

PROGRAMMING AND SYSTEMS ADMINISTRATION ASSISTANT

COMPETENCY BASED CURRICULUM

(Duration: 1 Yr. and 3 months)

APPRENTICESHIP TRAINING SCHEME (ATS)

NSQF LEVEL- 5



SECTOR – IT AND ITES



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

Programming and Systems Administration Assistant

PROGRAMMING AND SYSTEMS ADMINISTRATION ASSISTANT

(Revised in 2018)

APPRENTICESHIP TRAINING SCHEME (ATS)

NSQF LEVEL - 5

Developed By

Ministry of Skill Development and Entrepreneurship
Directorate General of Training
CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE
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1.1 Apprenticeship Training Scheme under Apprentice Act 1961

The Apprentices Act, 1961 was enacted with the objective of regulating the programme of training of apprentices in the industry by utilizing the facilities available therein for imparting on-the-job training. The Act makes it obligatory for employers in specified industries to engage apprentices in designated trades to impart Apprenticeship Training on the job in industry to school leavers and person having National Trade Certificate(ITI pass-outs) issued by National Council for Vocational Training (NCVT) to develop skilled manpower for the industry. There are four categories of apprentices namely; **trade apprentice, graduate, technician and technician (vocational) apprentices.**

Qualifications and period of apprenticeship training of **trade apprentices** vary from trade to trade. The apprenticeship training for trade apprentices consists of basic training followed by practical training. At the end of the training, the apprentices are required to appear in a trade test conducted by NCVT and those successful in the trade tests are awarded the National Apprenticeship Certificate.

The period of apprenticeship training for graduate (engineers), technician (diploma holders and technician (vocational) apprentices is one year. Certificates are awarded on completion of training by the Department of Education, Ministry of Human Resource Development.

1.2 Changes in Industrial Scenario

Recently we have seen huge changes in the Indian industry. The Indian Industry registered an impressive growth during the last decade and half. The number of industries in India have increased manifold in the last fifteen years especially in services and manufacturing sectors. It has been realized that India would become a prosperous and a modern state by raising skill levels, including by engaging a larger proportion of apprentices, will be critical to success; as will stronger collaboration between industry and the trainees to ensure the supply of skilled workforce and drive development through employment. Various initiatives to build up an adequate infrastructure for rapid industrialization and improve the industrial scenario in India have been taken.

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1.3 Reformation

The Apprentices Act, 1961 has been amended and brought into effect from 22nd December, 2014 to make it more responsive to industry and youth. Key amendments are as given below:

- Prescription of number of apprentices to be engaged at establishment level instead of trade-wise.
- Establishment can also engage apprentices in optional trades which are not designated, with the discretion of entry level qualification and syllabus.
- Scope has been extended also to non-engineering occupations.
- Establishments have been permitted to outsource basic training in an institute of their choice.
- The burden of compliance on industry has been reduced significantly.

2.1 GENERAL

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

Programming And Systems Administration Assistant trade under ATS is one of the most popular courses delivered nationwide through different industries. The course is of one year three months (01 Block of 15 months duration including basic training) duration. It mainly consists of Domain area and Core area. In the Domain area Trade Theory & Practical impart professional - skills and knowledge, while Core area - Engineering Drawing and Employability Skills imparts requisite core skills & knowledge and life skills. After passing out the training programme, the trainee is being awarded National Apprenticeship Certificate (NAC) by NCVT having worldwide recognition.

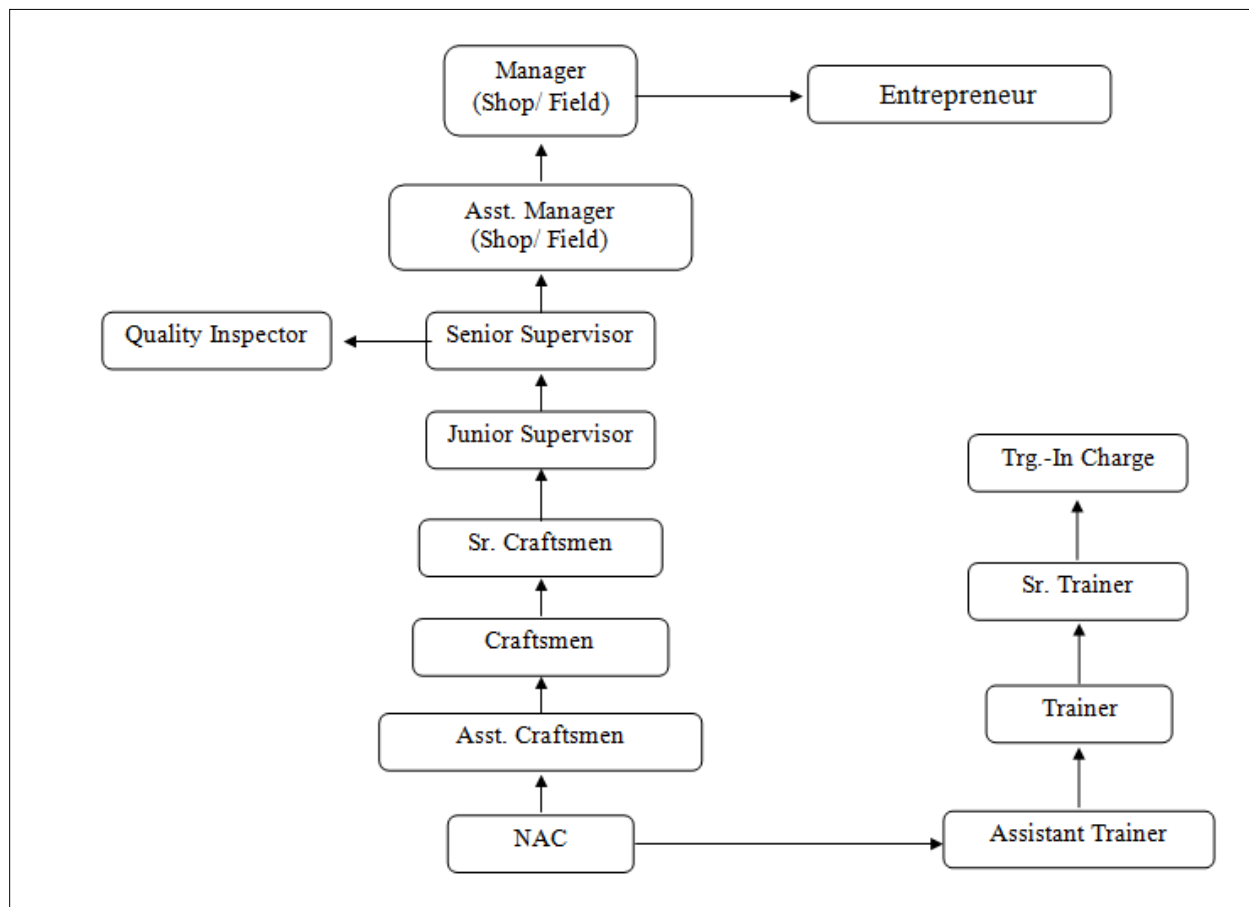
Broadly candidates need to demonstrate that they are able to:

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

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2.2 CAREER PROGRESSION PATHWAYS:

- Indicative pathways for vertical mobility.



2.3 COURSE STRUCTURE:

Table below depicts the distribution of training hours across various course elements during a period of one year (*Basic Training and On-Job Training*):-

Total training duration details: -

Time (in months)	1-3	4 -15
Basic Training	Block– I	-----
Practical Training (On - job training)	----	Block – I

A. Basic Training

For 02 yrs. course: - **Total 06 months:** 03 months in 1styr. + 03 months in 2nd yr.)

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For 01 yr. course: - **Total 03 months:** 03 months in 1st yr.)

Sl. No.	Course Element	Total Notional Training Hours
		For 01 yr. course
1	Professional Skill (Trade Practical)	270
2	Professional Knowledge (Trade Theory)	120
3	Employability Skills	110
	Total (including Internal Assessment)	500

B. On-Job Training:-

For 01 yr. course :- (**Total 12 months**)

Notional Training Hours for On-Job Training: 2080 Hrs.

C. Total training hours:-

Duration	Basic Training	On-Job Training	Total
For 02 yrs. course	500 hrs.	3640 hrs.	4140 hrs.
For 01 yr. course	500 hrs.	2080 hrs.	2580 hrs.

2.4 ASSESSMENT & CERTIFICATION:

The trainee will be tested for his skill, knowledge and attitude during the period of course and at the end of the training programme as notified by Govt. of India from time to time. The Employability skills will be tested in first two semesters only.

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

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

2.4.1 PASS REGULATION

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The minimum pass percent for Practical is 60% & minimum pass percent for Theory subjects 40%. The candidate pass in each subject conducted under all India trade test.

2.4.2 ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking assessment. Due consideration should be given while assessing for team work, avoidance/reduction of scrap/wastage and disposal of scarp/wastage as per procedure, behavioral attitude, sensitivity to environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising the following:

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

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

Performance Level	Evidence
(a) Weightage in the range of 60 -75% to be allotted during assessment	
For performance in this grade, the candidate with occasional guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of an acceptable standard of craftsmanship.	<ul style="list-style-type: none">• Demonstration of good skill in the use of hand tools, machine tools and workshop equipment• Below 70% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards.• A fairly good level of neatness and consistency in the finish• Occasional support in completing the project/job.
(b)Weightage in the range of above75% - 90% to be allotted during assessment	

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<p>For this grade, the candidate, with little guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of a reasonable standard of craftsmanship.</p>	<ul style="list-style-type: none">• Good skill levels in the use of hand tools, machine tools and workshop equipment• 70-80% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards.• A good level of neatness and consistency in the finish• Little support in completing the project/job
<p>(c) Weightage in the range of above 90% to be allotted during assessment</p>	
<p>For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.</p>	<ul style="list-style-type: none">• High skill levels in the use of hand tools, machine tools and workshop equipment• Above 80% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards.• A high level of neatness and consistency in the finish.• Minimal or no support in completing the project.

Brief description of Job roles:

After completion of the course the apprentices shall be qualified for one or more of the following job roles:

1. Provide Assistance to Systems Analyst in their day-to-day work in program coding, system analysis and design preparation of technical document/specifications
2. Provide assistance to the system administrator.
3. Manage the standalone computer systems develop programs to generate reports or ad-hoc queries prepare documents/presentation using a standard office automation tool.
4. Office Automation.
5. Computer maintenance.

Reference NCO:

- i) NCO-2015: 2511.0100 System Analysts
- ii) NCO-2015: 3514.0300 Programming Assistant
- iii) NCO-2015: 3513.9900 Computer network and system Technician
other.

4. NSQF LEVEL COMPLIANCE

NSQF level for PROGRAMMING AND SYSTEMS ADMINISTRATION ASSISTANT trade under ATS: **Level 5**

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

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

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

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

The Broad Learning outcome of PROGRAMMING AND SYSTEMS ADMINISTRATION ASSISTANT trade under ATS mostly matches with the Level descriptor at Level- 5.

The NSQF level-5 descriptor is given below:

Level	Process Required	Professional Knowledge	Professional Skill	Core skill	Responsibility
Level5	Job that requires well developed skill, with clear choice of procedures in familiar context.	Knowledge of facts, principles, processes and general concepts, in a field of work or study	A range of cognitive and practical skills required to accomplish tasks and solve problem by selecting and applying basic methods, tools, materials and information.	Desired mathematical skill, understanding of social, political and some skill of collecting and organizing information, communication.	Responsibility for own work and Learning and some responsibility for other's works and learning.

5. GENERAL INFORMATION

Name of the Trade	Programming And Systems Administration Assistant
NCO - 2015	2511.0100, 3514.0300, 3513.9900
NSQF Level	Level – 5
Duration of Apprenticeship Training (Basic Training + On-Job Training)	3 months+ One year (01 Block of 15 months duration including basic training).
Duration of Basic Training	a) Block –I : 3 months Total duration of Basic Training: 3 months
Duration of On-Job Training	a) Block–I: 12 months Total duration of Practical Training: 12 months
Entry Qualification	National Trade Certificate (NTC) Issued by National Council for Vocational Training in "Computer Operator and programming Assistant Trade
Selection of Apprenticeship	The apprentices will be selected as per Apprenticeship Act amended time to time.
Instructors Qualification for Basic Training	As per ITI instructors qualifications as amended time to time for the specific trade.
Infrastructure for basic training	As per the related trade of ITI
Examination	The internal examination/ assessment will be held on completion of each block. Final examination for all subjects will be held at the end of course and same will be conducted by NCVT.
Rebate to Ex-ITI Trainees	3 Months Basic Training
CTS trade eligible for Rebate	Computer Operator and Programming Assistant

Note:

- *Industry may impart training as per above time schedule for different block, however this is not fixed. The industry may adjust the duration of training considering the fact that all the components under the syllabus must be covered. However the flexibility should be given keeping in view that no safety aspects is compromised.*
- *For imparting Basic Training the industry to tie-up with ITIs having such specific trade and affiliated to NCVT.*

6. LEARNING OUTCOME

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6.1 GENERIC LEARNING OUTCOME

The following are minimum broad Common Occupational Skills/ Generic Learning Outcome after completion of the PROGRAMMING AND SYSTEMS ADMINISTRATION ASSISTANT course of 01 year and 03 months duration under ATS.

Block - I:-

1. Recognize & comply safe working practices, environment regulation and housekeeping.
2. Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.
3. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.
4. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.
5. Plan and organize the work related to the occupation.

6.2 SPECIFIC LEARNING OUTCOME

Block – II

1. Safety and best practices (5S, KAIZEN etc.)
2. Record keeping and documentation
3. Identify and test the Computer devices/ components/ Hardware/ software such as Computer Fundamentals ,MS- Windows ,Office Automation Tools and Local Area Network
4. Repair & Maintenance work.
5. OS Administration (Windows, Linux/Unix/Netware) Install the Linux/Windows/ Unix/Netware Operating System; configure server, adding user, Creating and managing user, effective access permission.
6. Install and configure of Add/Remove Programs, Server Setup, Web Server ,Domain Name Server ,Mail Server ,Proxy Server Drivers Setup ,Security Setup (User/Password, Permissions),Disk Management Backup/Restore Virus Protection, Printer Setup Network, Setup Email/Internet Setup ,Resource Sharing ,Troubleshooting printer, disk management tools and tasks, implementing file and folders share permission, using device manager, drivers, signature verification.
7. Work with different kind of editors Software.
8. Prepare system documentation such as Programming using C++/Visual Basic/ Java or other latest development tools, RDBMS (Oracle/Sql Server/Ingress/UDB etc.),

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ODBC/JDBC, Object Oriented Development, and Web Based Development using HTML/ASP/Java Applets/Java Script etc.

9. Practice administrative Tasks related to manage Computer Center.
10. A Simple project, GUI Tools (Visual Basic, SQL, Windows), Language (C++, Java), RDBMS (Oracle, Ingress etc), Applications (Financial/ manufacturing/Multi-media/Computer Graphics/ Instructional Design/ Database, Management System/Internet/ Intranet/Computer Network)

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

7. LEARNING OUTCOME WITH ASSESSMENT CRITERIA

GENERIC LEARNING OUTCOME	
LEARNING OUTCOMES	ASSESSMENT CRITERIA
1. Recognize & comply safe working practices, environment regulation and housekeeping.	1.1 Follow and maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements.
	1.2 Recognize and report all unsafe situations according to site policy.
	1.3 Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures.
	1.4 Identify, handle and store / dispose off dangerous/unsalvageable goods and substances according to site policy and procedures following safety regulations and requirements.
	1.5 Identify and observe site policies and procedures in regard to illness or accident.
	1.6 Identify safety alarms accurately.
	1.7 Report supervisor/ Competent of authority in the event of accident or sickness of any staff and record accident details correctly according to site accident/injury procedures.
	1.8 Identify and observe site evacuation procedures according to site policy.
	1.9 Identify Personal Productive Equipment (PPE) and use the same as per related working environment.
	1.10 Identify basic first aid and use them under different circumstances.
	1.11 Identify different fire extinguisher and use the same as per requirement.
	1.12 Identify environmental pollution & contribute to avoidance of same.
	1.13 Take opportunities to use energy and materials in an environmentally friendly manner
	1.14 Avoid waste and dispose waste as per procedure
	1.15 Recognize different components of 5S and apply the same in the working environment.
2. Understand, explain different mathematical calculation & science in the field of study including basic	2.1 Explain concept of basic science related to the field such as Material science, Mass, weight, density, speed, velocity, heat & temperature, force, motion, pressure, heat treatment, centre of gravity, friction.

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electrical and	
apply in day to day work. <i>[Different mathematical calculation & science -Work, Power & Energy, Algebra, Geometry & Mensuration, Trigonometry, Heat & Temperature, Levers & Simple machine, graph, Statistics, Centre of gravity, Power transmission, Pressure]</i>	2.2 Measure dimensions as per drawing
	2.3 Use scale/ tapes to measure for fitting to specification.
	2.4 Comply given tolerance.
	2.5 Prepare list of appropriate materials by interpreting detail drawings and determine quantities of such materials.
	2.6 Ensure dimensional accuracy of assembly by using different instruments/gauges.
	2.7 Explain basic electricity, insulation & earthing.
3. Interpret specifications, different engineering drawing and apply for different application in the field of work. <i>[Different engineering drawing-Geometrical construction, Dimensioning, Layout, Method of representation, Symbol, scales, Different Projections, Machined components & different thread forms, Assembly drawing, Sectional views, Estimation of material, Electrical & electronic symbol]</i>	3.1 Read & interpret the information on drawings and apply in executing practical work.
	3.2 Read & analyse the specification to ascertain the material requirement, tools, and machining /assembly /maintenance parameters.
	3.3 Encounter drawings with missing/unspecified key information and make own calculations to fill in missing dimension/parameters to carry out the work.
4. Select and ascertain measuring instrument and measure dimension of components and record data.	4.1 Select appropriate measuring instruments such as micrometers, verniercalipers, dial gauge, bevel protector and height gauge (as per tool list).
	4.2 Ascertain the functionality & correctness of the instrument.
	4.3 Measure dimension of the components & record data to analyse the with given drawing/measurement.
5. Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.	5.1 Explain the concept of productivity and quality tools and apply during execution of job.
	5.2 Understand the basic concept of labour welfare legislation and adhere to responsibilities and remain sensitive towards such laws.
	5.3 Knows benefits guaranteed under various acts

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6. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.	6.1 Explain the concept of energy conservation, global warming, pollution and utilize the available resources optimally & remain sensitive to avoid environment pollution.
	6.2 Dispose waste following standard procedure.
7. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.	7.1 Explain personnel finance and entrepreneurship.
	7.2 Explain role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmes & procedure & the available scheme.
	7.3 Prepare Project report to become an entrepreneur for submission to financial institutions.
8. Plan and organize the work related to the occupation.	8.1 Use documents, drawings and recognize hazards in the work site.
	8.2 Plan workplace/ assembly location with due consideration to operational stipulation
	8.3 Communicate effectively with others and plan project tasks
	8.4 Assign roles and responsibilities of the co-trainees for execution of the task effectively and monitor the same.
SPECIFIC OUTCOME	
Block-I (Section:10 in the competency based curriculum)	
<p><i>Assessment Criteria i.e. the standard of performance, for each specific learning outcome mentioned under block – I &II (section: 10) must ensure that the trainee achieves well developed skill with clear choice of procedure in familiar context. Assessment criteria should broadly cover the aspect of Planning (Identify, ascertain, estimate etc.); Execution (perform, illustration, demonstration etc. by applying 1) a range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information 2) Knowledge of facts, principles, processes, and general concepts, in a field of work or study 3) Desired Mathematical Skills and some skill of collecting and organizing information, communication) and Checking/ Testing to ensure functionality during the assessment of each outcome. The assessments parameters must also ascertain that the candidate is responsible for own work and learning and some responsibility for other's work and learning.</i></p>	

BASIC TRAINING (Block – I)

Duration: (03) Three Months

Week No.	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
1.	<p>Computer components and Windows Operating System</p> <ul style="list-style-type: none"> • Disassembling, Identification of components and Reassembling a Desktop computer. • Familiarization with Windows O.S desktop, using icons, buttons and customizing the desktop. • Managing files and folders, using removable drives. • Viewing system properties and control panel details. Viewing and setting environmental variables. • Working with MS Paint. <p>Computer Hardware basics and Software Installation</p> <ul style="list-style-type: none"> • Viewing the BIOS and changing the Boot order. • Identify and rectify common hardware and software issues. • Installation of DVD, using different types of hard disks. • Bluetooth Configuration, DVD write techniques. 	<p>Introduction to Computers and Windows Operating System</p> <ul style="list-style-type: none"> • History, Generations, Types, Advantages and Applications of Computers. • Concepts of Hardware and Software. Computer Hardware basics. • Introduction to various processors. • Introduction to the functions of an Operating System, Popular Operating Systems in Use. • Main features of Windows O.S • Various Input/ Output devices in use and their features. • Using Scanner, Printer and Webcam. <p>Computer Hardware basics and Software Installation</p> <ul style="list-style-type: none"> • Introduction to the booting process, BIOS settings and their modification. • Introduction to various types of memories and their features. • Basic Hardware and software issues and their solutions. Formatting and Loading O.S and Application software and Antivirus.
2.	<p>Familiarization with DOS CLI & Linux Operating Systems.</p> <ul style="list-style-type: none"> • Using basic DOS commands for directory listing, file and folder management etc. • Using Basic Linux commands for directory listing, file and folder management, password etc. 	<p>Introduction to DOS Command Line Interface & Linux Operating System.</p> <ul style="list-style-type: none"> • Introduction to basic DOS Internal and External Commands. • Introduction to Open Source Software. • Introduction to Linux Operating System features, structure, files

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	<p>Using the Linux graphical user interface for file and folder management, exploring the system etc.</p> <p>Using Word Processing Software</p> <ul style="list-style-type: none"> • Familiarization with the Word window components. • Creating, saving and editing documents using Word. • Inserting and formatting tables and other objects. • Using templates, autocorrect tools, macros and the mail merge tool. • Working with Page layout settings and printing documents. • Typing practice using open source typing tutor tools. 	<p>and processes.</p> <ul style="list-style-type: none"> • Introduction to various Linux Shells. <p>Basic Linux commands.</p> <p>Word Processing</p> <ul style="list-style-type: none"> • Introduction to the various applications in office. • Introduction to Word features, Office button, toolbars. • Creating, saving and formatting and printing documents using Word. • Working with inserting objects, macro, mail merge, templates and other tools in Word. • Page setup and Printing Documents using word.
3.	<p>Using Spread Sheet Application</p> <ul style="list-style-type: none"> • Creating, Saving and Formatting Excel Spreadsheets. • Using Absolute and Relative referencing, linking sheets, Conditional formatting etc. • Using Excel functions of all major categories. • Using various data types in Excel, Sorting, filtering and validating data. • Creating and formatting charts. • Importing &Exporting Excel Data. • Performing data analysis using “what if” tools. • Modifying Excel Page setup and printing. • Working with lookups (V lookup, H lookup). 	<p>Spread Sheet Application</p> <ul style="list-style-type: none"> • Introduction to Excel features and Data Types. • Cell referencing. Use of functions of various categories, linking Sheets. • Introduction to various functions in all categories of Excel. • Concepts of Sorting, Filtering and Validating Data. • Analysing data using charts, data tables, pivot tables, goal seek and scenarios. Introduction to Reporting. • Concepts lookups (V lookup, H lookup).
4-5	<p>Image editing, Creating presentations & Using Open Office</p> <ul style="list-style-type: none"> • Use of windows and open source image editing software like Open Office Draw, GIMP, Irfan View or a similar tool. • Creating Slide shows, Inserting 	<p>Image editing, Creating presentations & Using Open Office</p> <ul style="list-style-type: none"> • Introduction to Open Office. • Introduction to the properties and editing of images. • Introduction to Power Point and its advantages.

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	<p>objects.</p> <ul style="list-style-type: none"> • Animating Slide transitions and Objects. <p>Database Management</p> <ul style="list-style-type: none"> • Creating database and designing a simple tables in Access. • Enforcing Integrity Constraints and modifying the properties of tables and fields. • Creating Relationships and joining tables. • Creating Forms. • Creating simple select queries with various criteria and calculations. 	<ul style="list-style-type: none"> • Creating Slide Shows. • Fine tuning the presentation and good presentation techniques. <p>Database Management Systems</p> <ul style="list-style-type: none"> • Concepts of Data, Information and Databases. Overview of popular databases, RDBMS, OODB and NOSQL. • Rules for designing good tables. Integrity rules and constraints in a table. • Relationships in tables. • Introduction to various types of Queries and their uses. • Designing Access Reports and Forms. • Introduction to macros, designer objects controls, their properties and behaviour.
6-7	<p>Configuring and Using Networks</p> <ul style="list-style-type: none"> • Viewing Network connections. • Connecting a computer to a network and sharing of Devices, files and Folders. • Familiarization with various Network devices, Connectors and Cables. • IP Addressing and Subnetfor IPV4 / IPV6,Masking, pinging to test networks. • Using various tools for computer maintenance, Network security. <p>Internet Concepts</p> <ul style="list-style-type: none"> • Browsing the Internet for information. • Creating and using e – mail for communication. • Communication using text, video chatting and social networking sites. • Identifying various threats to the system connected to the net. • Protecting the computer against various internet threats. 	<p>Networking Concepts</p> <ul style="list-style-type: none"> • Introduction to Computer Networks, Necessity and Advantages. • Client Server and peer to Peer networking concepts. • Concept of Proxy Server and proxy firewall server. • Network topologies. Introduction to LAN, WAN and MAN. • Network components, viz. Modem, Hub, Switch, Router, Bridge, Gateway etc. • Network Cables,Wireless networks and Blue Tooth technology. • Concept of ISO - OSI 7 Layer Model. • Overview of various Network protocols Viz. TCP/IP, FTP, Telnet etc. • Logical and Physical Addresses, Classes of Networks. • Network Security &firewall concepts. • Concept of DHCP Server.

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	<ul style="list-style-type: none"> • Configure Outlook, mail service in mobile phones. Using tools like Skype, Google+ etc. <p>Designing Static Web Pages</p> <ul style="list-style-type: none"> • Designing simple web pages with text, pictures, tables, lists, hyperlinks, frames, marquees etc. using HTML tags. • Dividing website using division tag in html 5, embed Google map into website, how to put readymade slider, scrolling images, zoom image on mouse over, create navigation menubar in html using list put image icon with links. • Convert PSD file to html document using html tags and images. 	<p>Internet Concepts</p> <ul style="list-style-type: none"> • Introduction to WWW, Concept of Internet, Web Browsers, internet servers and search engines. • Concepts of Domain naming Systems and E mail communication. • Introduction to video chatting tools, VOIP and Social Networking concepts. • Concept of Cloud storage and Open Web Server. • Introduction to Internet Security, Threats and attacks, Malicious Software types, Internet security products and their advantages. <p>Web Design Concepts</p> <ul style="list-style-type: none"> • Concepts of Static and Dynamic Web pages. • Introduction to HTML and various tags in HTML. • Creating Forms with controls using HTML. • Concepts of CSS and applying CSS to HTML • Introduction to open source CMS viz. Joomla, Word press etc. and Web authoring tools viz. Kompozer, FrontPage etc. • Basic Concepts of Flash and Dreamweaver.
8-9	<p>Java Script</p> <ul style="list-style-type: none"> • Familiarization with JavaScript elements. • Embedding JavaScript in HTML to display information in web pages. Documentation and Formatting. • Using JavaScript Variables, Data types, Constants and Operators. • Working with functions, and calling of function on JavaScript events. • Create running clock on website 	<p>Java Script</p> <ul style="list-style-type: none"> • Algorithms and flowcharts. • Introduction to Web Servers and their features. • Introduction to Programming and Scripting Languages. • Introduction to JavaScript and its application for the web. • JavaScript Basics – Data types, Variables, Constants. Conversion between data types. • The Arithmetic, Comparison,

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	<p>using JavaScript.</p> <ul style="list-style-type: none"> • Find users browser and operating system using javascript. • Client side validation of form in javascript. 	<p>Logical and String Operators in JavaScript. Operator precedence.</p> <ul style="list-style-type: none"> • Arrays in JavaScript – concepts, types and usage. • Program Control Statements and loops in JavaScript. • Introduction to Functions in JavaScript. • Built in JavaScript functions overview. • The String data type in JavaScript. Introduction to String, Math and Date Functions. • Concepts of Pop Up boxes in JavaScript. • Introduction to the Document Object Model.
10-11	<p>Programming with VBA</p> <ul style="list-style-type: none"> • Familiarization with the VBA Editor. • Writing simple programs involving VBA Data types, Variables, Operators and Constants. • Working with string variables in VBA. • Creating and Manipulating Arrays in VBA. • Working with conditional statements like If. Elseif, Select ... Case statements in VBA. • Creating Message boxes and Input boxes in VBA. • Creating Functions and Procedures. Passing Parameters and Using Returned Data. 	<p>Introduction to VBA, Features and Applications.</p> <ul style="list-style-type: none"> • Introduction to VBA features and applications. • VBA Data types, Variables and Constants. • Operators in VBA and operator precedence. • Mathematical Expressions in VBA. • Introduction to Strings in VBA. • Introduction to Arrays in VBA. • Conditional processing in VBA, using the IF, Elseif, Select... Case Statements. • Loops in VBA Introduction to VBA. • VBA message boxes and input boxes. • Introduction to Creating functions and Procedures in VBA. • Using the built in functions. • Creating and editing macros. • Introduction to Object Oriented Programming Concepts. Concepts of Classes, Objects,

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		<p>Properties and Methods.</p> <ul style="list-style-type: none"> • Events and Event driven programming concepts. • The user forms and control in Excel VBA. • Properties, events and methods associated with the Button, Check Box, Label, Combo Box, Group Box, Option Button, List Box, Scroll Bar and Spin button controls. • Overview of ActiveX Data objects. • Debugging Techniques.
12	<p>Using Accounting Software</p> <ul style="list-style-type: none"> • Basic accounting practice. • Familiarization with the Tally interface. • Company creation, Account Creation, Voucher Entry in Tally. • Report Generation (Creating statements like Invoice, Bill, Profit & Loss account etc.). <p>E Commerce</p> <ul style="list-style-type: none"> • Familiarization with latest E commerce websites viz. E bay, Amazon, Flip Cart, OLX, Quikr etc. and comparative study of the main features of these sites. 	<p>Smart Accounting</p> <ul style="list-style-type: none"> • Basics of Accounting, Golden Rules of Accounting, Voucher Entry, Ledger Posting, Final Accounts Preparation. • Cash Book. Ratio Analysis, Depreciation, Stock Management. • Analysis of VAT, Cash Flow, Fund Flow Accounting. • Introduction to Tally, features and Advantages. • Implementing accounts in Tally. • Double entry system of bookkeeping. • Budgeting Systems, Scenario management and Variance Analysis. • Costing Systems, Concepts of Ratios, Analysis of financial statements, Inventory Basics, POS Invoicing, TDS, TCS, FBT, VAT & Service Tax Processing in Tally. • Tally Interface in Different Languages. <p>E Commerce</p> <ul style="list-style-type: none"> • Definition of E commerce, Types, scope and benefits of E commerce.

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		<ul style="list-style-type: none"> • Difference between E commerce and traditional commerce. • Capabilities requirements and Technology issues for E commerce. • Types of E commerce web sites. • Building business on the net. • Concepts of on line Catalogues, Shopping carts, Checkout pages. • Payment and Order Processing, Authorization, Chargeback and other payment methods. • Security issues and payment gateways. <p>Cyber Security:</p> <ul style="list-style-type: none"> • Overview of Information Security, Security threats, information Security vulnerability and Risk management • Introduction to Directory Services, Access Control, Software Development Security, Privacy protection, Audit and Security. <p>Introduction to I.T Act and penalties for cybercrimes.</p>
13	Assessment/Examination (03days)	

Note: - More emphasis to be given on video/real-life pictures during theoretical classes. Some real-life pictures/videos of related industry operations may be shown to the trainees to give a feel of Industry and their future assignment.

9.1 EMPLOYABILITY SKILLS

(DURATION: - 110 HRS.)

Block – I (Duration – 110 hrs.)	
1. English Literacy Duration: 20 Hrs. Marks : 09	
Pronunciation	Accentuation (mode of pronunciation) on simple words, Diction (use of word and speech)
Functional Grammar	Transformation of sentences, Voice change, Change of tense, Spellings.
Reading	Reading and understanding simple sentences about self, work and environment
Writing	Construction of simple sentences Writing simple English
Speaking / Spoken English	Speaking with preparation on self, on family, on friends/ classmates, on know, picture reading gain confidence through role-playing and discussions on current happening job description, asking about someone's job habitual actions. Cardinal (fundamental) numbers ordinal numbers. Taking messages, passing messages on and filling in message forms Greeting and introductions office hospitality, Resumes or curriculum vita essential parts, letters of application reference to previous communication.
2. I.T. Literacy Duration: 20 Hrs. Marks : 09	
Basics of Computer	Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of computer.
Computer Operating System	Basics of Operating System, WINDOWS, The user interface of Windows OS, Create, Copy, Move and delete Files and Folders, Use of External memory like pen drive, CD, DVD etc., Use of Common applications.
Word processing and Worksheet	Basic operating of Word Processing, Creating, opening and closing Documents, use of shortcuts, Creating and Editing of Text, Formatting the Text, Insertion & creation of Tables. Printing document. Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets.
Computer Networking and Internet	Basic of computer Networks (using real life examples), Definitions of Local Area Network (LAN), Wide Area Network (WAN), Internet, Concept of Internet (Network of Networks), Meaning of World Wide Web (WWW), Web Browser, Web Site, Web page and Search Engines. Accessing the Internet using Web Browser, Downloading and Printing Web Pages, Opening an email account and

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	use of email. Social media sites and its implication. Information Security and antivirus tools, Do's and Don'ts in Information Security, Awareness of IT - ACT, types of cybercrimes.
3. Communication Skills	
Duration: 15 Hrs. Marks : 07	
Introduction to Communication Skills	Communication and its importance Principles of Effective communication Types of communication - verbal, nonverbal, written, email, talking on phone. Nonverbal communication -characteristics, components-Para-language Body language Barriers to communication and dealing with barriers. Handling nervousness/ discomfort.
Listening Skills	Listening-hearing and listening, effective listening, barriers to effective listening guidelines for effective listening. Triple- A Listening - Attitude, Attention & Adjustment. Active Listening Skills.
Motivational Training	Characteristics Essential to Achieving Success. The Power of Positive Attitude. Self-awareness Importance of Commitment Ethics and Values Ways to Motivate Oneself Personal Goal setting and Employability Planning.
Facing Interviews	Manners, Etiquettes, Dress code for an interview Do's & Don'ts for an interview.
Behavioral Skills	Problem Solving Confidence Building Attitude
4. Entrepreneurship Skills	
Duration: 15 Hrs. Marks : 06	
Concept of Entrepreneurship	Entrepreneur - Entrepreneurship - Enterprises:-Conceptual issue Entrepreneurship vs. management, Entrepreneurial motivation. Performance & Record, Role & Function of entrepreneurs in relation to the enterprise & relation to the economy, Source of business ideas, Entrepreneurial opportunities, The process of setting up a business.
Project Preparation & Marketing analysis	Qualities of a good Entrepreneur, SWOT and Risk Analysis. Concept & application of PLC, Sales & distribution Management. Different Between Small Scale & Large Scale Business, Market Survey, Method of marketing, Publicity and advertisement, Marketing Mix.
Institutions Support	Preparation of Project. Role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies

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	/Programmes & procedure & the available scheme.
Investment Procurement	Project formation, Feasibility, Legal formalities i.e., Shop Act, Estimation & Costing, Investment procedure - Loan procurement - Banking Processes.
5. Productivity	
Duration: 10 Hrs. Marks : 05	
Benefits	Personal / Workman - Incentive, Production linked Bonus, Improvement in living standard.
Affecting Factors	Skills, Working Aids, Automation, Environment, Motivation - How improves or slows down.
Comparison with developed countries	Comparative productivity in developed countries (viz. Germany, Japan and Australia) in selected industries e.g. Manufacturing, Steel, Mining, Construction etc. Living standards of those countries, wages.
Personal Finance Management	Banking processes, Handling ATM, KYC registration, safe cash handling, Personal risk and Insurance.
6. Occupational Safety, Health and Environment Education	
Duration: 15 Hrs. Marks : 06	
Safety & Health	Introduction to Occupational Safety and Health importance of safety and health at workplace.
Occupational Hazards	Basic Hazards, Chemical Hazards, Vibroacoustic Hazards, Mechanical Hazards, Electrical Hazards, Thermal Hazards. Occupational health, Occupational hygienic, Occupational Diseases/ Disorders & its prevention.
Accident & safety	Basic principles for protective equipment. Accident Prevention techniques - control of accidents and safety measures.
First Aid	Care of injured & Sick at the workplaces, First-Aid & Transportation of sick person.
Basic Provisions	Idea of basic provision legislation of India. Safety, health, welfare under legislative of India.
Ecosystem	Introduction to Environment. Relationship between Society and Environment, Ecosystem and Factors causing imbalance.
Pollution	Pollution and pollutants including liquid, gaseous, solid and hazardous waste.
Energy Conservation	Conservation of Energy, re-use and recycle.
Global warming	Global warming, climate change and Ozone layer depletion.
Ground Water	Hydrological cycle, ground and surface water, Conservation and Harvesting of water.
Environment	Right attitude towards environment, Maintenance of in-house environment.
7. Labour Welfare Legislation	
Duration: 05 Hrs. Marks : 03	
Welfare Acts	Benefits guaranteed under various acts- Factories Act,

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	Apprenticeship Act, Employees State Insurance Act (ESI), Payment Wages Act, Employees Provident Fund Act, The Workmen's compensation Act.
8. Quality Tools	
Duration: 10 Hrs.	Marks : 05
Quality Consciousness	Meaning of quality, Quality characteristic.
Quality Circles	Definition, Advantage of small group activity, objectives of quality Circle, Roles and function of Quality Circles in Organization, Operation of Quality circle. Approaches to starting Quality Circles, Steps for continuation Quality Circles.
Quality Management System	Idea of ISO 9000 and BIS systems and its importance in maintaining qualities.
House Keeping	Purpose of House-keeping, Practice of good Housekeeping.
Quality Tools	Basic quality tools with a few examples.

10. DETAILS OF COMPETENCIES (ON-JOB TRAINING)

The **competencies/ specific outcomes** on completion of On-Job Training are detailed below: -

Block – I

1. Identify and test the Computer devices/ components/ Hardware/ software such as Computer Fundamentals ,MS- Windows ,Office Automation Tools and Local Area Network
2. Repair & Maintenance work
3. OS Administration (Windows, Linux/Unix/Netware) Install the Linux/Windows/ Unix/Netware Operating System; configure server, adding user, Creating and managing user, effective access permission.
4. Install and configure of Add/Remove Programs, Server Setup, Web Server ,Domain Name Server ,Mail Server ,Proxy Server Drivers Setup ,Security Setup (User/Password, Permissions),Disk Management Backup/Restore Virus Protection, Printer Setup Network, Setup Email/Internet Setup ,Resource Sharing ,Troubleshooting printer, disk management tools and tasks, implementing file and folders share permission, using device manager, drivers, signature verification.
5. Work with different kind of editors Software.
6. Prepare system documentation such as Programming using C++/Visual Basic/ Java or other latest development tools, RDBMS (Oracle/Sql Server/Ingress/UDB etc.), ODBC/JDBC, Object Oriented Development, and Web Based Development using HTML/ASP/Java Applets/Java Script etc.
7. Practice administrative Tasks related to manage Computer Center.
8. A Simple project, GUI Tools (Visual Basic, SQL, Windows), Language (C++, Java), RDBMS (Oracle, Ingress etc), Applications (Financial/ manufacturing/Multi-media/Computer Graphics/ Instructional Design/ Database, Management System/Internet/ Intranet/Computer Network)

Note:

1. Industry must ensure that above mentioned competencies are achieved by the trainees during their on job training.
2. In addition to above competencies/ outcomes industry may impart additional training relevant to the specific industry.

INFRASTRUCTURE FOR PROFESSIONAL SKILL & PROFESSIONAL KNOWLEDGE

PROGRAMMING AND SYSTEMS ADMINISTRATION ASSISTANT			
LIST OF EQUIPMENTS, SOFTWARES & TOOLS for Basic Training (For 20 Apprentices)			
A. EQUIPMENTS, SOFTWARES & TOOLS (For each additional unit trainees tool kit Sl. 1-18 is required additionally)			
Sl. no.	Name of the Tool & Equipments	Specification	Quantity
1	Desktop Computers of the latest configuration prevalent at the time of procurement or with the following minimum features	CPU: 32/64 Bit Core 2 Duo/Quad Core/i3/i5, Speed: 3 GHz or Higher. Cache Memory: - Minimum 3 MB or better. RAM:- 8 GB DDR-III or Higher. Hard Disk Drive: 500GB or Higher, 7200 rpm (minimum) or Higher, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet (10/100/1000) - Wi-Fi, USB Mouse, USB Keyboard and Monitor (Min. 22 Inch), Standard Ports and connectors. DVD Writer, Speakers And Mic. Licensed Windows Operating System / OEM Pack(Preloaded), Antivirus / Total Security	10 Nos.
2	Laptop	4 th Gen Ci5 Processor, 4GB RAM, 1TB Hard Disk, Win8 Preloaded Licensed OS, 2GB Graphics Card, DVD Writer, Standard Ports And Connectors.	01 No
3	Wi-Fi Router / Switch With Wireless Connectivity option	24 Port	01 No
4	Lab should have Structured cabling (to enable working with Wired Networks too for Practical)		As required
5	Internet or Intranet Connectivity		As required
6	Laser Printer Monochrome	A4 Size	1 No.
7	Network Monochrome Laser Printer	A4 Size	1 No.

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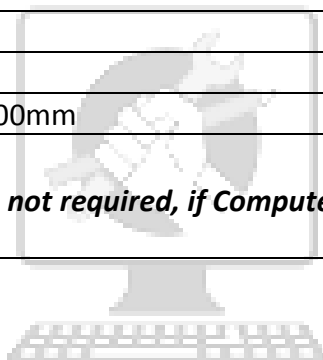
8	Optical Scanner (Flatbed A4)		1 No.
9	Digital Web Cam (High Resolution)		4 Nos.
10	DVD or Blu-Ray Writer		2 Nos.
11	LCD Projector with matte(antiglare) screen		1 No.
12	Online UPS	2KVA	2 Nos.
13	Cable crimping tool		1 No.
14	Standalone Hard Disks	500 GB or Higher	4 Nos.
15	Network Rack		1 No.
16	Barcode Scanner		1 No.
17	Digital Multimeters, handheld type.	3.5 digit	8 Nos.
18	Standard Screw Driver Set		10 Sets
19	USB Mini Dongle for Bluetooth devices Connection		6 Nos.
20	Bluetooth headphone & mic set		6 Nos
21	External Solid State Hard Disk	1 TB	2 Nos.
22	LAN Setup		As required
B : SOFTWARE PER UNIT			
1	MS Office 2010 (professional) or the latest version available at the time of procurement		11 Licenses
2	Antivirus for – clients / workstations in profile with validity of an year or more which should be renewed upon expiry		11 Licenses
3	Open Office or equivalent.		Open source software
4	GIMP / Irfan View Image editor or equivalent		Open source software
5	LINUX OS		Open source

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			software
6	WYSIWYG Web Authoring tool- Dreamweaver or Open source tools like KompoZer, Front Page or similar tools along with FTP tools for ex. Filezilla etc.		Proprietary / Open source software
7	Tally ERP 9 or Latest		11 Licenses
8	E Commerce Simulation Software		Open source software
9	Web Server : Any HTTP Web server / XAMPP or any other similar server		Open source software
C : LIST OF OTHER ITEMS/ FURNITURE			
1	Hand Held Vacuum cleaner		01 No
2	Pigeon hole cabinet	20 compartments	01 No
3	Chair and table for the instructor		01 each (for class room & laboratory)
4	Dual Desk or Chair and Tables for Trainees		10 / 20 Nos.
5	Computer table laminated top with sliding tray for key board and one shelf of storage	150X650X750 mm	10 Nos.
6	Operators chair (without arms mounted on castor wheels, adjustable height)		20 Nos.
7	Printer table can be varied as per local specifications	650X500X750mm	03 Nos.
8	Split type Air conditioners	1.5 tons	03 Nos.
9	Storage cabinet	60X700X450mm	01 No.
10	White Board.		01 No.
11	Steel Almirah		01 No.

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TOOLS & EQUIPMENTS FOR EMPLOYABILITY SKILLS		
Sl. No.	Name of the Equipment	Quantity
1.	Computer (PC) with latest configurations and Internet connection with standard operating system and standard word processor and worksheet software	10 Nos.
2.	UPS - 500VA	10 Nos.
3.	Scanner cum Printer	1 No.
4.	Computer Tables	10 Nos.
5.	Computer Chairs	20 Nos.
6.	LCD Projector	1 No.
7.	White Board 1200mm x 900mm	1 No.
<i>Note: - Above Tools & Equipments not required, if Computer LAB is available in the institute.</i>		



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FORMAT FOR INTERNAL ASSESSMENT

Name & Address of the Assessor :			Year of Enrollment :											
Name & Address of ITI (Govt./Pvt.) :			Date of Assessment :											
Name & Address of the Industry :			Assessment location: Industry / ITI											
Trade Name :		Semester:		Duration of the Trade/course:										
Learning Outcome:														
Sl. No	Maximum Marks (Total 100 Marks)		15	5	10	5	10	10	5	10	15	15	Total internal assessment Marks	Result (Y/N)
	Candidate Name	Father's/Mother's Name	Safety consciousness	Workplace hygiene	Attendance/ Punctuality	Ability to follow Manuals/ Written instructions	Application of Knowledge	Skills to handle tools & equipment	Economical use of materials	Speed in doing work	Quality in workmanship	VIVA		
1														
2														