – 16 mm diameter (single /3 phase)	Each	1:8	√	√	√

B.TOOLS

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
14.	Work Bench	1200x2000x750mm	Pcs	1:4	√	√	√
15.	Bench Vice	4 – 5 Inches	Pcs	1:4	√	√	√
16.	Bench Stakes	Various shape and sizes. 2-3.5Kg	Pcs	1:4	√	√	√
17.	Steel bench	60x90x75mm	Pcs	1:8	√	√	√
18.	Anvil	<ul style="list-style-type: none"> L 575mm Weight 75kg 	Pcs	1:8	√	√	√
19.	Ball pen hammer	Diameter of face 28mm Weight 850g	Pcs	1:4	√	√	√
20.	Sledge Hammer	Weight 6.6kg	Pcs	1:8	√	√	√
21.	Panel Hammers	Double round heads Face diameter 33 x 44mm Distance between face 150mm	Pcs	1:4	√	√	√
22.	Chipping hammer	with square and cross pein Weight 75g	Pcs	1:4	√	√	√
23.	Panel hammers Shrinking hammer	With one round watered face and one square flat face. Weight 225gm Face diameter 32 x 45mm length between face 100mm	Pcs	1:4	√	√	√
24.	Pinck and finishing hammer	<ul style="list-style-type: none"> With one round flat face and one spike Face diameter 41mm, length 130mm Weight 320g 	Pcs	1:4		√	√
25.	Shrinking hammer	With one square watered face and round flat face Face diameter 32 x 25, w – 225mm	Pcs	1:4		√	√
26.	Mallets	Wooden type with one round flat face and one curved face	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
27.	Wood Block	2 x 3 x 6 Inches or 90 x 65 x 25 mm	Pcs	1:4	√	√	√
28.	Dolly Blocks (Round Dolly)	With double round curved face. Diameter 55mm. Weight 0.75 kg	Pcs	1:4	√	√	√
29.	Shrinking dolly block (Toe dolly)	115x 22x55mm. Weight 0.9kg	Pcs	1:4		√	√
30.	Tape Measure (Steel type)	3m length	Pcs	1:4	√	√	√
31.	Steel Rule	Length 300mm (30cm)	Pcs	1:4	√	√	√
32.	Scriber (Double ended)	With one straight and one bent steel point. Length -175mm diameter 3mm	Pcs	1:1	√	√	√
33.	Hand Shear	Cutting capacity 4mm Blade length 300mm	Pcs	1:1	√	√	√
34.	Cold Chisels	Length 150mm Width 20mm Thickness 3mm	Pcs	1:8	√	√	√
35.	Body Spoons	Length 130mm, width 30mm weight 0.5kg	Pcs	1:4		√	√
36.	Spanners	Socket 4– 13mm	Set	1:4	√	√	√
		Box 4 – 32mm	Set	1:4	√	√	√
		Fix 10 – 32mm	Set	1:4	√	√	√
		Ring 10 – 32mm	Set	1:4	√	√	√
		Ring 6 – 19mm	Pcs	1:4	√	√	√
		Torx Maximum slot size 1.67 – 4.43 mm Length 13 x 44 – 20 60 mm	Set	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		Tabular Size 6 x 7 – 20 22mm hole for Tommy bar 6 – 12mm	Set	1:4	√	√	√
		Try square T1- T 100	Set	1:4	√	√	
37.	Screw Drivers	Flat 6 Pcs	Set	1:4	√	√	√
		Star 6 Pcs	Set	1:4	√	√	√
		Off- set 6 Pcs	Set	1:4	√	√	√
		<ul style="list-style-type: none"> • Torx Maximum slot size 1.67 - 82 mm • Length handle 60 - 105 mm • Length shaft 50 - 130 mm 	Set	1:4	√	√	√
							√
38.	Combination Pliers	Length 160 – 210mm. Set of six pieces	Set	1:4	√	√	√
39.	Wire Brush	No of row 3 overall length 290mm bristle length 20mm	Pcs	1:4	√	√	√
40.	Blow Lamp	Tank capacity 1Ltr	Pcs	1:8	√	√	√
41.	Scratch brush	50mm. width 12mm Wire gauge 0.25mm	Pcs	1:4	√	√	√
42.	Cold chisel thin flat	L – 200mm, width 26mm	Pcs	1:4	√	√	√
43.	Rubber mallet hammer	Round flat faces Dimension 40 x 80mm Weight 155g	Pcs	1:4	√	√	√
44.	Heel Dolly block	Length 80mm Height 35mm, Width 60, Weight 1kg	Pcs	1:4		√	√
45.	Curved dolly block (comma block)	Length 140 mm Weight 1.1kg Width 60 x 45 mm	Pcs	1:4		√	√
46.	Scrapers	2, 4 and 6 Inches	Set	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
47.	Welding Shield	<ul style="list-style-type: none"> • Lens Dimension 110x60mm • External dimension 210x330mm 	Pcs	1:4	√	√	√
48.	Clamps	<ul style="list-style-type: none"> • G- Clamps Jaw opening 203mm • Opening 95mm 	Pcs	1:4	√	√	√
		F- clamp 150x250mm	Pcs	1:4	√	√	√
49.	Files	<ul style="list-style-type: none"> • Beating • Length 1200mm • Width 30mm • Thick 7mm 	Pcs	1:4		√	√
		Panel File With left and right turning Screw.	Pcs	1:4		√	√
		Double cut Length 1200x30x7mm	Pcs	1:4	√	√	√
		Second cuts Length 300 Dimension 6.5mm	Pcs	1:4	√	√	√
		Round Double cuts Length 300 Dimension 6.5mm	Pcs	1:4	√	√	√
		Half round Double cut Length 300 Dimension 28.5x 8.5mm	Pcs	1:4	√	√	√
		Three Angle Double cut Length 300mm dimension 21.5mm Weight 1.1kg	Pcs	1:4	√	√	√
		Needle Length 160mm	Set	1:4			
50.	Body spoon inside pry and surfacing	<ul style="list-style-type: none"> • Length 280mm • Width 60x30mm • Weigh 1.1 kg 	Pcs	1:1		√	√
51.	Welding Tongs	<ul style="list-style-type: none"> • Length 280mm • Capacity 0 85mm • Depth of gape 85mm 	Pcs	1:4	√	√	√
52.	Hydraulic body	5 Tones	Kit	1:16		√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
	jack						
53.	Hydraulic body jack	20 tones	Kit	1:16		√	√
54.	Surface body spoon	L 200mmXW60x40mm	Pcs	1:8		√	√
55.	Pipe wrench	Maximum pipe diameter 3 ½ jaw opening 710mm, length 720mm	Pcs	1:4	√	√	√
56.	Allen keys	Measurement system Metric, 1.5-10mm	Set	1:4	√	√	√
57.	Long Hexagonal Allen keys	Measurement Metric size 3- 10mm	Set	1:4	√	√	√
58.	Combination spanners ring and open	Size 8-32mm	Set	1:4	√	√	√
59.	Cylinder valve key	Combine with spanner for regulator	Pcs	1:4	√	√	√
60.	Divider	Wing Divider Length 150mm	Pcs	1:4	√	√	√
61.	Calipers	Length 150mm	Pcs	1:4	√	√	√
62.	Plumb bob	With brass knob	Pcs	1:4			√
63.	Cutting torch	Nozzle diameter 1 150mm	Set	1:4		√	√
64.	Chalked string	Length of lines 4000mm	Pcs	1:16	√	√	√
65.	Twist drills	1 – 13mm diameter	Set	1:4	√	√	√
66.	Spirit level	Length 1200mm width 70mm	Pcs	1:8		√	√
67.	Welding goggles	Lens diameter 50mm outer flame DIN 5A inner flame, splinter proofs.	Pcs	1:1	√	√	√
68.	Hole punches(Wad punches)	Lens, Clear type	Pcs	1:4	√	√	√
69.	Centre punches	3 - 32mm diameter	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
70.	Universal pliers	Standard	Each	1:8	√	√	√
71.	Hand snip (Universal)	<ul style="list-style-type: none"> • Right 280 • Left 250 • Cutting thick cap • 5.0 – 1.5mm 	Pcs	1:1	√	√	√
72.	Bent or curved snip	<ul style="list-style-type: none"> • R.280, L. 280 • Cutting thick cap 0 - 1.5 mm 	Pcs	1:4	√	√	√
73.	Paint spry gun (Gravity feed cup)	<ul style="list-style-type: none"> • Cap 1 Litre. • Working pressure min 300 Air consumption 1/min 	Pcs	1:1	√	√	√
74.	Paint spry gun suction feed cup	<ul style="list-style-type: none"> • Capacity 1 Litre. • Working pressure 300 KPG 	Pcs	1:8		√	√
75.	Air pump	Maximum out let 600 – 800kpa	Pcs	1:8			
76.	Air hose pipe	<ul style="list-style-type: none"> • Diameter. ¼ Inch • Length 10-15m 	Pcs	1:16			
	Jacks	Trolley Jack Cap 5 Tons	Pcs	1:8	√	√	√
		Bottle 5Tons	Pcs	1:8	√	√	√
77.	Extension cable	<ul style="list-style-type: none"> • Mult-extension cable reeling unit • cross section 2mm • Cable length 35m • Maximum Load (coiled) 3A • Maximum load full run out 9A 	Pcs	1:8	√	√	√
78.	Air transformer (Air pressure regulatory)	Capacity 160 bar	Pcs	1:8	√	√	√
79.	Soldering Iron	<ul style="list-style-type: none"> • Power 75W • Tip diameter 7-20mm 	Pcs	1:4	√	√	√
80.	Soldering gun	Power 45W	Pcs	1:4	√	√	√
81.	Rivet gun	Nozzle capacity 3-5mm Folding type	Pcs	1:4	√	√	√
82.	Rivet pliers	Nozzle capacity 3-5mm	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
83.	Try set square	90° x 300mm length	Pcs	1:4	√	√	√
84.	Straight bent snip	Cut blade 6 Inch length	Pcs	1:4	√	√	√
85.	Vernier calliper	Jaw opening 0-200mm	Pcs	1:4	√	√	√
86.	Tire pressure gauge	Maximum pressure 20 bars	Pcs	1:8	√	√	√
87.	Safety stand (support)	5-10 Tons	Pcs	1:8	√	√	√

BASIC TOOLS AND EQUIPMENT FOR AUTO – ELECTRIC (FOR 16 TRAINEES)

A. EQUIPMENT

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Battery Charger	Alkaline, 6 -12V	Pcs	1:16	√	√	√
2.	Storage battery	Alkaline	Pcs	1:8	√	√	√
3.	Hydrometer	Battery Acid	Pcs	1:8	√	√	√
4.	Test lamp	Cable/10m long Power 12 voltage	Pcs	1:4	√	√	√
5.	Multimeter – analog	DCV:0 -1000V ACV:0 -750V DCA: 0 -10A	Pcs	1:8	√	√	√
6.	Multimeter – digital	DCV: 0 -1000V DCA: 0 -10A ACV: 0 -750V	Pcs	1:8	√	√	√
7.	Clamp on meter	0 -750V Digital 0 -10A	Pcs	1:8	√	√	√
8.	Crocodile clips	Insulated type	Pcs	1:4	√	√	√
9.	Timing lighting tester	Speed range 4 cylinder 0 - 3200rpm	Pcs	1:4	√	√	√
10.	Live spark ignition engine	4 cylinder Petrol Engine	Pcs	1:16	√	√	√
11.	Techo – dwell angle Tester/meter	4 Cylinder engine 0° - 90° 6 Cylinder engine 0° - 60°	Pcs	1:8	√	√	√
12.	Pressure gauge	Hose connector ¼ Inches Pressure range 0 -10 bars	Pcs	1:8	√	√	√
13.	Hand drilling Machine	Drill capacity 13mm Spindle speed 600 -1600rpm	Pcs	1:8	√	√	√
14.	Trimming light tester	speed range 0-3200rpm 4 cylinder	Pcs	1:8	√	√	√
15.	Electric soldering iron	220 -125W with bench holder	Pcs	1:4	√	√	√
16.	Electric soldering gun	220v -50hz, 70W with illumination lamp.	Pcs	1:8	√	√	√
17.	Live engine	4 Cylinder petrol or diesel	Pcs	1:8	√	√	√

B. TOOLS

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Spark plug cleaner brush	Length 200mm	Pcs	1:4	√	√	√
2.	Spark plug spanner	Sizes 21 and 26mm	Pcs	1:8	√	√	√
3.	Feeler gauge	Range 0.05 – 1.90mm	Pcs	1:4	√	√	√
4.	Bench vice	Size 5 inches jaw open length 200mm Depth 150mm width 150mm	Pcs	1:4	√	√	√
5.	Safety goggle	Clear goggles	Pcs	1:1	√	√	√
6.	Pliers	Vice grip Length 240mm Capacity 0 – 32mm diameter	Pcs	1:2	√	√	√
		Side cutting insulated Length 160mm	Pcs	1:1	√	√	√
		Combination insulated Length 180mm	Pcs	1:1	√	√	√
		Long nose insulated Length 160mm	Pcs	1:1	√	√	√
		Wire stripping Lengths Ranges 0-160 mm	Pcs	1:1	√	√	√
		Wire stripping Lengths Range 0 -160mm	Pcs	1:4	√	√	√
		Flat files, fine medium and rough wooden handle Length 160 mm	Pcs	1:4	√	√	√
		Round file fine, medium and rough Length 160mm	Pcs	1:4	√	√	√
		Half round file, fine medium and rough Length	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		160mm					
		Triangular file, fine, medium and rough Length 160mm	Pcs	1:4	√	√	√
7.	File brush	300 x 20 x 5.5mm	Pcs	1:1	√	√	√
8.	Centre punch	4 – 10mm diameters	Sets	1:4	√	√	√
9.	Oil squirt can	0.5 Litre	Litres	1:8	√	√	√
10.	Crimping tools	Richmond four way RICBW 031300 Full insulated up to 1000V – 150mm	Set	1:4	√	√	√
11.	Screw drivers	Allen key hexagonal	Set	1:4	√	√	√
		Off-set set of 12 Pcs	Set	1:4	√	√	√
		Star set of 6 Pcs	Set	1:8	√	√	√
		Torx set of 6 Pcs	Set	1:4	√	√	√
		Flat set of 6 Pcs	Set	1:8	√	√	√
12.	Wire brush	- No. of rolls – 3 - Length 290mm	Pcs	1:4	√	√	√
13.	Scriber	• Double ended with straight and bent point length 190mm Length 175 mm • Diameter = 6.5mm	Pcs	1:4	√	√	√
14.	Twist drills	Set of assorted high drills Twist drills Diameter range 1-13mm	Sets	1:4	√	√	√
15.	Hammers	Ball pain ½kg and 1kg	Pcs	1:4	√	√	√
		Cross pain ½kg	Pcs	1:4	√	√	√
		Plastic tip ½kg	Pcs	1:4	√	√	√
		Rubber Mallet ½kg	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		Copper ½kg	Pcs	1:4	√	√	√
16.	Flat Chisel	5x20x150mm	Pcs	1:4	√	√	√
17.	Model disc brakes	Contains: pedal, m/cylinder, piping, caliper and discs.	Pcs	1:16	√	√	√
18.	Half Car Model	With 1G 24 Valve Engine	Pcs	1:16	√	√	√
19.	Live diesel engine	4 Cylinder	Pcs	1:16	√	√	√
20.	Safety gears	Nose mask	Pcs	1:1	√	√	√
		Clear goggles	Pcs	1:1	√	√	√
		Safety Boots	Pcs	1:1	√	√	√
		Arc welding shields	Pcs	1:1	√	√	√
		Gas welding shields	Pcs	1:1	√	√	√
		Leather apron	Pcs	1:4	√	√	√
		Leather gloves	Pcs	1:4	√	√	√
21.	Road test insurance plate	Valid insurance	Pcs	1:8			√
22.	Chain Towing bars	Length 10M Maximum load 3tons	Pcs	1:8			√
23.	Reflector	Triangle self supporting	Pcs	1:4			√
24.	Fire Extinguisher	Carbon dioxide (CO ₂) Powder form	Set	1:8	√	√	√

**BASIC TOOLS AND EQUIPMENT FOR (HME) DIESEL ENGINE MECHANICS
(FOR 16 TRAINEES)**

A. EQUIPMENT

S/N	ITEM	SPECIFICATION	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Strap wrench assembly for filter	Diameter maximum 130mm	Pcs	1:4	√	√	√
2.	Hoist	7 tons Two post	Pcs	1:16	√	√	√
		7 tons four post	Pcs	1:16	√	√	√
3.	Gas welding set	Complete plant with regulators, hose pipes and welding torch.	Set	1:4	√	√	√
4.	Arc welding machine	380V – 3 Phase Power 12 - 20KVA	Set	1:8	√	√	√
5.	Air compressor	Maximum pressure 15Bar Auto start stop 5HP	Set	1:16	√	√	√
6.	Fuel pump test machine	Perform phasing and calibration up to 12cylinder pumps	Set	1:16		√	√
7.	Injector Nozzle tester	Pop tester Range pressure 0-300 Atm	Set	1:16		√	√
8.	Pedestal grinding machine	Grinding wheel size 150x20x13mm 320W – Motor rating	Pcs	1:16	√	√	√
9.	Drilling Machine	Drill size 25 mm Spindle speed 130-1940r/m	Pcs	1:16	√	√	√
10.	Live engine	6 Cylinder 7- 10 tons	Pcs	1:16	√	√	√
11.	Valve grinding machine	Maximum diameter 75mm Grinding sector 20 ⁰ -60 ⁰	Set	1:16	√	√	√

S/N	ITEM	SPECIFICATION	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
12.	Steam cleaning machine	<ul style="list-style-type: none"> • Power 1.2kw • Motor power 2kw • Water consumption • 11L/min 	Pcs	1:16		√	√
13.	Radiator pressuring pump (cooling system)	<ul style="list-style-type: none"> • Diameter range 30- 70 mm radiator opening 	Set	1:8		√	√
14	Gas Welding plant	Acetylene and Oxygen complete plant with regulators, hose pipes	Set	1:8	√	√	√
15	Live truck	3.25 to 7 Tons	Pcs	1:16	√	√	√
16	Live diesel engine	6 Cylinder, 5000cc	Pcs	1:16	√	√	√

B. TOOLS

S/N	ITEM	SPECIFICATION	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Ring Heavy Spanners	Ring spanner 6x7mm – 30x32mm	Set	1:4	√	√	√
		open ended 6x7mm – 30x32mm	Set	1:4	√	√	√
		Socket set ½ drive range 8mm – 32mm	Set	1:4	√	√	√
		Combination spanner 6mm-32mm	Set	1:4	√	√	√
2.	Special torque wrench	Heavy duty 0 -200Nm	Pcs	1:8	√	√	√
3.	Air pressure gun	Length 245mm	Pcs	1:4	√	√	√
4.	Pressure gauge	Range pressure 0 -15 bar	Pcs	1:4	√	√	√
5.	Thermometers	Engineering 0 -200°C	Pcs	1:4	√	√	√
6.	Feeler gauge	Range 0.05- 1mm	Pcs	1:4	√	√	√
7.	Screw driver	Flat set of 6 Pcs	Set	1:8	√	√	√
		Allen key hexagonal	Set	1:4	√	√	√
		Off-set set of 12 Pcs	Set	1:4	√	√	√
		Star set of 6 Pcs	Set	1:8	√	√	√
		Torx set of 6 Pcs	Set	1:4	√	√	√
8.	Tyre remove machine	Heavy duty for tracks	Pcs	1:16	√	√	√
9.	Grease nipples	Nipple kit	Kit	1:4	√	√	√
10.	Pliers	Combination Heavy duty	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATION	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		200mm					
		Length 160mm Jaw length 30mm Universal	Pcs	1:4	√	√	√
		Side cutter Length 160mm Jaw length 30mm	Pcs	1:4	√	√	√
		Vice grip Length 180mm	Pcs	1:4	√	√	√
		Long nose Length 160mm	Pcs	1:4	√	√	√
		Slip joint Length 250mm	Pcs	1:4	√	√	√
		Combination Length 180mm	Pcs	1:4	√	√	√
		Chain type Oil Filter Capacity diameter = 130mm	Pcs	1:8	√	√	√
11.	Grease gun	Capacity 5kg	Pcs	1:4	√	√	√
12.	Steel rule	1m long	Pcs	1:4	√	√	√
13.	Stiff brush	Standard size	Pcs	1:1	√	√	√
14.	Jacks	<ul style="list-style-type: none"> • 5 Tons hydraulic • 5 Tons Mechanical 	Pcs	1:4	√	√	√
15.	Support stand	5 Tones	Pcs	1:4	√	√	√
16.	Wooden blocks	For truck wheels stopper	Pcs	1:4	√	√	√
17.	Tyre levers	Heavy duty (small, medium, large)	Pcs	1:4	√	√	√
18.	Hammers	Copper 400gm	Pcs	1:4	√	√	√
		Plastic 120gm	Pcs	1:4	√	√	√
		Ball Pein 400gm	Pcs	1:4	√	√	√
		Wooden 250gm	Pcs	1:4	√	√	√
19.	Oil pressure	PSI – 2000	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATION	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
	gauge						
20.	Sharp knife	160mm long	Pcs	1:4	√	√	√
21.	Wheels spanner	Heavy duty (small, medium, large)	Pcs	1:4	√	√	√
22.	Bleeder pipe	5m long	Pcs	1:16	√	√	√
23.	Container	2 litres	Pcs	1:4	√	√	√
24.	Bench vice	4 – 5 inches	Pcs	1:4	√	√	√
25.	Sharp chisel (cold chisel)	<ul style="list-style-type: none"> • Length 150mm • Width 20mm 	Pcs	1:4	√	√	√
26.	punch	Tapered (drift punch)	Set	1:4	√	√	√
27.	Piston ring expander)	Diameter range 50 to 120mm	Pcs	1:8	√	√	√
28.	Tape measure	5m long	Pcs	1:4	√	√	√
29.	Micrometer gauge	Range 0 - 100mm Diameter	Pcs	1:4	√	√	√
30.	Hydraulic tester	Maximum pressure 200 bars	Set	1:16	√	√	√
31.	Pullers	Two legged type	Pcs	1:4	√	√	√
		Three legged type	Pcs	1:4	√	√	√
		Sleeve puller bore diameter range 50 -120mm	Set	1:4	√	√	√
32.	Wire Brush	160mm long reach 25mm	Pcs	1:4	√	√	√
33.	Vernier caliper	0 - 30mm long	Pcs	1:4	√	√	√
34.	Tachometer	Range 0 - 20000rpm	Pcs	1:8		√	√
35.	Hacksaw	300mm long	Pcs	1:1	√	√	√

S/N	ITEM	SPECIFICATION	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
36.	Filter Wrench	Range maximum diameter 150mm	Pcs	1:4	√	√	√
37.	Pipe cutting tools	Range 1/8 - 3 inches	Pcs	1:4	√	√	√
38.	Puller	<ul style="list-style-type: none"> • Three legged gear type • Maximum spread: 250mm • Maximum 250mm • Two legged gear types • Maximum spread 200mm • Maximum reach 200mm 	Pcs	1:4	√	√	√
39.	Knives	Hose skiving	Pcs	1:4	√	√	√
40.	Flare tools	<ul style="list-style-type: none"> • Diameter range • (3 - 16) mm 	Pcs	1:4	√	√	√
41.	Expanding tools	<ul style="list-style-type: none"> • Diameter • range 12 - 45 mm 	Set	1:4	√	√	√
42.	Tool box	Socket heavy duty set from 10 - 27 mm	Set	1:4	√	√	√
43.	Curved Scraper	Flat heavy duty	Set	1:4	√	√	√
44.	Depth gauge	Maximum depth 500mm	Pcs	1:4	√	√	√
45.	Vernier calliper	Range 0 - 200m	Pcs	1:4	√	√	√
46.	Pin pusher punch	Length 100mm	Set	1:4	√	√	√
47.	Torque meter	60 - 190Nm	Pc	1:4	√	√	√
48.	Inside micrometer	60 - 200mm	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATION	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
49.	Outside micrometer	60 -150mm	Pcs	1:4	√	√	√
50.	Nozzle cleaning.	Kit 0.5 – 0.65mm diameter	Kit	1:8	√	√	√
51.	Dial gauge	Divisions 0 - 100 <ul style="list-style-type: none"> • Graduation • 0 – 200mm 	Pcs	1:8	√	√	√
52.	Extractor	Range 3 -12mm Diameter	Set	1:4	√	√	√
53.	Vice	hand vice 5 Inches	Pcs	1:4	√	√	√
54.	Vacuum pump tester	Pressure <ul style="list-style-type: none"> • 0 - 0.4 kgf/cm² • Vacuum 0 - 76 cm hg 	Set	1:8			
55.	Soldering gun (electric)	Power 45W	Pcs	1:8		√	√
56.	Cutting and Welding torches	Welding Nozzle 1 -15mm thick Cutting 1 - 150mm thick	Set	1:8	√	√	√
57.	Soldering iron	Electrical power 100W	Pc	1:4	√	√	√
58.	Model disc brakes	Contains: pedal, m/cylinder, piping, caliper and discs.	Pcs	1:16	√	√	√
59.	Safety gears	Nose mask	Pcs	1:1	√	√	√
		Clear goggles	Pcs	1:1	√	√	√
		Safety Boots	Pair	1:1	√	√	√
		Arc welding shields	Pcs	1:1	√	√	√
		Gas welding goggles	Pcs	1:1	√	√	√
		Leather apron	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATION	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
60.	Road test insurance plate	Valid insured	Pcs	1:8			√
61.	Chain Towing bars	Length 10m Maximum load 3 tons	Pcs	1:8			√
62.	Reflector	Triangle self supporting	Pcs	1:4			√
63.	Fire Extinguisher	Carbon dioxide (CO ₂) Powder form	Set	1:8	√	√	√

BASIC TOOLS AND EQUIPMENT FOR MOTOR CYCLE MECHANICS (FOR 16 TRAINEES)

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Spanner	Socket 10 – 20mm	Set	1:4	√	√	√
		Ring 7 -20mm	Set	1:4	√	√	√
		Fix 9 -20mm	Set	1:4	√	√	√
		Adjustable small, medium and large	Set	1:4	√	√	√
		Torque Wrench 0 to 120 (Nm)	Pcs	1:4	√	√	√
		Torque Wrench 0 – 137Nm 0 – 100 foot pounds	Pcs	1:4	√	√	√
		Wheel Spanner Hexagon socket Type 17x19x22x ¹³ / ₁₆ Inches	Pcs	1:4	√	√	√
		Wheel bearing spanner Socket for 36 – 45mm	Set	1:8	√	√	√
		Combination spanner 7 - 28mm	Set	1:4	√	√	√
		Spark plug spanner 21 x 26mm Socket	Set	1:4	√	√	√
		Wheel spanner Cross type light commercial vehicles 21-32mm	Pcs	1:4	√	√	√
Size 17 x 19 x 22 13/10" x 3/4 x 7/8 x 13/16. 340 mm	Pcs	1:4	√	√	√		
2.	Screw driver	Length 80m 0.5 mm x 3m Bit thick x bit well Length Handle 75mm	Pcs	1:4	√	√	√
		0.6. x 4 – L.5 x 16mm Bit	Set	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		thick and width. 25 -17mm handle length 45 -120mm handle length					
3.	Tyre lever	400mm Length	Pcs	1:8	√	√	√
4.	Type pressure gauge	0 – 10 bar ¼ Air hose connection	Pcs	1:8	√	√	√
5.	Air Compressor	2-5Hp 150-300ltrs	Set	1:16	√	√	√
6.	Socket spanners Tool box	165mm length 210mm overall length	Pcs	1:4	√	√	√
7.	Knife	10mm length 210mm overall length	Pcs	1:4	√	√	√
8.	Gauges	Dial Accuracy 0.001	Set	1:4	√	√	√
		Feeler gauge 13 no of blades 0.05 -1mm blade three knees 50 mm blade length	Set	1:4	√	√	√
		Bore 50 -150mm diameter 11 no of contact point 300mm depth 10 blind hole	Set	1:4		√	√
		Telescopic 13mm – 152mm range measurement	Set	1:4		√	√
		Compression gauge Maximum 20bars	Plant	1:4	√	√	√
9.	Valve key	Are in standard sizes for all tubed tyres	Set	1:4	√	√	√
10.	Brake fluid	At 3.1 litre	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
11.	Vanier caliper	200mm length measurement 65mm jaw length	Pcs	1:4	√	√	√
12.	Multimeter	DCV 0 – 1000V DCA 0 – 10 A ACV 0 – 750V	Set	1:8	√	√	√
13.	Test lamp	6 -12V bulb capacity	Set	1:1	√	√	√
14.	Pliers	150mm length	Set	1:4	√	√	√
15.	Bench vice	Range 4-8Inches	Pcs	1:4	√	√	√
16.	Hammer	Copper 400gm	Pcs	1:4	√	√	√
		Plastic 120gm	Pcs	1:4	√	√	√
		Ball Pein 400gm	Pcs	1:4	√	√	√
		Wooden 250gm	Pcs	1:4	√	√	√
17.	Micrometer	25 and 38 mm rubber diameter	Pcs	1:4		√	√
18.	Ring squeeze	40 – 90 mm diameter 1-2 no component 50 0 80mm height	Pcs	1:4		√	√
19.	Pullers	Two legged type	Pcs	1:4	√	√	√
		Three legged type	Pcs	1:4	√	√	√
		Sleeve puller bore diameter range 50-120mm	Set	1:4	√	√	√
		80 – 160mm max spread 85 – 160mm max each 0 – 4 2.3kg wt	Set	1:4	√	√	√
20.	Drift punch	10mm – 50mm diameter 50mm – 100 length	Pcs	1:4	√	√	√
21.	Inspection lamp	10m cable, 60 cable 60W bull power	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
22.	Safety gears	Nose mask	Pcs	1:4	√	√	√
		Clear goggles	Pcs	1:4	√	√	√
		Safety Boots	Pcs	1:4	√	√	√
23.	Fire Extinguisher	Carbon dioxide (CO ₂) Powder form	Set	1:8	√	√	√

BASIC TOOLS AND EQUIPMENT FOR MOTOR VEHICLE MECHANICS (FOR 16 TRAINEES)

A. MACHINE

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Pedestal grinding machine	Grinding wheel size 150x20x13mm 320W – Motor rating	Pcs	1:16	√	√	√
2.	Air compressor machine	Maximum output = 12 bars /PSI 175 Motor rate 5HP	Pcs	1:16	√	√	√
3.	Hand Drilling machine	Drill size = 3-16mm Diameter Spindle speed 130 – 1940 r/m	Pcs	1:8	√	√	√
4.	Valve grinding machine	Single/3 phase 220/380V 50Hz	Pcs	1:16		√	√
5.	Nozzle tester machine	Range pressure 0 – 300Atm	Pcs	1:16		√	√
6.	Hand grinding machine	RPM 3600 Weight 5kg Diameter disc 180mm	Kits	1:8	√	√	√
7.	Portable drill machine	Drill size 13mm Diameter Spindle speed 600 – 1600r/m With rechargeable battery	Pcs	1:8	√	√	√
8.	Wheel Balance machine	Hub diameter from 60mm – 170mm	Set	1:16		√	√
9.	EFI Nozzle testing machine	For light commercial vehicles 12V	Set	1:16		√	√
10.	Jacks	Elephant 7 Tons	Pcs	1:8	√	√	√
		Bottle type 7 Tons	Pcs	1:8	√	√	√
		Heavy duty hydraulic trolley type 10Tons	Pcs	1:16	√	√	√
		Light duty hydraulic	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		5Tons					
11.	Tachometer	Maximum speed 50,000 rpm	Pcs	1:8		√	√
12.	Hoist	5Tons Four posts	Pcs	1:16	√	√	√
13.	Chain block	5Tons	Pcs	1:16	√	√	√
14.	Hydraulic press	5Tons	Pcs	1:16		√	√
15.	Tire changer	For light commercial vehicles	Set	1:16	√	√	√
16.	Cooling System Analyzer	With diameter ranging 30 - 80mm	Set	1:16		√	√
17.	Crane	5 Tons	Pcs	1:16	√	√	√
18.	Gas Welding plant	Acetylene and Oxygen complete plant with regulators, hose pipes	Set	1:8	√	√	√
19.	Cutting and Welding torches	Welding Nozzle 1 – 15mm thick Cutting 1 – 150mm thick	Set	1:8	√	√	√
20.	Battery Charger machine	Range 6 - 24V	Pcs	1:16		√	√
21.	Spark Plug Tester	Testing and Cleaning machine 220V	Pcs	1:16		√	√
22.	Fuel pump tester	Vacuum range 0-76 cm Hg Pressure range 0 – 0.4 kgf/cm ²	Set	1:8		√	√
23.	High rate discharge tester	Separate resistance range (6 – 0 – 6)V and (12 – 0 – 12)V	Pcs	1:8		√	√
24.	Cylinder Leakage tester	For Petrol and Diesel engines	Set	1:16		√	√
25.	Wheel alignment Optical gauge	Camber measuring gauge Camber and Caster range of camber +7, caster +9, toe in +40 ⁰	Set	1:16		√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
26.	Steam cleaning machine	Water temperature of 140°C	Pcs	1:16		√	√
27.	Electric soldering iron	220 -125W with bench holder	Set	1:4	√	√	√
28.	Electric soldering gun	220V -50Hz with 70W illumination lamp	Pcs	1:8	√	√	√
29.	Spanners	Socket 10 – 20mm	Set	1:4	√	√	√
		Ring 7 – 20mm	Set	1:4	√	√	√
		Fix 9 – 20mm	Set	1:4	√	√	√
		Adjustable small, medium and large	Set	1:4	√	√	√
		Torque Wrench 0 to 120 (Nm)	Pcs	1:4	√	√	√
		Torque Wrench 0 – 137Nm 0 – 100 foot pounds	Pcs	1:4	√	√	√
		Wheel Spanner Hexagon socket Type 17x19x22x ¹³ / ₁₆ Inches	Pcs	1:4	√	√	√
		Wheel bearing spanner Socket for 36 – 45mm	Set	1:8	√	√	√
		Combination spanner 7 – 28mm	Set	1:4	√	√	√
		Spark plug spanner 21 x 26mm Socket	Set	1:4	√	√	√
31.	Files	Triangular Length 160mm	Pcs	1:1	√	√	√
		Half round file Length 160mm	Pcs	1:1	√	√	√
		Flat file Length 160mm	Pcs	1:1	√	√	√
32.	Chisels	Flat Chisel 150mm length 20mm wide	Pcs	1:4	√	√	√
33.	Hacksaw frame	Length 300mm	Pcs	1:1	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
34.	Extractor	Range 3 -12mm Diameter	Set	1:4	√	√	√
35.	Bench vice	Size 5 Inches	Pcs	1:1	√	√	√
36.	Tubeless repair tools	Set of needles and brushes	Set	1:4	√	√	√
37.	Tire lever	Length 610mm		1:4	√	√	√
38.	Pliers	Universal pliers Length 160mm Jaw length 30mm	Pcs	1:4	√	√	√
		Side cutter pliers Length 160mm Jaw length 30mm	Pcs	1:1	√	√	√
		Wheel balancing weight plier Length 250 mm	Pcs	1:4	√	√	√
		Vice grip pliers Length 180 mm	Pcs	1:1	√	√	√
		Long nose pliers Length 160mm	Pcs	1:4	√	√	√
		Slip joint pliers Length 250mm	Pcs	1:4	√	√	√
		Combination pliers Length 180mm	Pcs	1:4	√	√	√
		Chain type Oil Filter Pliers Capacity 130mm diameter	Pcs	1:8	√	√	√
39.	Scraper	Length 160mm Width 50mm	Pcs	1:4	√	√	√
40.	Screw driver	Flat set of 6 Pcs	Set	1:8	√	√	√
		Allen key hexagonal	Set	1:4	√	√	√
		Off-set set of 12 Pcs	Set	1:4	√	√	√
		Star set of 6 Pcs	Set	1:8	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		Torx set of 6 Pcs	Set	1:4	√	√	√
41.	Clutch alignment bar	Range 10 – 50mm	Set	1:8	√	√	√
42.	Clamp	G- clamp Distance between jaws 400mm	Pcs	1:4	√	√	√
43.	Pullers	Two legged type	Pcs	1:4	√	√	√
		Three legged type	Pcs	1:4	√	√	√
		Sleeve puller bore diameter range 50-120mm	Set	1:4	√	√	√
44.	Circlip remover	Length 150 mm	Pcs	1:4	√	√	√
45.	Scrappers	150 mm length	Pcs	1:4	√	√	√
46.	Hammers	Copper 400gm	Pcs	1:4	√	√	√
		Plastic 120gm	Pcs	1:4	√	√	√
		Ball Pein 400gm	Pcs	1:4	√	√	√
		Wooden 250gm	Pcs	1:4			
47.	Stands	Engine stand Adjustable capacity 700kg	Pcs	1:4	√	√	√
		Adjustable Transmission stand 600 kg capacity	Pcs	1:8	√	√	√
		5 Tons axle Support Stand	Pcs	1:4	√	√	√
48.	Diamond Tipped dressing tool	For redressing grinding wheel	Pcs	1:8	√	√	√
49.	Seal drive tool	Diameter ranging from 50 to 160mm	Pcs	1:4	√	√	√
50.	Work bench	1200 L x800 Wx900H (mm)	Pcs	1:4	√	√	√
51.	Picker-nozzle cleaning tools.	Diameter 0.05 - 0.08 mm	Set	1:4	√	√	√
52.	Working pit	width 2m height 2m	Pcs	1:16	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		length 6m					
53.	Piston ring squeezer	57 - 125mm Diameter	Pcs	1:8	√	√	√
54.	Con-rod Checking tool	Length 600mm	Pcs	1:8	√	√	√
55.	Valve Spring Compressor	C-type Width 45 – 225mm Length 290mm	Pcs	1:16	√	√	√
56.	Torque Wrench	0 – 137nm (Nm) 0 – 100 foot pounds	Pcs	1:4	√	√	√
57.	Inspection lamp	Cable length 10mtrs Power 60W	Pcs	1:8	√	√	√
58.	Brake bleader	Transparent Length 1000mm	Pcs	1:4	√	√	√
59.	Battery cleaner	Car battery terminal (Internal & External)	Pcs	1:8	√	√	√
60.	Piston ring remover (expander)	Range 50 - 100mm Diameter	Pcs	1:8	√	√	√
61.	Sleeve puller	Bore diameter range from 50 to 120mm	Set	1:16	√	√	√
62.	Taps and Die	M8 to M24	Set	1:16	√	√	√
63.	Spring balance	Capacity 5kg	Pcs	1:8	√	√	√
64.	Grease pump	Capacity 5kg	Pcs	1:8	√	√	√
65.	Pressure gun	Hose connection ¼Inches length 245mm	Pcs	1:8	√	√	√
66.	Blow lamp	1 litre	Pcs	1:8	√	√	√
67.	Thermometer	Engineering temperature 0 - 200°C	Pcs	1:4	√	√	√
68.	Hydrometer	Battery Acid specific gravity 1.125 - 1.300	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
69.	Multimeter	Digital DC 0 - 1000V DC 0 - 10A AC 0 - 750V	Pcs	1:4	√	√	√
70.	Steel rule	0-300mm	Pcs	1:4	√	√	√
71.	Spring gauge (balance)	Max. = 5kg Range = 0 to 100gm	Pcs	1:4	√	√	√
72.	Feeler gauge	Range 0.05 – 1.0mm	Pcs	1:4	√	√	√
73.	Vacuum gauge	Pressure range 0-0.4 kgf/cm ² Vacuum range 0-76 cm/hg	Pcs	1:8	√	√	√
74.	Compression Gauge	Compression range 0 -21 kgf/cm ²	Pcs	1:8	√	√	√
75.	Bore gauge (cylinder Block)	Range 50 – 150mm Depth 300mm	Set	1:4	√	√	√
76.	Depth gauge	Length 30mm	Pcs	1:4	√	√	√
77.	Tire pressure gauge	Hose connector ¼Inches Pressure range 0 – 15 bars	Pcs	1:8	√	√	√
78.	Blocks	‘V’ block L 178mmXW 41mm Height 45mm	Pcs	1:8	√	√	√
		‘V’ block Length 100mm Width 100mm Height 100mm	Set	1:4	√	√	√
79.	Battery filler	Length 180mm	Pcs	1:4	√	√	√
80.	Micrometers	Inside 50 - 100mm Diameter	Pcs	1:16	√	√	√
		Outside Ranging 40-100mm diameter	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
81.	Vernier calliper	Range 0 -200mm	Pcs	1:4	√	√	√
82.	Dial gauge indicator	With Stand	Set	1:4	√	√	√
83.	Plastic graduated cylinder	Up to 100ml	Pcs	1:4	√	√	√
84.	Techo –dwell angle Tester/meter	4 cylinder Engine 6 cylinder Engine	Pcs	1:8	√	√	√
85.	Timing lighting tester	Speed range 4cylinder 0 -3200 r/m	Pcs	1:8	√	√	√
86.	Model disc brakes	Contains: pedal, m/cylinder, piping, caliper and discs.	Pcs	1:16	√	√	√
87.	Half Car Model	With 1G 24 Valve Engine	Pcs	1:16	√	√	√
88.	Live diesel engine	4 Cylinder	Pcs	1:16	√	√	√
89.	Safety gears	Nose mask	Pcs	1:1	√	√	√
		Clear goggles	Pcs	1:1	√	√	√
		Safety Boots	Pcs	1:1	√	√	√
		Arc welding shields	Pcs	1:1	√	√	√
		Gas welding shields	Pcs	1:1	√	√	√
		Leather apron	Pcs	1:4	√	√	√
		Leather gloves	Pcs	1:4	√	√	√
90.	Road test insurance plate	Valid insurance	Pcs	1:8			√
91.	Chain Towing bars	Length 10m Maximum load 3tons	Pcs	1:8			√
92.	Reflector	Triangle self supporting	Pcs	1:4			√
93.	Fire Extinguisher	Carbon dioxide (CO ₂) Powder form	Set	1:8	√	√	√

BASIC TOOLS AND EQUIPMENT FOR PLANT MECHANICS (FOR 16 TRAINEES)

A. EQUIPMENT

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1	Strap wrench	Assembly for filter Diameter maximum 130mm	Pcs	1:1	√	√	√
2.	Spanners	Ring Heavy duty, 6 - 24mm	Set	1:4	√	√	√
		Fix Heavy duty, 6-24mm	Set	1:4	√	√	√
		Socket set heavy duty range 10 – 27mm	Set	1:4	√	√	√
		Combination heavy duty 6 - 24mm	Set	1:4	√	√	√
3.	Air pressure gun	Length 245 mm	Pcs	1:8	√	√	√
4.	Pressure gauge	Range pressure 0 – 15 bar	Pcs	1:8	√	√	√
5.	Thermometers	Engineering 0 -200°c	Pcs	1:4	√	√	√
6.	Feeler gauge	Range 0.05 to 1 mm	Pcs	1:1	√	√	√
7.	Special torque wrench	Heavy duty 0 – 200NM	Pcs	1:4	√	√	√
8.	Screw drivers	Heavy duty Flat type Length75mm	Set	1:4	√	√	√
		Star head Assorted	Set	1:4	√	√	√
		Spiral ratchet 0.7x4.5/1.0x5mm bit thickness	Set	1:4	√	√	√
9.	Tyre remove machine	Heavy duty for tracks	Pcs	1:16	1:4	1:4	1:4

B. TOOLS

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Grease nipples	Nipple kit	Kit	1:4	√	√	√
2.	Pliers	Universal pliers Length 160mm Jaw length 30mm	Pcs	1:4	√	√	√
		Side cutter pliers Length 160mm Jaw length 30mm	Pcs	1:1	√	√	√
		Wheel balancing weight plier Length 250 mm	Pcs	1:4	√	√	√
		Vice grip pliers Length 180 mm	Pcs	1:1	√	√	√
		Long nose pliers Length 160mm	Pcs	1:1	√	√	√
		Slip joint pliers Length 250mm	Pcs	1:1	√	√	√
		Combination pliers Length 180mm	Pcs	1:1	√	√	√
		Chain type Oil Filter Pliers Capacity 130mm diameter	Pcs	1:8	√	√	√
3.	Grease gun	Capacity 5kg	Pcs	1:4	√	√	√
4.	Steel rule	1m long	Pcs	1:4	√	√	√
5.	Stiff brush	Standard	Pcs	1:1	√	√	√
6.	Jacks	5 Tons hydraulic	Pcs	1:4	√	√	√
7.	Support stand	5 Tones	Pcs	1:4	√	√	√
8.	Wooden blocks	For truck wheels stopper	Pcs	1:4	√	√	√
9.	Tyre levers	Heavy duty (small, medium, large)	Pcs	1:4	√	√	√
10.	Copper	Heavy duty	Pcs	1:1	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
	hammer						
11.	Oil pressure gauge	2000 PSI	Pcs	1:4	√	√	√
12.	Sharp knife	160 mm long	Pcs	1:1	√	√	√
13.	Wheels spanner	Heavy duty (small, medium, large)	Pcs	1:4	√	√	√
14.	Bleeder pipe	5m long	Pcs	1:16	√	√	√
15.	Container	2 litres	Pcs	1:4	√	√	√
16.	Bench vice	4 -5 inches	Pcs	1:1	√	√	√
17.	Sharp chisel (cold chisel)	<ul style="list-style-type: none"> • Length 150mm • Width 20mm 	Pcs	1:1	√	√	√
18.	Tapered punch	Drift punch Set	Set	1:4	√	√	√
19.	Piston (expander)	<ul style="list-style-type: none"> • Diameter range • 50-120mm 	Pcs	1:8	√	√	√
20.	Tape measure	5m long	Pcs	1:1	√	√	√
21.	Micrometer gauge	<ul style="list-style-type: none"> • Diameter • 0 – 100mm 	Pcs	1:4	√	√	√
22.	Hydraulic tester	Maximum pressure 200 bars	Set	1:16	√	√	√
23.	Suction pressure gauge	<ul style="list-style-type: none"> • Pressure range • 0 – 200 bars 	Pcs	1:16	√	√	√
24.	Puller	Three legged spread 200mm	Pcs	1:4	√	√	√
		Two legged reach 200mm	Pcs	1:4	√	√	√
25.	Wire Brush	160 mm long reach 25mm	Pcs	1:1	√	√	√
26.	Vernier caliper	0 – 30 mm long	Pcs	1:1	√	√	√
27.	Tachometer	Range 0 - 20000 rpm	Pcs	1:8	√	√	√
28.	Hacksaw	300mm long	Pcs	1:1	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
29.	Filter Wrench	Range maximum diameter 150mm	Pcs	1:4	√	√	√
30.	Pipe cutting tools	Range inches 1/8-3	Pcs	1:4	√	√	√
31.	Puller	<ul style="list-style-type: none"> • Three legged gear type • Maximum spread: 250mm • Maximum 250mm • Two legged gear types • Maximum spread 200mm • Maximum reach 200mm 	Pcs	1:4	√	√	√
32.	Knives	Hose skiving knives	Pcs	1:1	√	√	√
33.	Flare tools	Diameter range (3- 16)mm	Pcs	1:4	√	√	√
34.	Expanding tools	Diameter range 12 to 45mm	Set	1:4	√	√	√
35.	Tool box	Socket heavy duty set from 10-27mm	Set	1:4	√	√	√
36.	Curved Scraper	Flat heavy duty	Set	1:4	√	√	√
37.	Depth gauge	Maximum depth 500mm	Pcs	1:4	√	√	√
38.	Calipers inside outside	Maximum length 400mm	Pcs	1:4	√	√	√
39.	Pin pusher punch	Length 100mm	Set	1:1	√	√	√
40.	Press	Special for trucks		1:16	√	√	√
41.	Shoe bolt impact wrench.	<ul style="list-style-type: none"> • Heavy duty ring • 10-36mm 	Set	1:8	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
42.	Shoe bolt socket.	<ul style="list-style-type: none"> • Heavy duty • 10 -36mm 	Set	1:8	√	√	√
43.	Roller and idler press.	Maximum pressure 200 bars	Set	1:8	√	√	√
44.	Roller and idler rebuilding machines.	Standard	Set	1:8	√	√	√
45.	Torque meter	60 - 190Nm	Pcs	1:4	√	√	√
46.	Micrometer	<ul style="list-style-type: none"> • Inside • 60 - 200mm 	Pcs	1:4	√	√	√
		<ul style="list-style-type: none"> • Outside • 60 -150mm 	Pcs	1:4	√	√	√
47.	Nozzle cleaning.	Kit 0.5 – 0.65mm diameter	Kit	1:8	√	√	√
48.	Dial gauge	<ul style="list-style-type: none"> • Divisions 0 - 100 • Graduation 0 – 200 mm 	Pcs	1:8	√	√	√
49.	Extractor	Range 3 -12mm	Set	1:4	√	√	√
50.	Vice	5 Inches	Pcs	1:1	√	√	√
51.	Steam cleaning machine	<ul style="list-style-type: none"> • Power 1.2 kw • Motor power 2kw • Water consumption • 11 L/min 	Pcs	1:16	√	√	√
52.	Radiator pressuring pump	<ul style="list-style-type: none"> • Diameter range • 30-70mm radiator opening 	Set	1:4	√	√	√
53.	Vacuum pump	<ul style="list-style-type: none"> • Pressure kgf/cm² • 0 – 0.4 	Set	1:8	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
	tester	<ul style="list-style-type: none"> Vacuum 0 - 76 cmhg 					
54.	Soldering gun	<ul style="list-style-type: none"> Power 45w 	Pcs	1:1	√	√	√
55.	Gas welding set	<ul style="list-style-type: none"> Complete plant 	Set	1:4	√	√	√
56.	Arc welding machine	<ul style="list-style-type: none"> 380v – 3 phase Power 12-20 kva 	Set	1:8	√	√	√
57.	Air compressor	Maximum. pressure 12 bar Auto start stop	Set	1:16	√	√	√
58.	Hoist	7 tons	Set	1:16	√	√	√
59.	Soldering iron	Electrical power 100w	Pcs	1:4	√	√	√
60.	Model disc brakes	Contains: pedal, m/cylinder, piping, caliper and discs.	Pcs	1:16	√	√	√
61.	Live diesel engine	6-8 Cylinders	Pcs	1:16	√	√	√
62.	Safety gears	Nose mask	Pcs	1:1	√	√	√
		Clear goggles	Pcs	1:1	√	√	√
		Safety Boots	Pcs	1:1	√	√	√
		Arc welding shields	Pcs	1:1	√	√	√
		Gas welding shields	Pcs	1:1	√	√	√
		Leather apron	Pcs	1:4	√	√	√
		Leather gloves	Pcs	1:4	√	√	√
63.	Road test insurance plate	Valid insurance	Pcs	1:8			√
64.	Chain Towing bars	Length 10M Max. load = 3tons	Pcs	1:8			√
65.	Reflector	Triangle self supporting	Pcs	1:4			√
66.	Fire Extinguisher	Carbon dioxide (CO ₂) Powder form	Set	1:8	√	√	√

BASIC TOOLS AND EQUIPEMENT FOR TRUCK MECHANICS (FOR 16 TRAINEES)

A. EQUIPEMENT

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Hand drill machine	Drill cap. 13mm speed 3600rpm.	Pcs	1:4	√	√	√
2.	Brake lining turning machine	Standard	Pcs	1:16	√	√	√
3.	Truck and trailer	Loading cap 15 tones	Assy	1:16		√	√
4.	Pressing machine	Capacity of 10 tones	Set	1:16		√	√
5.	Brake bleeder	2 Litres tank capacity	Each	1:16	√	√	√
6.	Grinding machine	Wheel Diameter 180mm speed 3600rpm Power load 1700W	Pcs	1:16			
7.	A faulty live truck Vehicle with clutch mechanism	Loading cap 3 ¼-15 Tons	Assy	1:16		√	√
8.	Valve grinding sticks	Rubber snooker diameter 25 – 38mm length 400mm	Pcs	1:16	√	√	√
9.	Valve grinding machine	Maximum valve Diameter 75mm Grinding sector 20 ⁰ – 60 ⁰ Valve shank Diameter 6 – 16mm	Pcs	1:8		√	√
10.	Live truck and trailer with complete braking system	Loading capacity 3 ¼ - 15 Tons	Assy	1:16		√	√
11.	Diesel pump test bench	Up to 12 cylinders	Set	1:16		√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
12.	Tyre levers,	Heavy duty flat and round face. Length 900mm	Pcs	1:4	√	√	√
13.	Automatic bleeding Equipment	Tank capacity 1 – 7 litres	Each	1:8		√	√
14.	Tyre removing machine	For heavy commercial Vehicles	Pcs	1:16	√	√	√
15.	Spanners	Wheel Spanner Hexagon socket Type 22x24x26x 32mm	Pcs	1:4	√	√	√
		Wheel bearing spanner Socket for 36 – 60mm	Set	1:8	√	√	√
		Combination spanner 7 – 32mm	Set	1:4	√	√	√
		Wheel spanner Cross type light commercial vehicles 24 - 60mm	Pcs	1:4	√	√	√
		Torque Wrench 0 - 200Nm	Pcs	1:4	√	√	√
		Socket 10 – 40mm	Set	1:4	√	√	√
		Ring 12 – 40mm	Set	1:4	√	√	√
		Fix 19 – 40mm	Set	1:4	√	√	√
	Adjustable large size	Set	1:4	√	√	√	
16.	Air Compressor	Volume cap. 400 litre 5.5 HP	Each	1:16	√	√	√
17.	Greasing device	Capacity 5 – 10kgs pump	Pcs	1:4	√	√	√
18.	Live engine	6 cylinder 5000-7000cc	Pcs	1:16	√	√	√
19.	Screw drivers	Flat set of 6 Pcs	Set	1:8	√	√	√
		Allen key hexagonal	Set	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		Off-set set of 12 Pcs	Set	1:4	√	√	√
		Star set of 6 Pcs	Set	1:8	√	√	√
		Torx set of 6 Pcs	Set	1:4	√	√	√
20.	Gas Welding	Set of <ul style="list-style-type: none"> • Trolley • Cylinder oxy and acetyl line • Oxy – acetylene hosepipe • Regulators • Welding and hutting torch • Different size of cutting and welding Nozzle. 	Set	1:4	√	√	√
21.	Cylinder key	With spanner for pipe nuts and regulators	Set	1:16	√	√	√
22.	Lighter or match box.	Gas type	Pcs	1:1	√	√	√
23.	Set of welding and cutting nozzles.	Welding thick 0.5 – 8mm	Set	1:4	√	√	√
24.	Welding goggles.	Glass for outer frame DIN 5A Glass for inner frame splinter proof	Pcs	1:1	√	√	√
25.	Picker-nozzle cleaning tools.	Diameter 0.05 – 0.08 mm	Set	1:1	√	√	√
26.	Oil filter wrench	Chain type Max diameter 170mm	Pcs	1:1	√	√	√
27.	Grease pump	Capacity 5 – 15kgs	Pcs	1:4	√	√	√
28.	Measuring tape	• Steel materials	Pcs	1:1	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		<ul style="list-style-type: none"> 5m length 					
29.	Hydraulic jack	10 – 25 Tons capacity	Pcs	1:4	√	√	√
30.	Safety stands	Range 10-25 tons Height 800mm	pair	4:16	√	√	√
31.	Jacks	bottle type Maximum load 50 Tons Lifting 152mm	Pcs	1:4	√	√	√
32.	Support boards for jacks.	Maximum load 10 Tons Minimum Height 725mm Toe Height 72mm Lifting 350mm	Pcs	1:8	√	√	√
33.	Water bath.	Capacity 200 litres	Each	1:8		√	√
34.	Pin punch	Dimension of point 1 – 5mm length of tool 120mm	Each	1:8	√	√	√
35.	Working pit	2m width x 2m height x 6m length	Pcs	1:16	√	√	√
36.	Transmission jack	Loading capacity. 6Tons	Pcs	1:8	√	√	√
37.	Alignment jig or clutch mandrel	Diameter range 15 – 60mm	Pcs	1:8	√	√	√
38.	Magnetic stand	140x140x130mm	Pcs	1:4	√	√	√
39.	Piston ring expanded	Maximum diameter 50 -150mm	Pcs	1:4	√	√	√
40.	Valve spring compressor	C type Width 45 –22mm Length 290mm	Pcs	1:4	√	√	√
41.	Torque wrench	0 – 137Nm 0 – 100 foot pounds	Pcs	1:4	√	√	√
42.	Seal drive tool	Range 200 – 500mm	Sets	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		diameter					
43.	Dial indicator	Accuracy 0.001-0.01mm 58mm diameter	Pcs	1:4	√	√	√
44.	Pry bar	600mm long	Pcs	1:4	√	√	√
45.	Cylinder bore gauge	Range 50 – 150mm Depth 300mm	Set	1:4	√	√	√
46.	Outside micrometers	Range 0 – 100mm	Pcs	1:4	√	√	√
47.	Piston ring compressor	Width 57 – 125mm	Pcs	1:4	√	√	√
48.	Hammers	Copper 400gm	Pcs	1:1	√	√	√
		Plastic 120gm	Pcs	1:1	√	√	√
		Ball Pein 400gm	Pcs	1:1	√	√	√
		Wooden 250gm	Pcs	1:1	√	√	√
49.	Plastic gauge	Medium speed engine	Pcs	1:1	√	√	√
50.	Drop light (inspection light)	10 meters long cable 60W bulb	Pcs	1:4	√	√	√
51.	Torque wrench	Range 70 – 330Nm Overall length 840mm	Pcs	1:4	√	√	√
52.	Finger height adjustment	Depth gauge 300 long	Pcs	1:4	√	√	√
53.	Clutch assembling jig	Flywheel centre 20- 50mm diameter	Pcs	1:4	√	√	√
54.	Dial indicator	80mm range measurement 0.01 division 0.100 Graduations	Pcs	1:4	√	√	√
55.	Punches to fit rivet head.	Diameter rivets 2- 6mm	Set	1:4	√	√	√
56.	Wire brush.	3 rows brittle length 25mm Overall length 290mm	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
57.	Heavy duty tool box	Socket set heavy duty 10 – 48mm	Set	1:4	√	√	√
58.	Hoist	Hoist 10 tons	Pcs	1:16	√	√	√
59.	Spill pipe or swan	2 meters long diameter 0 -200mm	Pcs	1:4	√	√	√
60.	Fork lift	4 Tons	Pcs	1:16	√	√	√

APPENDIX 2: SCHEMATIC DRAWINGS OF CLASSROOMS AND WORKSHOPS