

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



***MANUALS FOR ESTABLISHING A VET CENTRE
FOR
ELECTRICAL 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 TOOL AND EQUIPMENT FOR ARMATURE AND MOTOR REWINDING (FOR 16 TRAINEES)

A. EQUIPMENT

ITEM CODE	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Pillar drilling machine	<ul style="list-style-type: none"> • 1 – 25mm • Single phase 220 – 250V/50Hz with complete accessories 	Pcs	1:16	√	√	√
2.	Electric portable drilling machine	Two speed 6mm, drilling capacity in steel, 220V single phase 50Hz supply	Pcs	1:4	√	√	√
3.	Pneumatic drill machine	Portable	Pcs	1:4	√	√	√
4.	Bread board	Medium size, with power supply lead connection	Pcs	1:1	√	√	√
5.	Electric soldering iron	230V, 50Hz 70W with alumination lamp and stand	Pcs	1:1	√	√	√
6.	Electric soldering iron	230V, 125W with bench holders	Pcs	1:1	√	√	√
7.	Non electric soldering gun	Straight diamond tip 500gm	Pcs	1:2	√	√	√
8.	Paraffin blow lamp	1 litre capacity	Pcs	1:4	√	√	√
9.	Variable voltage supply	0-250V/50Hz AC	Pcs	1:2	√	√	√
10.	Bench Mounted Power Supply	<ul style="list-style-type: none"> • With fuse • Voltmeter • ammeter • socket outlet • single phase 220V-250V/50Hz 	Pcs	1:4	√	√	√
11.	Bench Mounted	Motor control,	Pcs	1:4	√	√	√

ITEM CODE	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
	Power Supply	Supply single phase, 220V and 3 phase 380V-415V, 50Hz					
12.	Power supply	<ul style="list-style-type: none"> Output 0 – 30V/3A D.C Input Supply 220 – 250V/50Hz 	Pcs	1:4	√	√	√
13.	Tachometer	Range up to 50,000 rpm	Pcs	1:8		√	√
14.	Multimeter	<ul style="list-style-type: none"> Digital Range, DCV 0 – 1000V ACV 0 – 750V DCA 0 – 10A Resistance 0 – 40MΩ 	Pcs	1:2	√	√	√
		<ul style="list-style-type: none"> Analogue DCV 0 – 1000V ACA 0 – 750V DCA 0 – 10A 	Pcs	1:2	√	√	√
15.	Clamp on ammeter	<ul style="list-style-type: none"> Digital 150A 	Pcs	1:4		√	√
16.	Watt meter	<ul style="list-style-type: none"> Analogy 0-2000W 0-1000V 	Pcs	1:8	√	√	√
17.	Megger Insulation tester	<ul style="list-style-type: none"> Range 0.1MΩ to 100MΩ 1000V , AC/DC 	Pcs	1:8	√	√	√
18.	Ohmmeter	<ul style="list-style-type: none"> Resistance 0 – 1000MΩ 	Pcs	1:8	√	√	√
19.	Voltmeter	<ul style="list-style-type: none"> 96 x96mm 0 to 500V AC/DC 	Pcs	1:8	√	√	√
20.	Oscilloscope	Analogy double beam	Pcs	1:4			√
21.	High voltage tester	Above 415v/50Hz	Pcs	1:8		√	√

ITEM CODE	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
22.	Capacitance Meter	Digital	Pcs	1:8		√	√
23.	Measuring rule	<ul style="list-style-type: none"> Length 300mm Accuracy 0.5mm Steel (stainless) 	Pcs	1:1	√	√	√
24.	Coil winding m/c	3 legs table 8 inches	Pcs	1:8	√	√	√
25.	Stator cut off m/c	<ul style="list-style-type: none"> 3 phase motor 415V/50Hz , 1410 rpm 	Pcs	1:8		√	√
26.	Coil winding M/C	Standard	Pcs	1:8		√	√
27.	Power coil forming M/C	<ul style="list-style-type: none"> Bench type Maximum turns 100,000 	Pcs	1:16		√	√
28.	Winding fixture	Model V	Pcs	1:8		√	√
29.	Armature winding machine	<ul style="list-style-type: none"> Single phase 220V/50Hz Model Radius 45 – 240mm 	Pcs	1:16			√
30.	Bench lathe m/c	<ul style="list-style-type: none"> Centre distance 25 inches Max swing, diameter 300mm Bed length 30 inches 	Pcs	1:16		√	√
31.	Overhead crane machine	<ul style="list-style-type: none"> Three phase motor 2.2Kw,380V, 5tons 	Pcs	1:16	√	√	√
32.	Curve bending machine	Standard	Pcs	1:16		√	√
33.	Paper cutting m/c	<ul style="list-style-type: none"> Table 25"x38" Serrated up 60 lines 	Pcs	1:16		√	√
34.	Oven/heater	<ul style="list-style-type: none"> Maximum temperature 350 Centigrade Single phase 220V/50Hz 	Pcs	1:16		√	√

ITEM CODE	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
35.	Bearing heater	Standard	Pcs	1:16		√	√
36.	Puller/hydraulic manual	<ul style="list-style-type: none"> Jaw opening 15" Table 30x30 inches 	Pcs	1:16	√	√	√
37.	Air compressor (Compare) Great Britain	<ul style="list-style-type: none"> 150 litres DOS press 12 Bar Minimum Temperature 20°C 	Pcs	1:16	√	√	√
38.	Insulation heater	Standard	Pcs	1:16			√
39.	Oxy acetylene plant	<ul style="list-style-type: none"> With accessories i.e. Hose Pipes , blow pipe, Cylinder Key, pressure regulator, spark lighter, Wired. 	Pcs	1:16	√	√	√
40.	D.C motor	<ul style="list-style-type: none"> Shunt motor 220V DC. 	Pcs	1:16			√
41.	A.C motor	3 Phase,380V, 11Kw, 50Hz	Pcs	1:16		√	√
42.	Auto transformer	<ul style="list-style-type: none"> 0 – 415V, 10KVA Three phase 	Pcs	1:16		√	√
43.	A.C Generator	Three phase, 380V, 8KVA ,50Hz	Pcs	1:16			√
44.	Computer	Pentium 4, 3GHz, HDD 250 GB, Ram 512MB screen TFT Flat	Pcs	1:16	√	√	√
45.	Multimedia projector	1080P, HD Resolution , 3D, 2400 Lumens, 500,000 :1 Dynamic control	Pcs	1:1	√	√	√
46.	Laptop computer	AMD dual cores, 2.2GHz, 2GB-ram, HDD 250GB	Pcs	1:16	√	√	√
47.	UPS	1000VA	Pcs	1:16	√	√	√

ITEM CODE	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
48.	Computer printer	Inkjet/Laser	Pcs	1:16	√	√	√
49.	Electrical machine trainer with modules & graphics	ED - 5300	Pcs	1:4		√	√
50.	Basic Digital Training Board with accessories	532 x 367	Pcs	1:4		√	√
51.	Bread board trainer	250 x 250	Pcs	1:4		√	√
52.	Full system Hydraulic/Pneumatic/Electrical control trainer	Model 1AAA	Pcs	1:4		√	√

B. TOOLS

ITEM CODE	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Bench Vice	<ul style="list-style-type: none"> • Forged steel • jaw size 150mm • Jaw opening 150mm 	Pcs	1:1	√	√	√
2.	Safety gears	Goggles/glasses, <ul style="list-style-type: none"> • Lens diameter standard, • Plastic frame. 	Pcs	1:1	√	√	√
		Boots Leather	Pcs	1:1	√	√	√
		Gloves <ul style="list-style-type: none"> • Leather/ rubber 	Pcs	1:1	√	√	√
3.	Fire Extinguisher	Carbon dioxide	Pcs	1:16	√	√	√
		Water type	Pcs	1:16	√	√	√
		Dry powder	Pcs	1:16	√	√	√
		Foam type Pressure 200 PSI	Pcs	1:16	√	√	√
4.	Pliers	Side cutting Insulated, 160mm long	Pcs	1:1	√	√	√
		Combination Insulated, 160mm long	Pcs	1:1	√	√	√
		Long nose 160mm long, Insulated	Pcs	1:1	√	√	√
		Round nose 160mm long, insulated	Pcs	1:1	√	√	√
		Wire stripping Insulated, 150mm long	Pcs	1:1	√	√	√
		Cable cutter 300x300mm	Pcs	1:1	√	√	√
		Cir-clip Assorted	Pcs	1:4	√	√	√
5.	Hammer	Cross pein Wooden handle 500gm	Pcs	1:1	√	√	√
		Ball pein	Pcs	1:1	√	√	√

ITEM CODE	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		Wooden handle 640gm					
		Claw 500gm	Pcs	1:1	√	√	√
		Plastic head Plastic head 250gm weight Metal handle with insulation	Pcs	1:1	√	√	√
		Mallet Wooden handle Rubber 500gm	Pcs	1:1	√	√	√
		Slater Forged roofer &Leather handle	Pcs	1:8	√	√	√
6.	Cold chisel	Non tempered flat	Pcs	1:1	√	√	√
7.	Allen key	300x15mm	Set	1:2	√	√	√
		Precision	Set	1:4	√	√	√
8.	Electrician knife (utility knife)	<ul style="list-style-type: none"> • With folding blade • Blade size • 10mm – 30mm 	Pcs	1:1	√	√	√
9.	Vanier calliper	Stainless steel accurately hardened jaws graduated in mm and inches	Pcs	1:1	√	√	√
10.	Folding ruler	Wooden 2m	Pcs	1:4	√	√	√
11.	Tape measure	2 - 5m	Pcs	1:2	√	√	√
12.	Test leads	0.5m, 1.0m	Set	1:1	√	√	√
13.	Micrometer	Reading to 0.01mm diameter measuring 0 – 25mm	Pcs	1:2	√	√	√
14.	Try square	Angle 90 ⁰	Pcs	1:1	√	√	√
15.	Scriber	Double ended with straight and bent point length 190mm	Pcs	1:1	√	√	√
16.	Spanner	Adjustable <ul style="list-style-type: none"> • 6 – 12 inches 	Pcs	1:4	√	√	√

ITEM CODE	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		<ul style="list-style-type: none"> 45-40CR span up 19mm length 150mm Galvanized/ nickelized finish. 					
		Open ended <ul style="list-style-type: none"> 6mm to 32mm with holder 	Set	1:4	√	√	√
		Socket wrench <ul style="list-style-type: none"> Ring size of 4 -4, 5,6,7 	Set	1:4	√	√	√
		Box(wrench) <ul style="list-style-type: none"> 4 -4mm to 16 -17 	Pcs	1:4	√	√	√
		Cable Lugs <ul style="list-style-type: none"> Standard 	Set	1:4	√	√	√
		Torque wrench <ul style="list-style-type: none"> Capacity 20-600 lbf/in, set of 3 Pcs 	3 Pcs	1:8	√	√	√
		Flex head wrench Cooper	Pcs	1:8	√	√	√
17.	Crimping tools	Range 10 – 300mm force 14T stroke 12mm dies 10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300 mm ²	Pcs	1:4	√	√	√
18.	Tool Box container	Steel type 4"x12"x6"	Pcs	1:1	√	√	√
19.	Bearing fitting kit	large, medium, small size	Pcs	1:8	√	√	√
20.	Puller	<ul style="list-style-type: none"> Two legs Three legs 	Pcs	1:4	√	√	√
21.	Screw driver	Flat screw drivers <ul style="list-style-type: none"> (small, medium, large) 150mm blade 	Set	1:1	√	√	√

ITEM CODE	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		Phillips screw drivers (small, medium, large)	Set	1:4	√	√	√
		Precision	Set	1:1	√	√	√
		Nut driver <ul style="list-style-type: none"> Set of 11 pcs 120grams 	Set	1:4	√	√	√
22.	Hacksaw - complete	<ul style="list-style-type: none"> With cast handle chromium plated 250 – 300mm One blade 18 teeth per inch (300m) 100gm 	Set	1:1	√	√	√
		Junior hacksaw With spare blades	Pcs	1:1	√	√	√
23.	Files	Flat Fine, medium and rough	Set	1:1	√	√	√
		Square Fine, medium and rough)	Set	1:1	√	√	√
		Round Fine, medium and rough	Set	1:1	√	√	√
		Half round Fine, medium and rough	Set	1:1	√	√	√
		Triangular Fine, medium and rough	Set	1:1	√	√	√
		Needle	Set	1:1	√	√	√
24.	File brush	Steel wire	Pcs	1:1	√	√	√
25.	Centre punch	<ul style="list-style-type: none"> Plastic handle Steel made Hardened tip Angle 60° 	Pcs	1:1	√	√	√
26.	Spirit level	600mm	Pcs	1:1	√	√	√
27.	Oil squirt can	0.5litre	Pcs	1:4	√	√	√
28.	Grease gun	<ul style="list-style-type: none"> Level type Delivery tube of 		1:8	√	√	√

ITEM CODE	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		150mm • Capacity 500gram					
29.	Gloves	Rubber	Pcs	1:1	√	√	√
30.	Pair of scissor	• 7 inches • Home craft	Pair	1:1	√	√	√
31.	Winding stick	Plastic	Set	1:1	√	√	√
32.	Compass	Needle	Pcs	1:1	√	√	√

BASIC TOOLS AND EQUIPMENT FOR ELECTRICAL INSTALLATION (FOR 16 TRAINEES)

A. EQUIPMENTS

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Bench drilling Machine	Capacity 12mm 2500 – 3000 R. P. M, 0.75KW, 240V/50Hz motor	Pcs	1:4	√	√	√
2.	Pillar drilling machine	1-25mm single phase 220V-250V/50Hz complete accessories	Pcs	1:16	√	√	√
3.	Electric portable drill machine	Capacity 6mm, two speed 230V/50Hz 1 horse power	Pcs	1;4	√	√	√
4.	Conduit bending machine	With complete accessories	Pcs	1:8	√	√	√
5.	Work bench	40mm thick, wooden top 700x1400mm, height 850mm	Pcs	1:2	√	√	√
6.	Ladder	Extension aluminum closed 3.70m extended 6.80m	Pcs	1:8	√	√	√
7.	Combined terminal board and protection board for instruments	Standards size	Pcs	1:16	√	√	√
8.	Electric soldering gun	Straight diamond tip 500gm	Pcs	1:4	√	√	√
9.	Bending spring	½ Inches and ¾ Inches	Pcs	1:2	√	√	√
10.	Hickey bender	Medium	Pcs	1:5	√	√	√
11.	Electrical soldering iron	230v/50Hz,80W with illumination lamp	Pcs	1:1	√	√	√
12.	Electric soldering iron	230V, 125W with stand	Pcs	1:1	√	√	√
13.	Multi-extension cable	220V,2.5A,10M	Pcs	1:4	√	√	√
14.	Tool box (container)	<ul style="list-style-type: none"> • Steel type • 4x12x6 inches 	Pcs	1:1	√	√	√
15.	Paraffin blow lamp	0.5 litre	Pcs	1:4	√		

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
16.	Fire extinguishers	a) Carbon dioxide Co2 b) Foam c) Water d) Powder	Pcs	1:16	√	√	√
17.	First Aid Kit	Complete with all accessories	Pcs	1:16	√	√	√
18.	Multimeter	Digital <ul style="list-style-type: none"> • DCV – 0 – 1000V • AC 0 – 750V • DC 0 – 10A • AC 0- 20A • 10Hz -100 MHz 	Pcs	1:2	√	√	√
		Analog, <ul style="list-style-type: none"> • DCV 0 – 1000V • AC 0 – 750V, • DC 0 – 10A, • AC 0- 20A 	Pcs	1:2	√	√	√
19.	Clip on Ampere meter	0 – 75V, 0 – 50A	Pcs	1:4		√	√
20.	Portable earth loop resistance tester	0 – 30V 0-1000 Ω	Pcs	1:4		√	√
21.	Insulation tester (megger)	Measuring range 10 – 100 MΩ 500V AC/DC	Pcs	1:4	√	√	√
22.	Kilo Watt Hour (KWH) Meter	Single phase Three phase	Pcs	1:8		√	√
23.	Ohmmeter	0-1000 Ω	Pcs	1:4	√	√	√
24.	Voltmeter	0 – 250V AC/DC	Pcs	1:4	√	√	√
25.	Ammeter	Analogy AC and Analogy DC	Pcs	1:2	√	√	√
26.	Wattmeter	Analogy 0-1000W	Pcs	1:8		√	√
27.	Stroboscopic effect	Standard	Pcs	1:8	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
	meter						
28.	Battery Charge control Unit	Alkaline batteries	Pcs	1:16		√	√
29.	Storages battery	Alkaline batteries	Pcs	1:8		√	√
30.	Computer	New Model.	Pcs	1:16	√	√	√
31.	Lap - top	AMD Du-AI-core,2.2 GHZ,2GB,250 GB	Pcs	1:16	√	√	√
32.	UPS	1000VA	Pcs	1:16	√	√	√
33.	Computer printer	Inkjet/Laser	Pcs	1:16	√	√	√
34.	Multimedia projector	1080p HD Resolution,3D movie conversion,2400 lumens,500,000:Dynamic control	Pcs	1:16	√	√	√
35.	Programmable Logic Controller(PLC) with accessories	G7M DR 10A GLOFA	Pcs	1:2			√
36.	Sequence control trainer with accessories	ED-4010	Pcs	1:8			√
37.	Low voltage supply	<ul style="list-style-type: none"> 0 – 30V/3A D.C Input Supply 220 – 250V/50Hz 	Pcs	1:4	√	√	√
38.	Bench Mounted Power Supply	<ul style="list-style-type: none"> With fuse Voltmeter ammeter socket outlet single phase 220V-250V/50Hz 	Pcs	1:2		√	√
39.	Bench Mounted Power Supply	Motor control, single phase, 220V, and 3 phase 380-415, 50Hz	Pcs	1:4		√	√
40.	Variable voltage supply	0-250V/50Hz AC	Pcs	1:2	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
41.	Electric Motors	A.C Motor <ul style="list-style-type: none"> 3 Phase 380v/50Hz Star – delta 3.7A 1.5 KW 2800-3000R.P.M 	Pcs	1:4		√	√
		<ul style="list-style-type: none"> Split phase 0.5 horse power 220v/50Hz 1500 R. P. M Fan cooler 	Pcs	1:8		√	√
		D. C. Motor <ul style="list-style-type: none"> Shunt motor 125V DC, Screen Protected type 1500 rpm 	Pcs	1:8			√
		Face plate operated at 125V DC, <ul style="list-style-type: none"> 1HP with volt release protection to be used for dismantling & re-assembling 	Pcs	1:8			√
42.	Low Frequency Signal Generator	10Hz – 1MHz	Pcs	1:8		√	√
43.	A.C Generator	Single phase,220V,2.2kw	Pcs	1:4		√	√
44.	Transformer	Three phase,380V,5kvA	Pcs	1:4	√	√	√
45.	Autotransformer	0 – 380V,5kvA	Pcs	1:8		√	√
46.	Wheat stone Bridge portable	Portable with 4 decade resistance unit total 11 – 1100hms Ratio A.R.M. 0.001, 0.1, 1, 1.1.	Pcs	1:8		√	√
47.	Rheostat	Enclosed in Metal Protected by fuse a) 10 ohm / 100w b) 100 ohm / 100w	Pcs	1:8			√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		c) 1000 Ohm / 10W d) 50 Ohm / 200W e) 150 Ohm / 200W					
48.	Tachometer	Range up to 50,000 rpm	Pcs	1:8			√
49.	Capacitance Meter	Digital	Pcs	1:8		√	√
50.	Luxmeter	Digital or Analogy	Pcs	1:8			√
51.	Phase Sequence Tester	0 – 500V	Pcs	1:8			√
52.	Oscilloscope	Analogy double beam	Pcs	1:4			√
53.	Grinding machine	Supplied with a splash roof 220V, Single phase A.C. Motor and 2m of PV cable with a moulded plug 2800 R.P.M grindstone dime stone dimensions.	Pcs	1:16			√
54.	Thread cutting machine	Pipe and bolt <ul style="list-style-type: none"> • ¼ – 6 inches • 6 – 42mm pipe, • 220V single- Phase • 50Hz 	Pcs	1:2	√	√	√
55.	Sheet metal folding machine	Hand operated	Pcs	1:16			√
56.	Hand operated guillotine	With separate stand locking device	Pcs	1:16			√
57.	Commutator Stone	Standards	Pcs	1:4			√
58.	Hydrometer	Battery Acid	Pcs	1:8		√	√
59.	Computer	Pentium 4, 3GHz, HDD 120GB, Ram 512Mb, screen TFT Flat panel 14.	Pcs	1:16	√	√	√
60.	Protective jaw plates	Aluminium	Pcs	1:1	√	√	√
61.	Vice-grip pliers	(VIS 8 R0	Pcs	1:1			√
62.	Counter sink, tool steel	6mm straight shank, Eight flutes	Set	1:8	√	√	√
63.	Plumb bob	Iron with steel point,	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		bright turned finish with mass knob 300gm					
64.	Wall concrete drill bits	1mm – 12mm	Set	1:2	√	√	√
65.	Metal drill bits	<ul style="list-style-type: none"> • H.S. S • 1mm – 12mm • Set of 12 pcs 	Set	1:4	√	√	√
66.	Chalk line	<ul style="list-style-type: none"> • Approximately. 20m 	Pcs	1:4	√	√	√
67.	Ratchet Brace	<ul style="list-style-type: none"> • STA 102152 • 12 in sweep 	Pcs	1:4	√	√	√
68.	Double pinion hand drill	<ul style="list-style-type: none"> • With die cast wheel and frame. Black japanned finish three jaw 5/16" 	Pcs	1:4	√	√	√
69.	Engineers Breast drill	½ IN (13mm) three jaw check.	Pcs	1:4	√	√	√
70.	Training and demonstration electrical board	680x 175mm	Pcs	1:4		√	√
71.	Electrical machine trainer with modules & graphics	ED - 5300	Pcs	1:4		√	√
72.	Basic Digital Training Board with accessories	532 x 367	Pcs	1:4		√	√
73.	Bread board trainer	250 x 250	Pcs	1:4		√	√
74.	Full system Hydraulic/Pneumatic /Electrical control trainer	Model 1AAA	Pcs	1:4		√	√

B. TOOLS

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Screw drivers full insulated up to 1000volts	Flat screw drivers (small, medium, large) Star screw drivers (small, medium, large)	Set	1:1	√	√	√
2.	Precision screw drivers	1,4,2.0,3.0mm slotted type, Set of 6 Pcs RIC, BW, 150,00'	Set	1:1	√	√	√
3.	Philips screw drivers	(small, medium and large) Star screw drivers (small, medium, large)	Set	1:1	√	√	√
4.	Pliers	Combinations 160mm long Insulated handle	Pcs	1:1	√	√	√
		Diagonal cutting 160mm long, insulated.	Pcs	1:1	√	√	√
		Cable cutter 300x300mm	Pcs	1:1	√	√	√
		Flat-nose 160mm long, insulated.	Pcs	1:1	√	√	√
		Round nose 160mm long insulated.	Pcs	1:1	√	√	√
		Wire stripping 150mm long, insulated.	Pcs	1:1	√	√	√
5.	Hammer	Cross pein Wooden handle 450gm	Pcs	1:1	√	√	√
		Ball pein Wooden handle 640gm	Pcs	1:1	√	√	√
		Claw 500gm	Pcs	1:1	√	√	√
		Plastic head 450gm	Pcs	1:1	√	√	√
		Mallet Rubber	Pcs	1:8	√	√	√
6.	Pipe vice	Portable ½" to 2"	Pcs	1:8	√	√	√
7.	Conduit bending blocks	150 x30cm	Pcs	1:2	√	√	√
8.	Expanding tool for plastic conduit	5 sizes	Pcs	1:4	√	√	√
9.	Steel spiral for bending	3/8" – 1"	Pcs	1:2	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
	PVC conduit						
10.	Twist drills	Set assorted high speed drills 1- 13mm	Set	1:8	√	√	√
11.	Stock and die	For round dies with grinded handle 200mm	Pcs	1:4	√	√	√
20.	Rawl plug tools	a) Rawl plug handle b) Rawl plug drift key c) Rawl plug 5mm d) Rawl plug 8mm e) Rawl plug 10mm	Pcs	1:1	√	√	√
21.	Reamer	For pipe 1.5 – 38mm, PG type	Pcs	1:1	√	√	√
22.	Scriber	Double ended with straight and bent point length 190mm	Pcs	1:1	√	√	√
23.	Gimlet	Plastic handle	Pcs	1:1	√	√	√
24.	Spanners	Adjustable 150 angle span up to 19mm, length 150mm	Pcs	1:2	√	√	√
		Adjustable Model with 150 angle span up to 24mm length 300mm	Pcs	1:4	√	√	√
		Open-ended 6mm to 32mm with holder	Pcs	1:4	√	√	√
		Socket wrench Set of 8 spanners 4-4, 5-5,5-6,5-7,7-7,5mm	Set	1:4	√	√	√
25.	snake wire (fish)	3-5m steel	Pcs	1:8	√	√	√
26.	Hacksaw (complete)	Frame with cast handle, blade 18teeth per inch 100gm	Pcs	1:1	√	√	√
		Junior hacksaw With spare blades	Pcs	1:4	√	√	√
27.	Files	Flat	Set	1:1	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		Fine, Medium and Rough					
		Square Fine, Medium and Rough	Set	1:1	√	√	√
		Round Fine, Medium and Rough	Set	1:1	√	√	√
		Half round Fine, Medium and Rough	Set	1:1	√	√	√
		Triangular Fine, Medium and Rough	Set	1:1	√	√	√
28.	Wire brush	Steel material, with wooden handle	Pcs	1:2	√	√	√
29.	Centre punch	Plastic handle steel made hardened tip angle 60°	Pcs	1:2	√	√	√
30.	Oil squirt can	0.5 litre	Pcs	1:4	√	√	√
31.	Crimping tools	Richmond four way (mechanical and hydraulic) RIC BW 031300	Pcs	1:8	√	√	√
32.	Cable lug tool small	Complete accessories	Pcs	1:1	√	√	√
33.	Safety Gear	goggles Lens diameter 50mm	Pcs	1:1	√	√	√
		Helmet Plastic	Pcs	1:1	√	√	√
		Gloves leather	Pcs	1:1	√	√	√
		Earring Plastic Sponge	Pcs	1:1	√	√	√
34.	Fume extractors	Plastic	Pcs	1:1	√	√	√
35.	Electrician knife	Clutch type	Pcs	1:1	√	√	√
36.	Fish wire	Steel (15m)	Pcs	1:4	√	√	√
37.	Vernier caliper	150mm digital	Pcs	1:4	√	√	√
		150mm analog	Pcs	1:4	√	√	√
38.	Folding rule	Wooden 2m	Pcs	1:4	√	√	√
39.	Measuring tape	Steel 5m	Pcs	1:1	√	√	√
40.	Steel rule	300mm	Pcs	1:2	√	√	√
41.	Micrometer	Reading 0.01mm diameter measuring 0 – 25mm	Pcs	1:4	√	√	√
42.	Bradawl	Wooden handle/plastic	Pcs	1:1	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
43.	Cold chisel	Non temperature flat 300 x15mm special steel octagonal specially hardened.	Pcs	1:1	√	√	√
44.	Spirit level	Length 500mm aluminum type	Pcs	1:4	√	√	√
45.	Master check	Voltage tester	Pcs	1:1	√	√	√
46.	Extension cable	Single phase Three phase	Pcs	1:4	√	√	√
47.	Crocodile clips	Metallic	Pair	1:1	√	√	√
48.	Conduit bender	1 inches to 2 inches	Pcs	1:16	√	√	√
49.	Magnifying glass	Table type	Pcs	1:8			√
50.	Drawing board	A3 sizes	Pcs	1:1			√
51.	T. square	L=72cm	Pcs	1:1			√
52.	Try square	Angle 90 ⁰	Pcs	1:1	√	√	√
53.	Set square 30 ⁰ /60 ⁰	Medium size	Pcs	1:1			√
54.	Set square 45 ⁰ /90 ⁰	Medium size	Pcs	1:1			√
55.	Dividers	For chalk board	Pcs	1:1			√
56.	Templates	Circles	Pcs	1:1			√
57.	Drawing pens	HB	Pcs	1:1		√	√
58.	Drawing pencil	0.5mm	Pcs	1:1	√	√	√

BASIC TOOLS AND EQUIPMENT FOR ELECTRONICS (FOR 16 TRAINEES)

A. EQUIPMENT

S/ N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	DC power supply	0 – 60V/3A	Pcs	1:2	√	√	√
2.	DC Power supply	0 – 250V/3A	Pcs	1:2	√	√	√
3.	AC Voltage supply	0-250V/50Hz	Pcs	1:4	√	√	√
4.	Dual DC power supply	0-50V/3A	Pcs	1:4		√	√
5.	Battery charger	(2V and 9.0V) with capacity of charging 4 cells at a time	Pcs	1;8	√	√	√
6.	Oscilloscope and accessories	Analogue: Double, beam or more	Pcs	1:4		√	√
		Digital: Double beam or more, storage type	Pcs	1:4		√	√
7.	Signal generator and accessories	Low frequency	Pcs	1:4		√	√
		High Frequency 100kHz-200kHz	Pcs	1:4		√	√
8.	Pattern Generator	Colour type: Raster Red, Blue, Green, White	Pcs	1:8		√	√
9.	Function Generator	0-2MHz 3 Wave forms	Pcs	1:4		√	√
10.	Pulse Generator	<ul style="list-style-type: none"> • 0-10Mhz internal • 10Hz-10MHz External 	Pcs	1:4		√	√
11.	Portable drill machine and accessories.	<ul style="list-style-type: none"> • Electric 220V, 50Hz; 1PH • Two speed, 6mm drilling capacity. 	Pcs	1:8	√	√	√
12.	Computer set	Pentium 4	Set	1:4	√	√	√
13.	Printer	<ul style="list-style-type: none"> • HP/ink Jet/laser • 4A – 25ppm, 266MHz, HP 	Pcs	1:16	√	√	√
14.	Shear machine	<ul style="list-style-type: none"> • Manual operated • Medium size 	Pcs	1:16	√	√	√
15.	UPS	1000VA	Pcs	1:16	√	√	√
16.	Fax machine	New model	Pcs	1:16	√	√	√

S/ N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
17.	Scanner	DPI 400 UMAX	Pcs	1:16	√	√	√
18.	Signal tracer	Analogue or digital	Pcs	1:4		√	√
19.	Grinding machine: (Pedestal type)	Portable <ul style="list-style-type: none"> • Two grinding wheel • 200mm diameter • 20mm.0.35kw 	Pcs	1:8		√	√
20.	Digital frequency meter	Standard	Pcs	1:4		√	√
21.	Frequency counter	Two channels(A&B) Channel A: i) 10Hz-10MHz ii) 10MHz -100MHz Channel B. 100MHz-1300MHz	Pcs	1.4		√	√
22.	Non electric soldering gun	Straight diamond tip 500gm wire wrap	Pcs	1:4		√	√
23.	Pillar drilling machine and accessories	12mm Diameter <ul style="list-style-type: none"> • Single phase 220-250V,50Hz • Speed approximately 1500r.p.m 	Pcs	1:8	√	√	

B. TOOLS

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Soldering iron	60W and their stand	Pcs	1:1	√	√	√
		30W	Pcs	1:1	√	√	√
2.	Solder sucker	Standard	Pcs	1:1	√	√	√
3.	Solder less board(Bread board)	Standard	Pcs	1:1	√	√	√
4.	Solder wick	Standard	Pcs	1:4		√	√
5.	IC remover	8- 16 Terminal	Pcss	1:1		√	√
6.	Multi meter	Digital/Analogue <ul style="list-style-type: none"> • 0 – 1000V DC • 0 – 750V AC • 0 – 10A • 20 - 200Mega Ohm (MΩ) 	Pcs	1:2	√	√	√
7.	Electrical wire tester (neon)	Digital/analogue	Pcs	1:1	√	√	√
8.	Megger Tester	<ul style="list-style-type: none"> • Insulation Tester portable 	Pcs	1:8		√	√
9.	Wattmeter	<ul style="list-style-type: none"> • Analogue 0-1000W 	Pcs	1:4		√	√
10.	Hydrometer	<ul style="list-style-type: none"> • Temperature 27⁰ • Length 310mm • SG range 1.1-1.3 	Pcs	1:8	√		
11.	Transistor Tester	<ul style="list-style-type: none"> • Digital/Analogue 	Pcs	1:4		√	√
12.	Capacitance meter	<ul style="list-style-type: none"> • Digital • Range :1pF – 2μF 	Pcs	1:4		√	√
13.	Hot gun	Standard	Pcs	1:8		√	√
14.	Hose pipe	100m (length)	Pcs	1:16	√	√	√
15.	Vernier caliper	150mm (size)	Pcs	1:4	√		

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		<ul style="list-style-type: none"> 0.02mm (precision) Measuring possibilities. 					
16.	Micrometer screw gauge	<ul style="list-style-type: none"> 0-25mm, inbox 0.01mm (precision) 	Pcs	1:4	√	√	√
17.	Pop rivet machine (rivet gun)	<ul style="list-style-type: none"> Heavy duty – Long nose Nose $\frac{1}{8}, \frac{5}{32}, \frac{3}{16}$ inches 	Pcs	1:4	√		
18.	Extension cable	Single phase 220V/240V	Pcs	1:8	√	√	√
19.	Blower (Air blower, vacuum cleaner)	<ul style="list-style-type: none"> Electric Blower 220V/50Hz 1500rpm Hand Blower 	Pcs	1:8	√	√	√
20.	Stop Watch	Digital /Analogue	Pcs	1:4	√	√	√
21.	Magnifying glass: lighted table type	Lighted table/bench type	Pcs	1:4	√	√	√
22	Pliers	Long nose Large, medium, small	Pcs	1:4	√	√	√
		Combination Large, medium, small	Pcs	1:2	√	√	√
23	Screw drivers	<ul style="list-style-type: none"> Slotted type, 1.4, 2.0, 3.0mm 0 and 1 cross point 	Set	1:4	√	√	√
		Small, medium, large	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
25	Electrician Knife	Folding type	Pcs	1:1	√	√	√
26	Scribers	240mm length, one straight and one angled	Pcs	1:1	√		
27	Test Probe	1.5mm	Pcs	1:2		√	√
28	Set of pliers	Insulated	Pcs	1:2	√	√	√
29	Wire stripper	<ul style="list-style-type: none"> • Adjustable, single joint • 160mm plier length 	Pcs	1:1	√	√	√
30	Allen keys – precision	<ul style="list-style-type: none"> • Set of 7 pieces • Metric pocket type model • 1.5- 12mm length 	Set	1:4	√		
31	Bench vice	Half tone 150 jaw opening	Pcs	1:4	√		
32	Wire cutter	160mm long	Pcs	1:1	√	√	√
33	Fire extinguishers	Dry powder , Foam type.	Pkt	1:4	√		
		Carbon dioxide , water type 25kg	Pcs	1:4	√		
		Foam : Anticorrosive metal operating component	Pcs	1:4	√		
		Fire Blanket	Pcs	1:4	√		
34	Ruler	Folding steel 2m length	Pcs	1:1	√		
		Steel rule 300mm Length; stainless steel, 0.5	Pcs	1:1	√		

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		precision					
		Folding wooden <ul style="list-style-type: none"> • 5m Length Dimension in metric and inches	Pcs	1:1	√		
37	Clip on multi meter	0 – 30A	Pcs	1:4	√	√	√
38	Crocodile Clip	Insulated	PCs	16:1	√	√	√
39	Threading Tool	Die and Tap Different sizes	Pcs	1:8	√		
40	Centre Punch	Knobbed shaft	Pcs	1:4	√		
41	Service Lamp	Table type	Pcs	1:4	√	√	√
42	Computer	<ul style="list-style-type: none"> • Application software • Operating system software • Utility software 	Pcs	1:4		√	√
43.	Networking hub	8 ports	Pcs	1:4		√	√
44.	Solar system kit	Control unit, Hand set, Control Panel, Connection Wire, Charging unit and Solar lamp.	Pcs	1:4		√	√
45.	Microprocessor practical kit	Standard With accessories	Pcs	1:4		√	√
46.	Colour codes charts	Standard for resistor, capacitors and inductor	Pcs	1:1	√		
47.	Signal tracer	Digital or Analogue	Pcs	1:4		√	√
48.	Decade inductor	In mill Henry range 1mH – 1000mH	Pcs	1:4	√		

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
49.	Decade capacitor	1000pF – 10uF	Each	1:4	√		
50.	Folding wooden ruler	<ul style="list-style-type: none"> 5m length In metric and inches	Each	1:4	√		
51.	Tape Measure	Steel 5m length In metric and inches	Each	1:1	√		
		Plastic. 5m length In metric and inches	Each	1:1	√		
52.	Files	Pocket type Needle files- precision	Set	1:4	√		
53.	Brush	Wire. Standard	Pcs	1:4	√		
		File. Wire type	Pcs	1:4	√		
		Soft type	Pcs	1:4	√		
54.	Oil can	0.5 litre	Pcs	1:8	√		
55	Hammer	Claw hammer 250gram	Pcs	1:1	√	√	√
		Plastic head hammer Soft, medium and hard	Pcs	1:4	√		
		Rubber mallet 226gram	Pcs	1:4	√	√	
		Cross pein Hammer 450gram	Pcs	1:2	√		
		Ball pein hammer 640gram	Pcs	1:2	√		
56	Files	Flat files: Fine, medium and rough	Pcs	1:1	√		
		Square files : Fine,	Pcs	1:1	√		

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		medium, and rough					
		Half round :Fine, medium, and rough	Pcs	1:1	√		
		Triangular ; fine, medium and rough	Pcs	1:1	√		
		Pocket type	Pcs	1:1	√		
57.	Spanners	Small size	Set	1:4	√		
		Adjustable Medium	Set	1:2	√		
58.	Raw plugs	Hand, drift key, 5mm, 8mm,10mm diameter	Pcs	1:1	√		

BASIC TOOLS AND EQUIPMQNT FOR REFRIGERATION AND AIR CONDITIONING (FOR 16 TRAINEES)

A. EQUIPMENT

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Oxy-acetylene gas welding set (plant)	<ul style="list-style-type: none"> • Set of two cylinder with trolley, gas bottles, and welding accessories, • pressure gauges, hose and goggles 	Set	1:4	√	√	√
2.	Bench vice	<ul style="list-style-type: none"> • Forged steel • With hardened steel jaw • Size jaw width 150mm • Jaw opening 150mm • Anvil size 115 x 80 	Pcs	1:1	√	√	√
3.	Work bench	<ul style="list-style-type: none"> • Size 2000x800mm • Height 880mm • With two stands • Shelf under bench with one drawer 	Pcs	1:2	√	√	√
4.	Cabinets	<ul style="list-style-type: none"> • Size 500 x 500 mm • Height 900mm • 1 shelf 2 drawers with accessories 	Pcs	1:2	√	√	√
5.	Vacuum pump complete	<ul style="list-style-type: none"> • Single stage pump • Vacuum speed 13.4CFM • Motor 220V/50Hz 	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
6.	Compressor analyzer	<ul style="list-style-type: none"> With 15 built in malfunctions Single phase 240V/50Hz 	Pcs	1:8	√	√	√
7.	Refrigerant analyzer	<ul style="list-style-type: none"> Digital display with printer in built A.C and D.C 	Pcs	1:8	√	√	√
8.	Recovery unit	<ul style="list-style-type: none"> 5g to 30kg pressure gauge ½ HP, 10kg tank 220V/50Hz Sight glass with moisture indicator, hose of 6ft 	Pcs	1:8		√	√
9.	Recovery cylinders	<ul style="list-style-type: none"> 13.6kg , portable 	Pcs	1:16		√	√
10.	Recovery bags	<ul style="list-style-type: none"> 0.5kg 	Pcs	1:8		√	√
11.	Graduated Charging cylinder	<ul style="list-style-type: none"> 25g to 2200g 220V/50Hz 	Pcs	1:8		√	√
12.	Electronic charging machine	<ul style="list-style-type: none"> Accuracy ±0.5g 220V/50Hz 	Pcs	1:16		√	√
13.	Hermetic compressor	<ul style="list-style-type: none"> Rotary and reciprocating type Capacity 1/5HP, 1/6HP, 1/8, 1.5HP, 2HP Single phase, 220V/50Hz 	Pcs	1:2	√	√	√
14.	Semi-hermetic	380V,50Hz, 1.5tons,	Pcs	1:16			√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
	compressor	3 Phase					
15.	Open type compressor	380V,50Hz, 1.5tons, 3 phase	Pcs	1:16			√
16.	Bench drilling M/C with accessories e.g. chucks diameter 12mm keys Morse taper	<ul style="list-style-type: none"> Capacity diameter 12mm Speed approximate 1500rpm, 2500rpm 0.75KW Chuck diameter 12mm 3 phase motor/50Hz 	Pcs	1:8	√	√	√
17.	Double ended grinding machine	<ul style="list-style-type: none"> Pedestal type Two grinding wheel 0.35KW 	Pcs	1:16		√	√
18.	Electrical portable drill m/c (Bosch)	<ul style="list-style-type: none"> Double insulated Capacity 8mm with chuck key and cable For 240V/50HZ 	Pcs	1:4	√	√	√
19.	Pneumatic drill machine	Portable	Pcs	1:4	√	√	√
20.	Domestic refrigeration demonstration and AC	<ul style="list-style-type: none"> 240V/single phase Glass tube evaporator 	Kit	1:8	√	√	√
21.	Domestic refrigeration trainer	R134A, 220V, 1Phase, 50hz	Pcs	1:8	√	√	
22.	Industrial and commercial refrigeration trainer	R404A,R407c, 380V, 3Phase, 50Hz	Pcs	1:16		√	√
23.	Electrical wiring	<ul style="list-style-type: none"> Aluminum case with 	Pcs	1:2	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
	trainer board	wooden mounting area <ul style="list-style-type: none"> • Single and three phase 					
24.	Sliding chalk board with accessories	2400 x 1200 foldable	Pcs	1:16	√	√	√
25.	White board with stand & accessories	1.85 x0.6m movable	Pcs	1:16	√	√	√
26.	Bread board	Medium size, with power supply lead connection	Pcs	1:1	√	√	√
27.	Single phase starter board	220-230V, 50Hz, 1ø	Pcs	1:8	√	√	√
28.	Mega/Insulation tester (megger)	<ul style="list-style-type: none"> • AC & DC • Capacity 10 to 100Mohm • Voltage 500V 	Pcs	1:4		√	√
29.	Multi- Extension cable	<ul style="list-style-type: none"> • Single phase 220-240V/50Hz • 3phase 380v/50Hz 	Pcs	1:8	√	√	√
30.	Low voltage power supply	<ul style="list-style-type: none"> • AC, single phase • 220V-240V/50Hz 	Pcs	1:4		√	√
31.	Bench Mounted Power Supply	<ul style="list-style-type: none"> • With fuse, Voltmeter, ammeter and socket outlet • Single phase 220V-250V/50Hz 	Pcs	1:2		√	√
32.	Bench Mounted Power Supply	Motor control with single phase, 220V -240V and 3 phase 380V-415V, 50Hz	Pcs	1:4		√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
33.	Transport trolley	<ul style="list-style-type: none"> • Low loading heavy duty steel tube • Wooden, loading platform • Two swiveling two fixed wheels • Loading platform 650x1260mm 	Pcs	1:4	√	√	√
34.	Ladder	<ul style="list-style-type: none"> • Aluminum forged • Straight • Length 6.8m • Folded 3.7m 	Pcs	1:8	√	√	√
35.	Fire Extinguisher	Carbon dioxide	Pcs	1:16	√	√	√
		<ul style="list-style-type: none"> • Weight of chemical 6.0 kg • Discharge range 5 to 8 • Pressure 200 PSI 					
		<ul style="list-style-type: none"> • Water type • Weight of chemical 6.0 kg • Discharge range 5 to 8 • Pressure 200 PSI 	Pcs	1:16	√	√	√
		<ul style="list-style-type: none"> • Dry powder • Weight of chemical 6.0 kg • Discharge range 5 to 8 • Pressure 200 PSI 	Pcs	1:16	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		<ul style="list-style-type: none"> • Foam type • Pressure 200 PSI • Discharge range 5 to 8 	Pcs	1:16	√	√	√
36.	OHP with stand	<ul style="list-style-type: none"> • LAMPS 2X 24V • 250W • WT.13.5KG • High DPI • Worktop 28.5x28.5cm • Lens 3 	Pcs	1:16	√	√	√
37.	Computer	<ul style="list-style-type: none"> • Pentium 4 • 3GHz • HDD 120GB • Ram 512MB • Flat Screen • panel 14 	Pcs	1:16	√	√	√
38.	UPS	1000VA	Pcs	1:16	√	√	√
39.	Computer printer	Inkjet/Laser	Pcs	1:16	√	√	√
40.	Laptop	AMD Dual-cores, 2.2GHz,2GB-ram,250GB- HDD	Pcs	1:16	√	√	√
41.	Refrigerator	500 litres, 220V, 50Hz	Pcs	1:4	√	√	
42.	Multimedia Projector	1080P,HD Resolution , 3D, 2400 Lumens, 500,000 :1 Dynamic control	Pcs	1:16	√	√	√
43.	Projector screen	Foldable ,size 2500 x1500mm, white	Pcs	1:16	√	√	√
44.	Weighing scale	Digital 250 x 250mm	Pcs	1:4	√	√	√
45.	Wireless weighing	<ul style="list-style-type: none"> • Digital 	Pcs	1:16	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
	scale	<ul style="list-style-type: none"> • Capacity 110kg • Accuracy 0.005kg • Resolution 0.01kg 					
46.	Grease gun	<ul style="list-style-type: none"> • Level type • Delivery tube of 150mm • Capacity 500gram 	Pcs	1:8	√	√	√

B. TOOLS

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Screw driver	Flat type Set of (6) <ul style="list-style-type: none"> Flat tip Insulated handle Blade size 2 x 60mm 	Set	1:1	√	√	√
		Philips/star <ul style="list-style-type: none"> Round melite plated blade Insulated handle Small , medium and large 	Set	1:1	√	√	√
		Precision	Set	1:1	√	√	√
		Nut driver <ul style="list-style-type: none"> Set of 11 pcs 120grams 	set	1:4	√	√	√
2.	Pliers	Side cutting Insulated, 160mm long	Pcs	1:1	√	√	√
		Combination Insulated, 160mm long	Pcs	1:1	√	√	√
		Long nose 160mm long, insulated	Pcs	1:1	√	√	√
		Round nose 160mm long, insulated	Pcs	1:1	√	√	√
		Wire stripping Insulated, 150mm long	Pcs	1:1	√	√	√
		Cir-clip Assorted	Pcs	1:2		√	√
3.	Puller extractor set	<ul style="list-style-type: none"> Two legs Three legs 	Pcs	1:8		√	√
4.	Screw	<ul style="list-style-type: none"> assorted 	Pcs	1:8		√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
	extractor						
5.	Bearing fitting kit	large, medium, small size	Pcs	1:8	√	√	√
6.	Metric steel rule	<ul style="list-style-type: none"> Length 300mm Stainless steel graduated 1mm 0.5 precision 	Pcs	1:1	√	√	√
7.	Spirit level	<ul style="list-style-type: none"> Length 500mm Tolerance 0.5% 1 horizontal 2 vertical Aluminum made 	Pcs	1:1	√	√	√
8.	Vernier calipers (Digital or analogy)	<ul style="list-style-type: none"> Size 150mm Stainless steel with lock nut 4 measuring possibilities precision 0.02mm 	Pcs	1:1	√	√	√
9.	Micrometer	<ul style="list-style-type: none"> Size 0 – 25mm Precision 0.01mm In box 	Pcs	1:1	√	√	√
10.	Digital multimeter	<ul style="list-style-type: none"> Ranges DCV 0 – 1000V AC 0 – 750V DC 0 – 10A AC 0-20A Resistance 0-2Mohms 10Hz -100 MHz Diode test side 0.8 – 1mA 	Pcs	1:1	√	√	√
11.	Digital thermometer	Ranges 10 to 50 degree	Pcs	1:4	√	√	√
12.	Clamp on	Clip on type	Pcs	1:4			√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
	meter	<ul style="list-style-type: none"> • 0-750DC/AC • 0 – 150A 					
13.	Portable insulation tester	<ul style="list-style-type: none"> • Measuring range • 10 MΩ and 100M Ω • 500V, AC or DC 	Pcs	1:8	√	√	√
14.	Pressure gauges	<ul style="list-style-type: none"> • Low side 1 to 8 bar (blue) • High side 1 to 25 bar (red) • Pulse free 	Pcs	1:4	√	√	√
15.	Manifold with gauges	<ul style="list-style-type: none"> • 4 way system • 150cm hose length • Including vacuum hose $\frac{3}{8}$ complete set. 	Pcs	1:4	√	√	√
16.	Charging hose pair	<ul style="list-style-type: none"> • $\frac{1}{4}$ hoses 150cm • Hose color blue and red • One end with flare 45⁰ 	Set	1:4	√	√	√
17.	Electric soldering iron	230V, 50Hz , 70W with alumination lamp and stand	Pcs	1:1	√	√	√
18.	Soldering gun	<ul style="list-style-type: none"> • For 220V/50 Hz 60 W • Quick solder tip heat • With 3 bits and chisel bits 	Pcs	1:1	√	√	√
19.	Regulator hose pairs	<ul style="list-style-type: none"> • $\frac{1}{4}$ HP • 150cm long • Yellow 	Pair	1:4	√	√	√
20.	Pinch off tool	<ul style="list-style-type: none"> • Movable jaw for parallel clamping • Automatic locking of jaw • Length 245mm 	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		<ul style="list-style-type: none"> Jaw length 65mm 					
21.	Piecing pliers	5/16 inches connection	Pcs	1:1	√	√	√
22.	spanner	Socket <ul style="list-style-type: none"> ½ bi hexagonal socket 35 parts 14 socket size 10-21mm 11 AF socket $\frac{7}{16}$ -1 inches 10w $\frac{3}{16}$ – $\frac{3}{4}$ inches Steel case 	Set	1:4	√	√	√
		Ring <ul style="list-style-type: none"> Set of 20 pcs Chromium plated with ground head Size 3 – 32mm 	Set	1:4	√	√	√
		Open end <ul style="list-style-type: none"> Set of 20 pcs Double ended spanner chromium plated -vanadium steel Jaw angle 15° Size 3 – 32mm 	Set	1:4	√	√	√
		Lugs spanners Standard	Set	1:4	√	√	√
		Adjustable <ul style="list-style-type: none"> Set of 3 Pcs With tapering jaw for easy gripping Size 4, 6 and 8 inches 	Set	1:4	√	√	√
23.	Allen key set	<ul style="list-style-type: none"> Metric pocket size model 	Set	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		<ul style="list-style-type: none"> 7 pieces set 1.5 – 12.0mm Folded length 100mm 					
24.	Set of flaring tools	<ul style="list-style-type: none"> Self centre For pipe size 6,8,10,12,14,15,16 or $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{7}{16}$, $\frac{5}{8}$, $\frac{3}{4}$ inches 	Set	1:4	√	√	√
25.	Swaging tool set (swage adaptor)	<ul style="list-style-type: none"> For soft copper Exchangeable expander heads of $\frac{1}{4}$, $\frac{5}{16}$, $\frac{1}{2}$, & $\frac{3}{4}$ 	Set	1:4	√	√	√
26.	Swaging tool 1 punch type	<ul style="list-style-type: none"> For $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{7}{16}$, $\frac{5}{8}$ & $\frac{3}{4}$ inches 	Set	1:4	√	√	√
27.	Pipe bender	<ul style="list-style-type: none"> For soft copper Lever type With single and three grooved 	Pcs	1:4	√	√	√
28.	Tube bending spring	<ul style="list-style-type: none"> For cold bending of thin copper tube Size $\frac{1}{4}$, $\frac{5}{16}$, $\frac{1}{2}$ and $\frac{3}{4}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{5}{8}$ inches 	Pcs	1:4	√	√	√
29.	Tube cutter set	<ul style="list-style-type: none"> Medium and heavy duty 	Pcs	1:2	√	√	√
30.	Cable cutter	300x300mm	Pcs	1:1	√	√	√
31.	Hacksaw frame	<ul style="list-style-type: none"> Fixed frame Wooden handle/or steel or aluminum handle For saw blade length of 300mm 	Pcs	1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
32.	Hacksaw blade	<ul style="list-style-type: none"> • 24 - 32teeth per inch • Length 300mm • Flexible back 	Set	1:1	√	√	√
33.	Centre punches	<ul style="list-style-type: none"> • With knobbed shaft 	Pcs	1:1	√	√	√
34.	Scriber	<ul style="list-style-type: none"> • One straight end and one angled steel tip • Length 240mm 	Pcs	1:1	√	√	√
35.	File	Flat <ul style="list-style-type: none"> • Second cut and crosscut • Width 200mm • Thickness 5mm • Length 250mm • With wooden handle 	Pcs	1:1	√	√	√
		Half round <ul style="list-style-type: none"> • Length 200mm • Width 20.5mm • Thickness 6mm • 10 teeth per cm • Crosscut bastard • With handle 	Pcs	1:1	√	√	√
		Round <ul style="list-style-type: none"> • Length 150mm • O 10mm • 13 teeth per cm • Bastard crosscut • With handle 	Pcs	1:1	√	√	√
		Triangular <ul style="list-style-type: none"> • Length 150mm • Width 8.4mm 	Pcs	1:1	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		<ul style="list-style-type: none"> • 20 teeth per cm • Sing cut medium • With handle. 					
		Needle / precision <ul style="list-style-type: none"> • assorted 	Pcs	1:1	√	√	
36.	Wire brush	Steel wire	Pcs	1:1	√	√	√
37.	Electronic leak detector	<ul style="list-style-type: none"> • For all HFC, CFC – WJL 2000 	Pcs	1:4	√	√	√
38.	Tape measure	<ul style="list-style-type: none"> • Inch and metric calibration • 30m long in metal case 	Pcs	1:4	√	√	√
39.	Twist drill set	<ul style="list-style-type: none"> • High speed steel • Range from diameter 3 to diameter 12mm • In steel or plastic 	Pcs	1:4	√	√	√
40.	Concrete drill bit set	<ul style="list-style-type: none"> • Diamond end print / / • 3m – 12mm diameter • Steel or plastic case 	Set	1:4	√	√	√
41.	Welding & cutting outfit	<ul style="list-style-type: none"> • Nozzle ranges of orifice • Set of 7 pcs • 1mm – 7mm • With Blow pipe • Cutting nozzle 	Set	1:4		√	√
42.	Claw hammer	<ul style="list-style-type: none"> • Weight 250gram and 500gram 	Pcs	1:4	√	√	√
43.	Plastic hammer and rubber mallet a copper hammer	<ul style="list-style-type: none"> • ½ kg/250grm • Wooden handle • rubber mallet • copper hammer 	Pcs Pcs Pcs Pcs	1:4 1:4 1:4 1:4	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
44.	Welding goggles	<ul style="list-style-type: none"> Plastic case Lens diameter 50mm Fold up 	Pcs	1:1	√	√	√
45.	Electrician Knife	<ul style="list-style-type: none"> Clutch type Blade width 10-30mm Length 100 – 250mm 	Pcs	1:1	√	√	√
46.	Cold chisel	<ul style="list-style-type: none"> Non tempered flat blade Size 15x 300 mm Special steel octagonal hardened 	Pcs	1:1	√	√	√
47.	Rivet gun	<ul style="list-style-type: none"> Heavy duty long nose Nose size $\frac{1}{8}$, $\frac{5}{32}$, and $\frac{3}{16}$ inches 	Pcs	1:4	√	√	√
48.	Tool Box (container)	<ul style="list-style-type: none"> Steel type 4x12x6 inches 	Pcs	1:1	√	√	√
49.	Safety gears	Goggles Lens ø50mm	Pcs	1:1	√	√	√
		Helmet Plastic		1:1	√	√	√
		Gloves Leather	Pcs	1:1	√	√	√
		Mask Plastic	Pcs	1:1	√	√	√
		Earring Sponge/plastic	Pcs	1:1	√	√	√
50.	Piecing valve	<ul style="list-style-type: none"> 5/16 Inches 	Pcs	1:1	√	√	√
51.	Drawing board with accessories	A3 sizes	Pcs	1:1	√	√	√
52.	Drawing	Large size	Set	1:16	√	√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
53.	Test leads	0.5m, 1.0m	Set	1:1	√	√	√
54.	Nozzle cleaner	Needle type set	set	1:16	√	√	√
55.	Hand Threading tool	Taps and dies With wrench M2- M20	Set	1:4	√	√	√

BASIC TOOLS AND EQUIPMENT FOR TELECOMMUNICATIONS - (FOR 20 TRAINEES)

A. EQUIPMENT

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Regulated D.C Power Supply	0-30V/3A	Pcs	1:2	√	√	√
2.	Regulated D.C Power Supply	0-250V/3A	Pcs	1:2	√	√	√
3.	Dual DC Power Supply	0-30V/3A	Pcs	1:2	√	√	√
4.	AC Voltage Supply	Three Phase 0-250V/50Hz	Pcs	1:2	√	√	√
5.	Multi meter	Digital/Analogue: 0-1000V _{DC} /0-10A, 010MΩ 0-1000V _{AC} /0-10A, 0- 10MΩ	Pcs	1:2	√	√	√
6.	Transistor Tester	In circuit Testing	Pcs	1:10		√	√
7.	Insulation Tester Megger	Portable 500V	Pcs	1:10		√	√
8.	Frequency Counter	Two channels (A&B) Channel A: i. 10Hz-10MHz ii. 10MHZ- 100MHz Channel B: 100MHz-1300MHz	Pcs	1:10		√	√
9.	Oscilloscope	Analogue: Dual beam or more	Pcs	1:5		√	√
		Digital Storage Oscilloscope	Pcs	1:20		√	√
10.	Signal Tracer	Analogue	Pcs	1:5		√	√
		Digital	Pcs	1:5		√	√

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
11.	Current Tracer	Analogue/Digital	Pcs	1:5		√	√
12.	Telephone Set (Trainer Kit)	Keypad	Pcs	1:2		√	√
13.	Computer Set	Pentium 4 /Current one	Pcs	1:4	√	√	√
14.	Signal Generators	Audio Frequency	Pcs	1:5		√	√
		Radio Frequency	Pcs	1:5		√	√
15.	Function generator	0-2MHz	Pcs	1:4		√	√
16.	Television Receiver Set (Trainer Kit)	Monochrome and Colour	Pcs	1:10		√	√
17.	Television Camera Set	Charge-coupled detector (CCD)	Set	1:10		√	√
18.	Radio Receiver Set (Trainer Kit)	AM&FM	Set	1:10	√	√	√
19.	Antennas	HF	Pcs	1:10	√	√	√
		VHF and UHF	Pcs	1:10	√	√	√
20.	Machine	Etching. PCB Production	Pcs	1:20		√	√
		Drilling. Diameter 12mm at 1500rpm, 220-250,50Hz	Pcs	1:5	√		

B. TOOLS

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
1.	Soldering Gun	50-500Watts	Pcs	1:4	√	√	√
2.	Soldering Iron	Ceramic Shafted - 30Watts	Pcs	1:4	√	√	√
		Ceramic Shafted - 60Watts	Pcs	1:4	√	√	√
3.	Solder Wire	1 mm 60/40	Roll	1:4	√	√	√
4.	Solder Sucker	Poly tetra fluoroethylene (PTFE) nozzle	Pcs	1:4	√	√	√
5.	Extension Cables	Single Phase 220V/240V	Pcs	1:10	√	√	√
6.	Drivers	Screw. Flat and Star (Small and Medium)	Set	1:5	√	√	√
		Nut. 3/16,1/4 inch hexagonal	Pcs	1:10	√		
		Torx. Star-shaped	Pcs	1:10	√		
7.	Logics	Probe. Digital	Pcs	1:10		√	√
		Pulser. Digital	Pcs	1:10		√	√
8.	Working light	Bench Type	Pcs	1:10	√	√	√
9.	Safety gears	Belt. Canvas	Pcs	1:10	√	√	√
		Gloves- Plastic	Pcs	1:1	√	√	√
		Boots -Plastic	Pcs	1:1	√	√	√
10.	Fire Extinguisher	Foam: Anticorrosive metal operating component. Capacity 9Lts,	Pcs	1:10	√		

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		Height 505mmX 195mm					
		Water :Capacity 9lts, height545mm x 190 mm	Pcs	1:10	√	√	√
		CO₂ : Capacity 2Kg, height 500mmX117mm	Pcs	1:10	√	√	√
		Dry Powder	Pcs	1:10	√	√	√
		Fire Blankets	Pcs	1:10	√	√	√
11.	Health Masks	Perforated	Pcs	1:1	√	√	√
12.	First Aid Kit	Medium Size	Set	1:20	√	√	√
13.	Ladder	Indoor Wooden or Steel Type	Pcs	1:20	√	√	√
		Extension Wooden or Steel Type	Pcs	1:20	√	√	√
14.	Data Book	Semiconductor Devices (Discrete and IC)	Pcs	1:20		√	√
15.	Software	Software package of: Electronic Workbench and Circuit Marker	Packag e	1:20		√	√
16.	Dust Blower	Electric 220V/50Hz, Hand held	Pcs	1:5	√	√	√
17.	Wire stripper	Adjustable, single joint, 160mm pliers length	Pcs	1:5	√	√	√
18.	Maintenance Record Sheets	Weekly	Pcs	1:1	√	√	√
19.	Telephone Cables	Overhead	Rolls	1:10	√	√	
20.	Connecting wires	Breadboard wires	Rolls	1:4	√		
21.	Connecting leads	Black and Red leads	Sets	2:1	√		
22.	Magnifying Glass	Bench Type	Pcs	1:4	√	√	

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
23.	Allen Head Keys	Metric pocket type, 1.5-12mm length (Pieces lengths)	Set	1:5	√		
24.	Spanners	Small and Medium	Set	1:5	√		
		Adjustable: 150mm-300mm	Pcs	1:10	√		
25.	Flexible tape	5 metres (In metric and inches)	Pcs	1:10	√		
26.	Steel Measuring Ruler	2 metres (In metric and inches)	Pcs	1:4	√		
27.	Scissors	Small and Medium	Set	1:10	√		
	Pliers	Combination Insulated	Set	1:5	√		
		Long noise Insulated	Set	1:5	√		
28.	Hammer	Claw hammer	Pcs	1:1	√		
		Plastic head hammer	Pcs	1:5	√		
		Rubber mallet	Pcs	1:5	√		
		Gross pein hammer 450gm	Pcs	1:2	√		
		Ball pein hammer 640g	Pcs	1:2	√		
29.	Raw Plugs	Hand, drift key, (5mm,8mm and 10mm)	Pcs	1:1	√		
30.	Files	Flat files (fine, medium and rough)	Pcs	1:5	√		
		Square files(fine, medium and rough)	Pcs	1:5	√		
		Half round (fine, medium and rough)	Pcs	1:5	√		

S/N	ITEM	SPECIFICATIONS	UNIT	RATIO	LEVEL I	LEVEL II	LEVEL III
		Triangular (fine, medium and rough)	Pcs	1:5	√		
31.	Hacksaw	Small and Medium	Set	1:5	√		
32.	Chisel	Wood chisel	Pcs	1:5	√		
		Cold chisel	Pcs	1:5	√		
33.	Burr Reamer	Universal	Pcs	1:10	√		
34.	Brushes	Soft	Pcs	1:5	√		
		Hard	Pcs	1:5	√		
		Wire	Pcs	1:5	√		
		File. Wire Type	Pcs	1:5	√		
35.	Bench Vice	150 jaw opening	Pcs	1:5	√		
36.	Crimper	Automatic Preset Type	Pcs	1:5	√		

APPENDIX 2: SCHEMATIC DRAWINGS FOR CLASSROOMS A