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

COMPETENCY BASED CURRICULUM

INFORMATION TECHNOLOGY

(Duration: Two Years)
Revised in July 2022

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 4

SECTOR – IT & ITES

Directorate General of Training

INFORMATION TECHNOLOGY

(Engineering Trade)

(Revised in July 2022)

Version: 2.0

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 4

Developed By

Ministry of Skill Development and Entrepreneurship

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1. COURSE INFORMATION

During the two-year duration of Information Technology trade a candidate is trained on professional skill, professional knowledge, and Engineering Drawing, Workshop Calculation & Science and Employability skill related to job role. In addition to this a candidate is entrusted to undertake project work and extracurricular activities to build up confidence. The broad components covered under Professional Skill subject are as below :-

FIRST YEAR: In this year the trainee learns about safety and environment, use of various trade tools safety measures involved in the industry. Gain basic knowledge of Electrical and Electronic components related to Computer and Networking system. They learn about assembling and servicing of Desktop computer hardware components. Trainee learns about Installing UNIX / LINUX & other operating system with application software and Adding new users, software, material components, Identification of laptop sections and connectors. Assembling and disassembling a Laptop, troubleshooting Latest Tools & Gadgets for Desktop/Laptop Repairs. They learn to install and use different types of printers, Scanner & MFD Scanner. Trainees are able to install and configuration Monitor, display card and driver, front panel controls and settings, Practice on Backup Drives, Maintenance and Troubleshooting of PC. They can also assemble & disassemble of Tablet / Smart Devices. The trainee learns to work on MS office package (word, excel, power point, outlook). They learn to design graphics using Adobe Page maker, Corel draw and Adobe Photoshop. Trainees are able to create email account, chat and browse through internet and Microsoft Outlook Express. They learn to design and develop web pages using HTML. They perform create and record various formats of multimedia audio and video files using digital audio and video editor tools. Trainees are able to create customized database files using Microsoft Access and Visual Basic.

SECOND YEAR: In this year the trainee learns Network fundamentals. They also learn to set up and configuring Networking System using various network devices. Trainees are able to configure Data communication equipment, Network Protection and troubleshooting, Server Installation, managing Server Network Security, Linux Server installation and configuration, Network Security. The trainee learns about image editing and graphic design using Adobe Illustrator and Flash, video and audio editing using Adobe Premier. They learns to create graphics animation using Adobe after Effects and 3Ds Max. They learn to design webpage using Front Page, also use HTML and PHP embedding VBScript, JavaScript and publish in a local server. They will learn basic python based coding and programming. They learn about functions, operators, expressions, priorities, bindings, strings, list, modules, errors and etc. Trainees are also learn to use *Dreamweaver and also on practice on Open Source Tools for Web Designing and Information Security Vulnerabilities.*

2. TRAINING SYSTEM

2.1 GENERAL

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

The "Information Technology" trade under CTS is one of the significant trade as no similar courses are available in the vocational system to cater this area. The course is of two years duration. It mainly consists of Domain area and Core area. The Domain area (Trade Theory & Practical) imparts professional skills and knowledge, while Core area (Employability Skills) impart requisite core skill, knowledge and life skills. After passing out the training program, the trainee is awarded National Trade Certificate (NTC) by DGT which is recognized worldwide.

Trainees broadly need to demonstrate that they are able to:

- Read and interpret technical parameters/ documents, 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 & employability skills while performing jobs.
- Document the technical parameters related to the task undertaken.

2.2 PROGRESSION PATHWAYS:

- Can join industry as Technician and will progress further as Senior Technician, Supervisor and can rise up to the level of Manager.

- Can become Entrepreneur in the related field.

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

- Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming instructor in ITIs.

- Can join Advanced Diploma (Vocational) courses under DGT as applicable.

2.3 COURSE STRUCTURE:

Table below depicts the distribution of training hours across various course elements during a period of two-year: -

S No.	Course Element	Notional Training Hours	
		1st Year	2nd Year
1	Professional Skill (Trade Practical)	840	840
2	Professional Knowledge (Trade Theory)	240	300
3	Employability Skills	120	60
	Total	**1200**	**1200**

Every year 150 hours of mandatory OJT (On the Job Training) at nearby industry, wherever not available then group project is mandatory.

On the Job Training (OJT)/ Group Project	150	150

Trainees of one-year or two-year trade can also opt for optional courses of up to 240 hours in each year for 10th/ 12th class certificate along with ITI certification, or, add on short term courses

2.4 ASSESSMENT & CERTIFICATION

The trainee will be tested for his skill, knowledge and attitude during the period of course through formative assessment and at the end of the training programme through summative assessment as notified by the DGT from time to time.

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

b) The final assessment will be in the form of summative assessment. The All India Trade Test for awarding NTC will be conducted by **Controller of examinations, DGT** as per the guidelines.

The pattern and marking structure is being notified by DGT from time to time. **The learning outcome and assessment criteria will be the basis for setting question papers for final assessment. The examiner during final examination will also check** the individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

2.4.1 PASS REGULATION

For the purposes of determining the overall result, weightage of 100% is applied for six months and one year duration courses and 50% weightage is applied to each examination for two years courses. The minimum pass percent for Trade Practical and Formative assessment is 60% & for all other subjects is 33%.

2.4.2 ASSESSMENT GUIDELINE

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

Assessment will be evidence based comprising some of 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
- Computer based multiple choice question examination
- Practical Examination

Evidences and records of internal (Formative) assessments are to be preserved until forthcoming examination for audit and verification by examining body. The following marking pattern to be adopted for formative assessment:

Performance Level	Evidence
(a) Marks in the range of 60%-75% to be allotted during assessment	
For performance in this grade, the candidate should produce work which demonstrates attainment of an acceptable standard of craftsmanship with occasional guidance, and due regard for safety procedures and practices	• Demonstration of good skill in the use of hand tools, machine tools and workshop equipment. • 60-70% accuracy achieved while undertaking different work with those demanded by the component/job. • A fairly good level of neatness and consistency in the finish. • Occasional support in completing the project/job.
(b) Marks in the range of 75%-90% to be allotted during assessment	
For this grade, a candidate should produce work which demonstrates attainment of a reasonable standard of craftsmanship, with little guidance, and regard for safety procedures and practices	• Good skill levels in the use of hand tools, machine tools and workshop equipment. • 70-80% accuracy achieved while undertaking different work with those demanded by the component/job. • A good level of neatness and consistency in the finish. • Little support in completing the project/job.
(c) Marks in the range of more than 90% to be allotted during assessment	
For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.	• High skill levels in the use of hand tools, machine tools and workshop equipment. • Above 80% accuracy achieved while undertaking different work with those demanded by the component/job. • A high level of neatness and consistency in the finish. • Minimal or no support in completing the project.

Junior Software Developer; is one of the many entry level roles in the software industry including support and help desk, testing, user interaction design, maintenance, enhancement, development and documentation. They are responsible for assisting in performing the key activities and tasks involved in the assigned role.

Programming Assistant/Junior Software Engineer; installs, maintains and updates computer programs by making minor changes and adjustments to them under the guidance of computing professionals. Maintains and updates documents of computer programs and installations. Applies knowledge of principles and practices in the area of programming and computing in order to identify and solve problems arising in the course of their work. They may receive guidance from managers or professionals. May supervise other workers also.

Domestic IT Helpdesk Attendant; is mainly responsible for the smooth running of computer systems and ensuring users get maximum benefits from them. Individual tasks vary depending on the size and structure of the organization, but may include installing and configuring computer hardware operating systems and applications; monitoring and maintaining computer systems and networks; talking staff/clients through a series of actions, either face to face or over the telephone to help set up systems or resolve issues; troubleshooting system and network problems and diagnosing and solving hardware/software faults etc.

Web Developer; is responsible for designing and maintaining web-based applications that include static and dynamic content. This includes the design, layout and coding of a website. They may work standalone or along with application/functional developers as part of the overall solution that includes a web based component.

Media Developer-Application Development; is responsible for designing and improving the look and feel, functionality and graphics appeal of the developed application. They may work standalone or along with application/functional developers to improve the aesthetics of the application being developed.

Data Communication Analyst/Network Administrator; researches, tests, evaluates, and recommends data communications hardware and software: Identifies areas of operation which need upgraded equipment, such as modems, fibre optic cables and telephone wires. Conducts survey to determine user needs. Reads technical manuals and brochures to determine equipment which meets establishment requirements. Visits vendors to learn about available products or services. Tests and evaluates hardware and software to determine efficiency, reliability, and compatibility with existing system, using equipment such as computer terminal

and modem. Analyses test data and recommends hardware or software for purchase. Develops and writes procedures for installation, use, and solving problems of communications hardware and software. Monitors system performance. Trains users in use of equipment. Assists users to identify and solve data communication problems. May write technical specifications to send to vendors for bid. May oversee or assist in the installation of communications hardware. May perform minor equipment repairs.

Reference NCO-2015:
- (i) 2512.0205 - Junior Software Developer
- (ii) 3514.0300 - Programming Assistant/Junior Software Engineer
- (iii) 3512.0101 - Domestic IT Helpdesk Attendant
- (iv) 2513.0101 - Web Developer
- (v) 2513.0302 - Media Developer-Application Development
- (vi) 2523.0100 - Data Communication Analyst/Network Administrate

Reference NOS:
- SSC/N0201
- SSC/N0501
- SSC/N0502
- SSC/N0503
- SSC/N0504
- SSC/N0506
- SSC/N0901
- SSC/N0922
- SSC/N0202
- SSC/N9401
- SSC/N9402

4. GENERAL INFORMATION

Name of the Trade	INFORMATION TECHNOLOGY
Trade Code	DGT/1054
NCO - 2015	2512.0205, 3514.0300, 3512.0101, 2513.0101, 2513.0302, 2523.0100
NOS Covered	SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504, SSC/N0506, SSC/N0901, SSC/N0922, SSC/N0202, SSC/N9401, SSC/N9402
NSQF Level	Level – 4
Duration of Craftsmen Training	Two Year (2400 hours + 300 hours OJT/Group Project)
Entry Qualification	Passed 10th class examination with Science and Mathematics or its equivalent
Minimum Age	14 years as on first day of academic session.
Eligibility for PwD	LD, CP, LC, DW, LV, AA, LV
Unit Strength (No. Of Student)	24 (There is no separate provision of supernumerary seats)
Space Norms	70 Sq. m
Power Norms	3.45 KW
Instructors Qualification for:	
(i) INFORMATION TECHNOLOGY Trade	B.Voc/Degree in Engineering/ Technology in Computer Science/ IT/ Electronics & Communication AICTE/UGC recognized Engineering College/ university with one year expreience in the relevant field. **OR** Computer Science /Computer Application / IT OR NIELIT "B" Level from AICTE/UGC recognised university with one year experience in the relevant field. **OR** Bachelor in Computer Science / Computer Application / IT OR PGDCA **OR** NIELIT "A" Level from AICTE/UGC recognised university with Two years experience in the relevant field. **OR** 03 years Diploma from recognized Board/ Institution in Computer Science / IT from AICTE/recognized board of technical education or relevant Advanced Diploma (Vocational)

		from DGT with two years' experience in the relevant field.
		OR
		NTC/ NAC passed in the trade of IT/ICTSM with three years experience in the relevant field.
		Essential Qualification:
		Relevant Regular / RPL variants of National Craft Instructor Certificate (NCIC) under DGT.
		Note: - Out of two Instructors required for the unit of 2(1+1), one must have Degree/Diploma and other must have NTC/NAC qualifications. However, both of them must possess NCIC in any of its variants.
(ii) Workshop Calculation & Science		B.Voc/Degree in Engineering from AICTE/UGC recognized Engineering College/ university with one-year experience in the relevant field.
		OR
		03 years Diploma in Engineering from AICTE / recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field.
		OR
		NTC/ NAC in any one of the engineering trades with three years' experience.
		Essential Qualification:
		Regular / RPL variants of National Craft Instructor Certificate (NCIC) in relevant trade
		OR
		Regular / RPL variants NCIC in RoDA or any of its variants under DGT
(iii) Engineering Drawing		B.Voc/Degree in Engineering from AICTE/UGC recognized Engineering College/ university with one-year experience in the relevant field.
		OR
		03 years Diploma in Engineering from AICTE / recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field.
		OR
		NTC/ NAC in any one of the Mechanical group (Gr-I) trades categorized under Engg. Drawing'/ D'man Mechanical / D'man Civil' with three years' experience.
		Essential Qualification:
		Regular / RPL variants of National Craft Instructor Certificate

	(NCIC) in relevant trade
	OR
	Regular / RPL variants of NCIC in RoDA / D'man (Mech /civil) or any of its variants under DGT.
(iv) Employability Skill	MBA/ BBA / Any Graduate/ Diploma in any discipline with Two years' experience with short term ToT Course in Employability Skills.
	(Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above)
	OR
	Existing Social Studies Instructors in ITIs with short term ToT Course in Employability Skills.
(v) Minimum Age for Instructor	21 Years
List of Tools and Equipment	As per Annexure – I

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

5.1 LEARNING OUTCOMES

FIRST YEAR:

1. Perform all the functions with Electrical and Electronic Components related to Computer and Networking system following safety precautions. (NOS: SSC/N0101, SSC/N0202)
2. Introduction to Personal Computer Hardware, PC Assembly, Advanced Computer Hardware, Preventive Maintenance and Troubleshooting. (NOS: SSC/N0101, SSC/N0202)
3. Networking Concepts and Applied Networking. (NOS: SSC/N0101, SSC/N0202)
4. Laptops and Other Mobile Devices, Printers, Virtualization and Cloud Computing. (NOS: SSC/N0506, SSC/N0501, SSC/N0901)
5. Windows Installation, Windows Configuration, Mobile, Linux, and OSX Operating Systems. (NOS: SSC/N0506, SSC/N0501, SSC/N0901)
6. Security and IT Professional. (NOS: SSC/N0506, SSC/N0501, SSC/N0901)
7. Perform the operations of MS Office package (word, excel, power point, outlook). (NOS: SSC/N0506, SSC/N0501, SSC/N0901)
8. Create Graphic design and work with Adobe Page maker, Corel draw and Adobe Photoshop. (NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)
9. Create email account, chat and browse through internet and Microsoft Outlook Express. (NOS: SSC/N0506, SSC/N0501, SSC/N0901)
10. Design and develop web pages using HTML. (NOS: SSC/N0503, SSC/N0901)
11. Create Graphic design and work with Adobe Photoshop. (NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)
12. Create and record various formats of multimedia audio and video files using digital audio and video editor tools. (NOS: SSC/N0201, SSC/N0501), SSC/N0502, SSC/N0503, SSC/N0504)
13. Create customized database files using Microsoft Access and Visual Basic. (NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)
14. Demonstrate basic mathematical concept and principles to perform practical operations. Understand and explain basic science in the field of study. (NOS: SSC/N9401)
15. Read and apply engineering drawing for different application in the field of work. (SSC/N9402)

SECOND YEAR:

16. Basic Network Connectivity and Communications. (NOS: SSC/N0922, SSC/N0202, SSC/N0901),

17. Ethernet Concepts. (NOS: SSC/N0922, SSC/N0202, SSC/N0901)

18. Communicating Between Networks. (NOS: SSC/N0922, SSC/N0202, SSC/N0901)

19. IP Addressing. (NOS: SSC/N0922, SSC/N0202, SSC/N0901)

20. Network Application Communications. (NOS: SSC/N0922, SSC/N0202, SSC/N0901)

21. Building and Securing a Small Network. (NOS: SSC/N0922, SSC/N0202, SSC/N0901)

22. Install and configure Windows Server and Linux server. (NOS: SSC/N0922, SSC/N0202, SSC/N0901)

23. Perform Network Configuration, troubleshooting and Network Security. (NOS: SSC/N0922,SSC/N0202,SSC/N0901)

24. Image editing and graphic design using Adobe Illustrator and Flash. (NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)

25. Editing Video and Audio using Adobe Premier. (NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)

26. Creation of Graphics Animation using Adobe after Effects and 3Ds Max. (NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)

27. Designing Webpage using bootstrap. (NOS: SSC/N0503, SSC/N0901)

28. Designing Webpage in HTML and PHP embedding CSS, JavaScript. (NOS: SSC/N0503, SSC/N0901)

29. Install and Configure MySQL. (NOS: SSC/N0503, SSC/N0901)

30. Create and publish web pages in Local web server. (NOS: SSC/N0503, SSC/N0901)

31. Python: Basic coding based summery test – (NOS: SSC/N0503, SSC/N0901)

32. Python: Intermediate knowledge based summery test – II, (NOS: SSC/N0503, SSC/N0901)

33. Designing Website using Dreamweaver application and open source software. (NOS: SSC/N0503, SSC/N0901)

34. Configure and secure network against threat, vulnerability and risk for information security. (NOS: SSC/N0503, SSC/N0901)

35. Create workbooks with advanced formulas, macros, charts, pivot tables and demonstrate ability to use Power tools. (NOS: SSC/N0506, SSC/N0501)

36. Cloud concepts & its services. (NOS: SSC/N8301)

37. Demonstrate basic mathematical concept and principles to perform practical operations. Understand and explain basic science in the field of study. (NOS: SSC/N9401)

LEARNING OUTCOMES	ASSESSMENT CRITERIA
FIRST YEAR	
1. Perform all the functions with Electrical and Electronic Components related to Computer and Networking system following safety precautions. (NOS SSC/N0101, SSC/N0202)	Measure DC voltage of a given battery-pack.
	Practice Domestic wiring using different components of wiring.
	Measure effective value of resistors in series, parallel and series-parallel.
	Solder a given circuit (consisting of resistors and semiconductor diodes on a lug board.
	Measure capacitance using LCR meter.
	Testing a step-down transformer and finding transformation ratio.
	Refer to Diode handbook to get a diode for a given application and rating.
	Construct and test a Full wave rectifier.
	Find a required transistor referring to Transistor data book.
	Testing amplification of different configurations using pre wired kits.
	Test harmonic oscillators using pre wired circuits.
	Construct and test relaxation oscillators using pre wired circuit.
	Construct and test a Thyristor based power supply.
	Construct and test an IC variable output Voltage regulator.
	Test Dry cells. Identify of different types and sizes of button cells. Test button cells.
	Charge batteries. Connect batteries with UPS and test.
	Verify the truth table of NOT, AND, OR, NAND and NOR gates.
	Construct a logic circuit using basic gates for a given output logic.
	Construct a 1's compliment & 2's compliment circuit and verify.
2. Introduction to Personal Computer Hardware, PC Assembly, Advanced Computer Hardware, Preventive Maintenance and Troubleshooting (NOS: SSC/N0101, SSC/N0202)	Select the appropriate computer components to build, repair, or upgrade personal computers
	Install components to build, repair, or upgrade personal computers
	Install and configure components to upgrade a computer
	Perform Troubleshooting on personal computers
3. Networking Concepts and Applied Networking (NOS: SSC/N0101, SSC/N0202)	Explain how computers communicate on a network
	Explain networking protocols, standards and services
	Explain the purpose of devices on a network
	Configure devices to communicate on a network
	Troubleshoot problems and solutions related to networks

4.	Laptops and Other Mobile Devices, Printers, Virtualization and Cloud Computing (NOS: SSC/N0506, SSC/N0501, SSC/N0901)	Explain how to remove and install laptop components
		Explain the purpose and characteristics of other mobile devices
		Explain how to troubleshoot Laptops and other Mobile Devices
		Install a printer to meet requirements
		Describe virtualization and cloud computing
5.	Installation, configuration and troubleshooting of Windows, Mobile, Linux, and OSX Operating Systems. (NOS: SSC/N0506, SSC/N0501, SSC/N0901)	Install Windows operating systems
		Create a partition in Windows using the Disk Management Utility
		Perform management and maintenance of Windows operating systems
		Use Windows tools and utilities to manage Windows system
		Explain how to configure, secure, and troubleshoot mobile, Mac, and Linux operating systems
		Explain how to troubleshoot other operating systems
6.	Security and IT Professional (NOS: SSC/N0506, SSC/N0501, SSC/N0901)	Implement basic host, data, and network security
		Configure basic security settings and policies for end devices
		Explain the roles and responsibilities of the IT Professional
		Explain appropriate behavior when faced with the legal and ethical issues that arise in the IT industry
7.	Perform the operations of MS Office package (word, excel, power point, outlook). (NOS: SSC/N0506, SSC/N0501, SSC/N0901)	Opening, edit and save/ "save as" documents.
		Add Bullets and numbering.
		Work with Microsoft Excel for creating worksheets with Graphs and Visuals.
		Work with Microsoft Powerpoint for creating multimedia presentations.
		Customize quick e-mail, calendar, and tasks.
		Create and store personal distribution lists along with contacts in your Contacts folder.
8.	Create Graphic design and work with Adobe Page maker, Corel draw and Adobe Photoshop. (NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)	Create Pamphlets.
		Work with reports.
		Create long book works.
		Work with Corel draw.
		Practice use of palettes. Draw & edit with the pencil tools.
		Practice transforming selected objects.
		Practice using the pathfinder palette.
		Practice changing vector Graphics into Bitmap images.
9.	Create email account, chat and browse through internet and Microsoft	Send Email with attachment.
		Use Telnet to get connected to remote computer.
		Using features of OUTLOOK Express for sending and receiving Emails.

Outlook Express. (NOS: SSC/N0506, SSC/N0501, SSC/N0901),	Setup internet connection using ISP.
10. Design and develop web pages using HTML. (NOS: SSC/N0503, SSC/N0901)	Develop Web pages using Forms (2 pages, 3 pages, Multi pages).
	Set different colors to different Headings. Change paragraph font size and color using styles.
	Register free website and upload pages.
11. Create Graphic design and work with Adobe Page maker, Corel draw and Adobe Photoshop. (NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)	Create Pamphlets.
	Work with reports.
	Create long book works.
	Work with Corel draw.
	Practice use of palettes. Draw & edit with the pencil tools.
	Practice transforming selected objects.
	Practice using the pathfinder palette.
	Practice changing vector Graphics into Bitmap images.
12. Create and record various formats of multimedia audio and video files using digital audio and video editor tools. (NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)	Practice sound editing and giving special effects. Use various formats of sound files.
	Practice distorting recorded audio using Effects.
	Create different objects, using Standard Primitives and Extended Primitives.
	Practice application of Lathe Option for creating symmetrical objects.
	Practice modelling of real world objects through LPM using Editable Mesh and Editable Poly. Convert a model to an editable mesh and working with Extrude and bevel options.
13. Create customized database files using Microsoft Access and Visual Basic. (NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)	Opening an existing and creating a new database with MS-ACCESS.
	Creating table in Data sheet and design view.
	Develop customized form for data entry.
	Generate reports for required output.
	Setting relationship between tables and queries or both.
	Create a simple application using Access and VB for a given specification.
	Database back up and retrieval in Access.
14. Demonstrate basic mathematical concept and principles to perform practical operations. Understand and explain basic science in the field of study.	Read & interpret the information on drawings and apply in executing practical work.
	Read &analyze the specification to ascertain the material requirement, tools and assembly/maintenance parameters.
	Encounter drawings with missing/unspecified key information and make own calculations to fill in missing dimension/parameters to carry out the work.

(NOS: SSC/N9410)	
15. Read and apply engineering drawing for different application in the field of work. (NOS: SSC/N9411)	Solve different mathematical problems
	Explain concept of basic science related to the field of study
SECOND YEAR	
16. Basic Network Connectivity and Communications (NOS: SSC/N0922 SSC/N0202, SSC/N0901)	Explain the advances in modern network technologies
	Implement initial settings including passwords, IP addressing, and default gateway parameters on a network switch and end devices
	Explain how network protocols enable devices to access local and remote network resources
17. Ethernet Concepts (NOS: SSC/N0922, SSC/N0202, SSC/N0901)	Explain how physical layer protocols, services, and network media support communications across data networks
	Calculate numbers between decimal, binary, and hexadecimal systems
	Explain how media access control in the data link layer supports communication across networks
	Explain how Ethernet operates in a switched network
18. Communicating Between Networks (NOS: SSC/N0922, SSC/N0202, SSC/N0901)	Explain how routers use network layer protocols and services to enable end-to-end connectivity
	Explain how ARP and ND enable communication on a network
	Implement initial settings on a router and end devices
19. IP Addressing NOS: SSC/N0922, SSC/N0202, SSC/N0901)	Calculate an IPv4 subnetting scheme to efficiently segment a network
	Explain public, private, and reserved IPv4 addresses
	Explain how subnetting segments a network to enable better communication
	Implement an IPv6 addressing scheme
	Explain how IPv6 addresses are represented
	Explain how to configure static global unicast and link- local IPv6 network addresses
	Use various tools to test network connectivity (ICMP)
20. Network Application Communications (NOS: SSC/N0922 SSC/N0202, SSC/N0901)	Compare the operations of transport layer protocols in supporting end- to-end communication
	Explain characteristics of the TCP & UDP.
	Explain how TCP session establishment and termination processes facilitate reliable communication
	Explain the operation of application layer protocols in providing

		support to end-user applications
		Explain how DNS and DHCP operate
21.	Building and Securing a Small Network (NOS: SSC/N0922, SSC/N0202, SSC/N0901)	Configure switches and routers with device hardening features to enhance security
		Implement a network design for a small network to include a router, a switch, and end devices
22.	Install and configure Windows Server and Linux server. (NOS: SSC/N0922, SSC/N0202, SSC/N0901)	Install and configure Windows Server.
		Install and Configure Active Directory.
		Implementing Backup and Recovery.
		Install Linux Server.
		Create new user and group.
23.	Perform Network Configuration, troubleshooting and Network Security. NOS: SSC/N0922, SSC/N0202, SSC/N0901)	Connecting computers with Network with Drop cable and using Wi-Fi configuration.
		IP Routing Process Verifying Configuration.
		Setting up basic protection using public keys and MAC address filters.
		Connect Power over Ethernet (PoE) in network.
		Practice on firewall technologies to secure the network perimeter.
		Wi-Fi configuration to implement security considerations.
24.	Image editing and graphic design using Adobe Illustrator and Flash. (NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)	Using the basic selection tools, magic Wand and the Lasso tool, selecting objects by attribute, saving and reusing selections.
		Modifying graphic styles: appearance palette settings, copying appearance.
		Transformation and Positioning: Rotating and scaling objects, reflecting and skewing objects, using the free Transform panel, Aligning objects.
		Applying Filters and Live Effects: Minding your resolution settings, Mapping artwork to 3Dobjects, using the Transform effect.
		Practice on Creating and Importing Graphics Assets, Working with different graphic.
		Practice on Creation of Animations - Working with the timeline, using key frames, blanks key frames and frames, Creating motion tweens, Creating shape tweens, creating transition effects, using animation best practices.
25.	Editing Video and Audio using Adobe Premier. (NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)	Managing Clips: The Project panel, Views, The preview area, Organizing clips and bins, Duplicating and copying clips, Renaming clips, Finding clips(search function), Interpreting Footage, Unlinking and Re-linking Media, The Project Manager.
		Creating a Sequence Editing Methods, In And Out Points, Sub Clips, Source And Target Tracks, Overlay And Insert Edits, Adding Clips By

	Dragging, 3 And 4 Point Edits, Lift And Extract, Storyboard Editing, Multiple And Nested Sequences.
	Practice with Transitions: The Effects Panel, Understanding Transitions, Applying A Transitions, Editing A Transitions.
	Practice with Titles: Creating a title Text paths, Roll and crawl titles, Text configuration.
26. Creation of Graphics Animation using Adobe after Effects and 3Ds Max. (NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)	Practice on User interface.
	Create the arrivals Bound Effects.
	Practice on Animate 3D transformations.
	Rotoscoping, Chroma, 2D & 3D tracing, Green/ Blue screen technique/ shooting. Colour Correction.
	Practice on Transform tool basics, Pivot points, Grouping and parenting, Modelling with primitives.
	Practice on User Interface - Setting up project, Views/panels, Hotbox, Viewing Geometry, Channel Box, Layer Box, Attributes Editor, QWERTY Navigation.
	Practice on Hyper shade, Materials, Apply Materials, Making Shader Networks, Combining Ramps, Layered Textures, Intro to lights, Making Bump Maps.
27. Designing Webpage using Bootstrap. (NOS: SSC/N0503, SSC/N0901)	Using Bootstrap components like Alerts, Badge, Breadcrumbs, buttons, button group, cards, carousel.
	Using Collapse and Accordion, custom forms, dropdowns, forms, Input group, jumbotron, List group, media object.
	Using Nav, Navbar, bootstrap modal (plugin), Paginators, popovers, progress, spinner.
	Using Table, toasts, tooltips, bootstrap Styling essentials like Breakpoints for components, layouts and grid systems. Applying typography, floats, flex, alignment, borders, position of elements, shadow and visibility
28. Designing Webpage in HTML, CSS, JavaScript and PHP. (NOS: SSC/N0503, SSC/N0901)	Use of CSS to Configure backgrounds, border, box model, font, text, column and colors, Table, speech, list & markers, animations, transitions, UI and pseudo-class.
	Managing pseudo-element, absolute measurement, relative measurement, angles, time, frequency and colors by CSS. Modifying selector types, outline, 3D / 2D transform, generated content, line box, hyperlink, and positioning by CSS.
	Practice using Java Script in an HTML Document, Hiding Java Script from old Web Browsers.
	Basic Syntax Used in Java Script Commands, Variables - Assigning Values to Variables, Concatenating String Variables.
	Installation of Apache Web Server Practice simple PHP programs.

	Practicing on programming to test events.
	Practicing the Writing to the browser, Getting input from forms, Output buffering, Session handling, Regular expression, Common math, Random numbers, File upload, File download, Environment variables.
	Practice on Creating and deleting a file, Reading and writing text files, Working with directories in PHP, Checking for existence of file, Determining file size, Opening a file for writing, reading, or appending, Writing Data to the file Reading characters.
	Working with Classes And Objects -Creating an object, Object properties, Object methods, Object constructors and destructors, Class constants Class inheritance, Abstract classes and methods, Object serialization, Checking for class and method, existence, Exceptions, Iterators.
29. Install and Configure MySQL. (NOS: SSC/N0503, SSC/N0901)	Installation of MySQL.
	Practice on MySQL syntac and creating database design.
	Importing and exporting formats.
	Practice on Database repair and archival.
30. Create and publish web pages in Local web server. (NOS: SSC/N0503, SSC/N0901)	Create a Web page using HTML, CSS, VB Script and Java Script. By installing and configuring IIS convert your windows PC into web server.
	Install any open source web server like Apache / Wamp. Publish / Host website in the local web server.
31. Python: Basic coding based summery test – I (NOS: SSC/N0503, SSC/N0901)	Concepts on print() function, formatting, literals (integers, floats, strings, Boolean values), arithmetic operators, operators and their bindings, naming and assigning variables
	shortcut operators, comments, output vs. input, inputting data with the input() function, converting strings into numbers, simple interactive programs, string operators
	asking questions and receiving answers, conditions and conditional execution, the if statements, the, if-else statements, the elif clause, loops (while, for, break, continue),
	computer logic and its operators, logical values vs. single bits, bitwise operators, dealing with single bits, creating and using lists, list methods (methods vs. functions)
	designing and writing functions, shadowing, positional arguments, keyword arguments, mixed arguments, sorting parameter default values, returning a result from a function
	functions and scopes, global variables, interaction of parameters with their arguments, recursion, tuples and dictionaries

32. Python: Intermediate knowledge based summery test - II (NOS: SSC/N0503, SSC/N0901)	using and importing modules, working with standard modules, functions from the math module, functions from the random, module, functions from the platform module,	
	modules and packages, errors, failures, exceptions, characters and strings vs. computers, the nature of strings in Python, string methods, strings in action, simple programs	
	the basic concepts of object programming, classes, a stack, properties, methods (the inner life of classes and objects, reflection and introspection, classes and methods in detail)	
	inheritance (finding properties and methods, building a hierarchy of classes, inheritance vs. composition, single inheritance vs. multiple inheritance), exceptions – advanced topics	
	creating and using exceptions, generators and closures, processing files, working with real files (dealing with text files, working with binary files, stream – reading and writing bytes	
33. Designing Website using Dreamweaver application and open source software. (NOS: SSC/N0503, SSC/N0901)	Create Web sites with hyperlinks and graphic images.	
	Use page layout tools such as tables, frames, and layouts.	
	Incorporate Dreamweaver with related software such as Macromedia Fireworks and Flash.	
	Incorporate Dreamweaver with related PHP, VBScript, JavaScript, MySQL etc.	
	WYSIWYG web page editor - KompoZer, source code editor - Notepad++, plugin for Firefox - Firebug, highly stable and feature rich web development environment - Quanta Plus.	
	Work with graphics application - Krita, vector graphics editor – Inkscape.	
34. Configure and secure network against threat, vulnerability and risk for information security. (NOS: SSC/N0503, SSC/N0901)	Demonstrate Video show on Information Security.	
	Demonstrate Video show on Security Threats.	
	Observe using Video show on Security Vulnerabilities.	
	Demonstrate Video show on Risk Management	
35. Create workbooks with advanced formulas, macros, charts, pivot tables and demonstrate ability to use Power tools. (NOS: SSC/N0506, SSC/N0501)	Create workbooks with advanced functionalities in Excel.	
	Create advanced charts & Pivot Tables.	
	Create output files using specific Power tool.	

36. Cloud concepts and its services. (NOS: SSC/N8301)	Explain cloud concepts
	Use common cloud services such as Office 365, Google Drive, Dropbox.
37. Demonstrate basic mathematical concept and principles to perform practical operations. Understand and explain basic science in the field of study. (NOS: SSC/N9410)	Read & interpret the information on drawings and apply in executing practical work.
	Read &analyze the specification to ascertain the material requirement, tools and assembly/maintenance parameters.
	Encounter drawings with missing/unspecified key information and make own calculations to fill in missing dimension/parameters to carry out the work.

	SYLLABUS FOR INFORMATION TECHNOLOGY TRADE		
	FIRST YEAR		
Duration	**Reference Learning Outcome**	**Professional Skills (Trade Practical) With Indicative Hours**	**Professional Knowledge (Trade Theory)**
Professional Skill 203 Hrs; Professional Knowledge 44 Hrs.	Perform all the functions with Electrical and Electronic Components related to Computer and Networking system following safety precautions. (Mapped NOS: SSC/N0101, SSC/N0202)	1. Practice of safety while lifting and shifting fragile and heavy equipments. (2 hrs) 2. Check earthing and identify the type of earthing. (2 hrs) 3. Practice electrical safety while connecting, switching-on and switching-off of heavy electrical outlet points. (2 hrs) 4. Practice first aid in case of physical injury. (2 hrs) 5. Practice first aid in case of electrical hazard. (2 hrs)	• Safety of personal equipment working and Safety while lifting and shifting of fragile and heavy equipments. • Safety precautions. • Earthing, need and importance of Earthing, Types of earthing, Electrical safety. • Electrical safety precautions. First aid in case of physical injury. • First aid in case of Electrical hazard (04 hrs)
		6. Identify AC voltmeters/ Multi meters. (1 hr) 7. Identify DC voltmeters/ Multi meters. (1 hr) 8. Measure DC voltage of a given battery-pack. (2 hrs) 9. Measure mains AC voltage. (1 hrs) 10. Identify different types of wires used for interconnections (Sing lest and multi strand, twisted pair) (2 hrs) 11. Test wires and cables. (2 hrs)	• Electricity, Potential difference, AC &DC voltage, Current, Waveform • Measuring (meter). Devices • Conductors, Insulators and semiconductors, examples and applications. • Domestic electrical wiring –requirements • Testing continuity of wires. Skinning and tinning of wires and cable ends. (04 hrs)

		12. Wiring harness. And Skin wire ends and tinning. (3 hrs) 13. Terminate wire ends with lugs and connectors. (2 hrs) 14. Crimping practice with RJ connectors. (2 hrs) 15. Practice Domestic wiring using different components of wiring. (4 hrs)	
		16. Identify different types of resistors. (2 hrs) 17. Find value of resistors and its tolerance using colour code. (2 hrs) 18. Measure resistance-using multi meter. (2 hrs) 19. Measure effective value of resistors in series, parallel and series-parallel. (2 hrs) 20. Measure branch currents and node voltages of a series-parallel circuit (Kirchoff's law). (2 hrs) 21. Solder single strand wires on to Lug board.(2 hrs) 22. Solder single and multiple solder joints. (2 hrs) 23. Solder Resistors on to a lug board. Solder Semiconductor device on to a lug board. (2 hrs) 24. Solder a given circuit (consisting of resistors and semiconductor diodes on a lug board. (1 hr) 25. Solder resistor, a semiconductor device and an IC on lug board.(1	• Resistors, types, specifications, applications, identification using colour code, Resistors in series, parallel and series parallel • Ohms law and its application. • KCL & KVL Solder joint. • Soldering requirement &practice, Common soldering defects. • De soldering – Precautions & practice. • Application of PCB's. Types of PCBs, specifications. List some Connectors used with PCB.(04 hrs)

		hrs)	
		26. Practice de-soldering of above soldered components. (1 hrs)	
		27. Capacitor – measuring the value, colour code. (3 hrs) 28. Measure capacitance using LCR meter.(3 hrs) 29. Identify different types of inductors. (1 hrs) 30. Measure inductance using LCR meter. (2 hrs) 31. Test a step-up transformer and finding transformation ratio.(3 hrs) 32. Testing a step-down transformer and finding transformation ratio.(3 hrs) 33. Construct Electro-magnetic effect using Electric Bell, Solenoid. (4 hrs)	• Capacitor, types, specification, capacitors in series and parallel applications • Magnetism. Faradays Laws • Inductance, Inductor-types, specifications, applications. • Measurement of inductance, Inductance in series and parallel. Inductive reactance. Self & mutual Inductance - properties, applications • Transformer, principle, construction, types, rating and applications. • How to test a given transformer. (04 hrs)
		34. Identify different types of rectifiers and terminals. (3 hrs) 35. Choose diode for a given application and rating with reference to Diode handbook. (3 hrs) 36. Testing a given diode. (1 hr) 37. Construct and test a Half wave rectifier. (2 hrs) 38. Construct and test a Full wave rectifier. (2 hrs) 39. Construct and test a Bridge rectifier. (2 hrs) 40. Test LED's. Use LED as output indicator in DC power supplies. (3 hrs)	• Semiconductor device. Rectifier diodes, types, specifications and applications • Half wave rectifier, construction, working, output voltage, current rating and output ripple. Efficiency, limitations, applications. • Full wave rectifier, construction, working, output voltage, current rating and output ripple. Efficiency, limitations, applications • Bridge rectifier, construction, working, output voltage, current rating, output ripple.

			Efficiency, limitations, applications. • LED's, types, specification and applications. Using LED as indicator lamps. (04 hrs)
		41. Identify different types and packages of transistors. (3 hrs) 42. Identify transistors leads / terminals. (3 hrs) 43. Testing of transistors. (4 hrs) 44. Find a required transistor referring to Transistor data book. (4 hrs) 45. Testing amplification of different configurations using pre wired kits. (4 hrs) 46. Test cascaded amplifiers using pre wired kits. (4 hrs)	• Principle of working of a transistor. PNP and NPN transistors. Specification of transistors. • Identification of transistors, terminals. Referring to Data book for selecting a transistor. Biasing of transistors - types, advantages, and applications. • Types of amplifiers, working and applications. Cascaded amplifiers, type and applications. (04 hrs)
		47. Familiarization and using CRO & function generator. (8 hrs) 48. Test harmonic oscillators using pre wired circuits. (4 hrs) 49. Construct and test relaxation oscillators using pre wired circuit. (4 hrs) 50. Measure parameter of Pulses using oscilloscope. (4 hrs)	• Oscillators, types, Harmonic-LC, RC, Crystal and relaxation-UJT. • Pulse, pulse parameters, implications. Pulse circuits, multi vibrators, applications. (04 hrs)
		51. Construct and test a Thyristor based power supply. (3 hrs) 52. Testing op-amp, testing and analyzing results of an OP-Amp. (3 hrs) 53. Wire and test a	• DIAC, SCR, TRIAC- principle of working, specifications, circuits and application. • Differential amplifiers, OP-Amps,

		Multistage IC amplifier. (2 hrs) 54. Construct and test a 3-pin Voltage regulator. (3 hrs) 55. Construct and test an IC variable output Voltage regulator. (3 hrs) 56. Trace circuit of PC SMPS. Fault finding of SMPS used in PC. (3 hrs) 57. Troubleshoot SMPS used in PC's. (3 hrs) 58. Trace circuit, Fault finding and troubleshoot Power supplies used in PC I/O devices. (4 hrs)	principle, characteristics, advantages, applications. List a few commonly used op-amps, Amplifiers in integrated circuit Forms • IC oscillators -IC 555Other types of linear IC's and applications. • Voltage regulator - z • IC voltage regulators- fixed / variable, specifications, testing. Multiple output regulators, package details of Some common IC regulator. • Comparison of linear • and Switch mode power supplies • Working of SMPS. Types, specifications and applications. Circuit tracing of SMPS. • Fault finding and Troubleshooting approach of SMPS with emphasis on power supplies used in PC's and its I/O devices. (04 hrs)
		59. Test Dry cells. Identify of different types and sizes of button cells. Test button cells. (2 hrs) 60. Check the specific gravity of electrolyte. (2 hrs)	• Primary and secondary batteries. Dry cells, • specification. Button cells, types and applications - testing. • Secondary battery

		61. Checking battery using discharge tester. Top-up secondary batteries. (3 hrs) 62. Connecting secondary batteries in series/series parallel. (3 hrs) 63. Identify a dead/ defective battery in a chain of batteries. (3 hrs) 64. Charge batteries. Connect batteries with UPS and test. (4 hrs)	types, specification, construction, Routine maintenance, Electrolyte- specific gravity, charging batteries. • Maintenance free batteries. Use of batteries with UPS. Safety precautions. (04 hrs)
		65. Construct circuits to convert Decimal to Binary and reverse. Convert of Binary to octal and reverse. Convert of Binary to Hexadecimal and reverse. (3 hrs) 66. Identify given IC's using digital IC handbook. (2 hrs) 67. Verify the truth table of NOT, AND, OR, NAND and NOR gates. (4 hrs) 68. Construct a logic circuit using basic gates for a given output logic. (3 hrs) 69. Construct a 1's compliment & 2's compliment circuit and verify. (4 hrs) 70. Construct and verify the truth table of flip-flop. (4 hrs) 71. Construct and test a serial and parallel shift register. (8 hrs) 72. Construct and test a 4-bit binary counter. (8 hrs)	• Comparing Analog and Digital signal. Application of Digital electronics. • Number system, • Binary, octal and hexadecimal. • Boolean algebra, D'Morgans theorem. Simplification of logic circuit. • Identification of Digital IC's, Types of packages, applications. Basic digital gates and truth tables. 1's & 2's compliment Flip-flop, register & counter. • Making a logic circuit for any custom requirement. (08 hrs)
Professional Skill 52 Hrs;	Introduction to Personal Computer Hardware, PC	73. Identify the Components of Personal Computer, Disassemble a PC. (12	• Explain how personal computer components work together, Explain

Professional Knowledge 15 Hrs	Assembly, Advanced Computer Hardware, Preventive Maintenance and Troubleshooting. (Mapped NOS: (SSC/N0101, SSC/N0202)	Hrs.) 74. Practice Assembling the Computer (12 Hrs.) 75. Check Electrical Power. Boot the Computer, Practice Advanced Computer Functionality (12 Hrs.) 76. Practice Computer Configuration, Protecting the Environment (8 Hrs.) 77. Practice Preventive Maintenance, Troubleshooting Process (8 Hrs.)	the Features and Functions of components, Precautions before disassembling a PC (3 Hrs.) • Build a computer (4 Hrs.) • Explain how to verify BIOS and UEFI settings, Explain electrical power, Explain computer functionality (3 Hrs.) • Select components to upgrade a computer to meet requirements, Explain the necessary procedures to protect the environment. (3Hrs.) • Explain why preventive maintenance must be performed on personal computers, Troubleshoot problems with PC and Peripheral devices (2 Hrs.)
Professional Skill 36 Hrs; Professional Knowledge 11 Hrs	Networking Concepts (Mapped NOS: SSC/N0101, SSC/N0202)	78. Practice Network Components and Types, Networking Protocols, Standards, and Services (8 Hrs.) 79. Practice connecting Network Devices, Network Cables (8 Hrs.) 80. Practice configuring devices to Network Connection, Basic Troubleshooting process for Networks (20 Hrs.)	• Explain the components and types of computer networks, Explain networking protocols, standards and services (4 Hrs.) • Explain the purpose of devices on a network, Build a network cable (3 Hrs.) • Configure devices for wired and wireless networks, Troubleshoot problems and solutions related to networks (4 Hrs.)
Professional Skill 44 Hrs;	Laptops and Other Mobile Devices,	81. Practice characteristics of Laptops and Other	• Explain the features and

| Professional Knowledge 8 Hrs. | Printers, Virtualization and Cloud Computing

(Mapped NOS: SSC/N0506, SSC/N0501, SSC/N0901), | Mobile Devices, Laptop Configuration, Laptop Hardware and Component Installation and Configuration (16 Hrs.)
82. Practice on other mobile Device's Hardware, Network Connectivity and Email,   Preventive Maintenance for Laptops and Other Mobile Devices., Basic Troubleshooting Process for Laptops and other Mobile Devices (12 Hrs.)
83. Practice on Common Printer Features, Printer Type Comparison, Installing and Configuring Printers, Sharing Printers, Maintaining and Troubleshooting Printers (8 Hrs.)
84. Practice on Virtualization, Cloud Computing (8 Hrs.) | functions of laptops and other mobile devices, explain how to configure laptop power settings and wireless settings, explain how to remove and install laptop components (2 Hrs.)
• Explain the purpose and characteristics of other mobile devices, Explain how to configure network connectivity and email on mobile devices, Use common preventive maintenance techniques for Laptops and other Mobile Devices, Explain how to troubleshoot Laptops and other Mobile Devices (2 Hrs.)
• Explain the purpose and characteristics of different types of printers, Compare Different Types of Printers, Install a printer, Configure Printer sharing, Explain how to improve printer availability (2 Hrs.)
• Explain Cloud and Virtualization, Compare and contrast cloud computing concepts (2 Hrs.) |
| Professional Skill 68 Hrs;

Professional Knowledge 14 Hrs | Windows Installation, Windows Configuration Mobile, Linux, and OSX Operating Systems (Mapped NOS: SSC/N0506, | 85. Practice on Modern Operating Systems, Disk Management, Installation and Boot Sequence (8 Hrs.)
86. Practice on Windows Desktop and File Explorer, Configure Windows using Control | • Explain operating system requirements, Create a partition in Windows using the Disk Management Utility, Install a Windows Operating System (2 Hrs.)
• Configure the Windows Desktop and File Explorer, |

	SSC/N0501, SSC/N0901),	Panels, System Administration, Command- Line Tools (20 Hrs.) 87. Practice on Windows Networking, Common Preventive Maintenance Techniques for Operating Systems, Basic Troubleshooting Process for Windows Operating System (20 Hrs.) 88. Practice on Mobile Operating Systems, Methods for Securing Mobile Devices, Linux and macOS Operating Systems, Basic Troubleshooting Process for Mobile, Linux, and macOS Operating Systems (20 Hrs.)	Configuring Windows with Control Panels, Use Windows tools and utilities to manage Windows system, Use of Microsoft Windows command line tools (4 Hrs.) • Configure a Windows computer to work on a network, Use common preventive maintenance on a computer using Micorsoft Windows tools, Explain how to troubleshoot Microsoft Windows operating system (4 Hrs.) • Explain the purpose and characteristics of mobile operating systems, Explain methods for securing mobile devices, Explain the purpose and characteristics of macOS and Linux operating systems, Explain how to troubleshoot other operating systems (4Hrs.)
Professional Skill 44 Hrs; Professional Knowledge 9 Hrs	Security and IT Professional (Mapped NOS: SSC/N0506, SSC/N0501, SSC/N0901),	89. Practice on Security Threats, Security Procedures (12 Hrs.) 90. Practice on Securing Windows Workstations, Wireless Security, Basic Troubleshooting Process for Security (20 Hrs.)	• Explain Security Threats, Explain Security Procedures (3 Hrs.) • Configure basic security settings and policies for end devices, Configure wireless security, Explain the six steps of the troubleshooting process for security (3Hrs.)
		91. Practice on Communication Skills and the IT Professional, Operational Procedures (4 Hrs.) 92. Practice on Ethical and	• Explain why good communication skills are a critical part of IT work, Explain how to manage change and unplanned disruptions in a business

		Legal Considerations, Call Center Technicians responsibilities (8 Hrs.)	environment (1 Hrs.) • Explain appropriate behavior when faced with the legal and ethical issues that arise in the IT industry, Explain the call center environment and technician responsibilities (2 Hrs.)
Professional Skill 90 Hrs; Professional Knowledge 16 Hrs	Perform the operations of MS Office package (word, excel, power point, outlook). (Mapped NOS: SSC/N0506, SSC/N0501, SSC/N0901),	**Microsoft WORD** 93. Open, resize and close MS Word. (1 hr) 94. Opening, editing and save/ "save as" documents. (1 hr)	**Microsoft WORD** • Text editing software. • Introduction to MSOffice. Features and application of Microsoft word.
		95. Use all menu bar features. (2 hrs) 96. Use all Standard tool bar features. (2 hrs) 97. Create Document, non- documents files. (2 hrs) 98. Create templates (2 hrs) 99. Create tables. (1 hr)	• Concept of word processing. Menu bar features. Standard toolbar features. Editing the text, use of different tools, formatting the text. • Creating, document, non-documents files. Creating templates. • Creating tables. • Inserting pictures and videos. • Mail merge.
		100. Insert pictures and videos. (2 hrs) 101. Mail merge documents. (1 hr) 102. Creating Bookmarks. (1 hr) 103. Add Bullets and numbering. (1 hr) 104. Create Hyperlinks. (2 hrs) 105. Create brochures. (3 hrs) 106. Create bookwork. (3 hrs)	• Book marks. • Bullets and numbering. • Hyperlinks. Creating brochures. Creating bookwork (04 hrs)
		Microsoft EXCEL	**Microsoft EXCEL**

		107. Work with Microsoft Excel for creating worksheets with Graphs and Visuals. (20 hrs)	• Use of Microsoft Excel features for creating worksheets with mathematical formulae and graphs. (04 hrs)
		Microsoft POWERPOINT	**Microsoft POWERPOINT**
		108. Work with Microsoft Power point in for creating multimedia presentations. (16 hrs) 109. Work with custom animation and effects. (8 hrs)	• Use of Microsoft Power point features for creating multimedia presentations. (04 hrs)
		Microsoft OUTLOOK	**Microsoft OUTLOOK**
		110. Customize quick e- mail, calendar, and tasks. (3 hrs) 111. Create a shortcut in the Outlook Bar to any file, folder or Web page. (3 hrs) 112. Send and receive e-mail in HTML format. (2 hrs) 113. Use 'Find' tool to quickly find messages, appointments or tasks using a Web-style search to specify the desired information. (2 hrs) 114. Set up rules and even filter out junk e-mail. (2 hrs) 115. Publish personal or team calendar as a Web page using a single command. (3 hrs) 116. Create and store personal distribution lists along with contacts in your Contacts folder. (3 hrs) 117. Manage mass mailings with Mail Merge for e- mail, fax or print	• Customizable quick e- mail, calendar, and tasks. • How to create a short cut in the Outlook Bar to any file, folder or Webpage. • How to send and receive-mail in HTML format. • Find tool to quickly find messages, appointments or tasks using a Web- style search to specify the desired information. • Publish personal or team calendar as a Web page using a single command. • Create and store personal distribution lists along with contacts in your Contacts folder. • Manage mass mailings with Mail Merge for e- mail, fax or print distribution to select or all contacts based on any set of contact fields contacts based on any set

		distribution to select or all contacts based on any set of contact fields. (4 hrs)	of contact fields. • How to use the Activities tab on a contact item to dynamically track and view all activity related to a contact such as e-mail, appointments and tasks. (04 hrs)
Professional Skill 43 Hrs; Professional Knowledge 4 Hrs	Create Graphic design and work with Adobe Page maker, Corel draw. (Mapped NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)	Adobe PageMaker 118. Work with PageMaker. (4hrs) 119. Create Pamphlets. (4hrs) 120. Create brochures. (4hrs) 121. Work with reports. (3hrs) 122. Create illustrative works. (4hrs) 123. Create long book works. (4hrs)	• Page Maker features for creating Pamphlets, broachers, reports, illustrative works and long book works. (02 hrs)
		Corel Draw 124. Work with Corel draw. (8 hrs) 125. Create artistic characters and shapes for use with page maker. (12 hrs)	**Corel draw** • Features of Corel draw • Explain artistic characters and shapes for use with page maker. (02 hrs)
Professional Skill 38 Hrs; Professional Knowledge 06 Hrs	Create email account, chat and browse through internet and Microsoft Outlook Express. (Mapped NOS: SSC/N0506, SSC/N0501, SSC/N0901),	**Internet** 126. Open web pages using URL and domain name. (1 hr) 127. Save web pages. (1 hr) 128. Store web pages as favorites. (1 hrs) 129. Use search engines to find sites offering free Email services. (1 hrs) 130. Create Email account. (1 hr) 131. Send Email. (1 hr) 132. Copy received Email. Copy/Print received mail. (1 hr) 133. Send Email with attachment. (1 hr)	**Internet** • Networking of Computers. LAN, MAN, WAN. Intranet. Interconnected computers. • Intranet. Internet, • Websites, WWW, URL. • Internet protocols, HTTP, FTP, • Client end software - Browsers. • Requirements for Internet access, browser, modem, ISP. • Getting internet count and settings. • Types of browsers, basic

		134. Open / Download attachments. (1 hrs) 135. Set-up for Chat. (1 hr) 136. Practice chatting. (1 hr) 137. Practice chatting with Video. (1 hr) 138. Join Newsgroup. (2 hrs) 139. Getting connected using FTP. (2 hrs) 140. Downloading software. (2hrs) 141. Upgrading Browser versions. (2 hrs) 142. Use Telnet to get connected to remote 143. computer. (2 hrs	principle, features. Setting of browser features, security levels. • Getting connected to a website- site name & its URL, Domain name server. Saving websites, favorites, printing web pages / sites. • Meaning and use of Search engines. Searching tips. Webmail account, Email, providers- free and paid. Creating free Email ID, sending and receiving Email. Sending and receiving attachments using Email. • Chatting over Web. News groups. • Down loadingof software's –FTP • Getting connected to a distant computer and Telnet. (03 hrs)
		MS Outlook Express 144. Using features of OUTLOOK Express for sending and receiving Emails. (2 hrs) 145. Setting multiple accounts in outlook express to send/ receive mails. (2 hrs) 146. Maintaining Address book. (4 hrs)	
		Connecting to Internet 147. Installing modem in computer and Installing Web Browsers. (4 hrs) 148. Setup internet connection using ISP. (2 hrs) 149. Setup browser settings. (2 hrs)	**MS Outlook Express** • Setting-up outlook express for sending and receiving mails using multiple ID's. Features provided by Outlook express. (03 hrs)
Professional Skill 25 Hrs; Professional Knowledge 07 Hrs	Design and develop web pages using HTML. (Mapped NOS: SSC/N0506, SSC/N0501, SSC/N0901),	**HTML** 150. Working with HTML tags. (1 hr) 151. Working with Fonts, colors. (1 hr) 152. Working with Hyper text Links. (1 hr) 153. Develop Unordered	**HTML** • Source code of Web pages, meaning of HTML, its features and advantages. • Programming using • HTML. Using Scripts for active web pages.

| | | Lists. (1 hr)
154. Develop Ordered Lists. (1 hr)
155. Develop Definition Lists. (1 hr)
156. Practice with different types of Marquee effects. (1 hr)
157. Develop HTML Pages using Tables. (1 hr)
158. Develop User registration forms. (1 hr)
159. Develop Web pages using Forms (2 pages, 3pages, Multi pages). (1 hr)
160. Open pages in parent windows. Use Embed tag to insert Media. (1 hr)
161. Insert flash file safe mode. (1 hr)
162. Auto plays Videos and Audio files. (1 hr)
163. Play Audio and Video files from specific time. (1 hr)
164. Hide controls on web page. (1 hr)
165. Set different colors to different Headings. Change paragraph font size and color using styles. (1 hr)
166. Print "Hello World" on web page using Jscript. (1 hr)
167. Validate Password given by the user. (1 hr)
168. Validate User input date. (2 hrs)
169. Validate E-Mail Address. (2 hrs)
170. Register free website and upload pages. (2 | • Use of Java scripts. (Simple scripts only)
• Use of Java script for interactive pages.(Simple scripts only)
• Picture formats, animated files and its usage in web pages.
• Web page design using Front end design tool like bootstrap.
• Procedure for Hosting of web sites. (07hrs) |

		hrs) 171. Setting up the work area. (1 hr)	
Professional Skill 40 Hrs; Professional Knowledge 8 Hrs	Create Graphic design and work with Adobe Photoshop. (Mapped NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)	**Adobe Photoshop** 172. Practice use of Photoshop tools. (2hrs) 173. Practice uses of palettes. Draw & edit with the pencil tools. (2hrs) 174. Smoothen the path with smooth tool. Draw with the Paint tool. (2hrs) 175. Draw curve segments. Use reshape tool. (2hrs) 176. Draw & edit brushed paths. Practice managing brushes. (2hrs) 177. Create brushes. Create a pattern brush. Practice using the brush libraries. (3hrs) 178. Use rulers, guides & grids. (3hrs) 179. Practice use of selection tools. (2hrs) 180. Practice moving, copying and deleting objects. (2hrs) 181. Practice grouping & ungrouping objects. (2hrs) 182. Practice transforming selected objects. (2hrs) 183. Practice distorting with free transform tool. (2hrs) 184. Practice Punking & Bloating. Create blends. (2hrs) 185. Practice using the pathfinder palette.	**Adobe Photoshop** • Different composition of colors. The colors of the visual spectrum. Evidence of color theory implementation from existing graphics • found in print media. • Picture formats, Color use and implementation on the web. • Introduction to some of the most common graphics and image file formats, and its restrictions to particular Hardware / operating system platforms. • Image formats and incorporation of compression technique for large storage size of Image files. • Creating Vector Graphics. Using tools for publishing artwork on the Web & in print • Exploring new creative options and producing high quality images for print & web. • Creating exceptional imagery with easier access to file. • Streamlined web • design. • Photo re-touching, Colorful image collages, (08hrs)

		(2hrs) 186. Practice working with clipping masks. (2hrs) 187. Practice changing vector Graphics into Bitmap images. (4 hrs) 188. Practice linking objects to URLS for Internet packages. (4 hrs)	
Professional Skill 64 Hrs; Professional Knowledge 12 Hrs	Create and record various formats of multimedia audio and video files using digital audio and video editor tools. (Mapped NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)	**MULTIMEDIA -Audio** 189. Practice sound Recording in different channels - Mono-stereo. (4 hrs) 190. Practice sound editing and giving special effects. Use various formats of sound files. (4 hrs) 191. Carryout conversion of analog audio to digital audio. (4 hrs) 192. Practice Frequency management. (4 hrs) 193. Practice distorting recorded audio using Effects. (4 hrs) **Multimedia -Video** 194. Get acquainted with the arrangement of different Tool Bars, Panels, Tools and View Ports. (4 hrs) 195. Draw and visualize simple objects in terms of Top View, Front View and Side View. Create simple objects. (4 hrs) 196. Practice Moving, Rotating and Scaling objects. (4 hrs) 197. Practice changing dimensions of objects using modifiers. (4hrs) 198. Create different objects,	**MULTIMEDIA -Audio** • Sound recording basics, various formats of sound files, • Converting analog audio to digital audio. • Digital audio editors that include powerful audio processing tools, effects for Recording and manipulating audio. • Edit files Non-destructively down to the sample level with extreme speed and accuracy. (04 hrs) **Multimedia -Video** • Introduction to the concept of 3D. Orthographic and Perspective views. • Creating basic objects in 3D. • Introduction to command panel. • Working with "Properties" of 3D objects. Editing 3D objects using modifiers. • Elements of View Port controller. • Creating objects with Standard Primitives and Extended Primitives.

		using Standard Primitives and Extended Primitives. (6 hrs) 199. Make shapes renderable and create splines, Practice manipulation of the shape of the model using Compound Objects. (6 hrs) 200. Practice application of Lathe Option for creating symmetrical objects. (4 hrs) 201. Apply animation to the models created so far. (6 hrs) 202. Practice modelling of real-world objects through LPM using Editable Mesh and Editable Poly. Convert a model to an editable mesh and working with Extrude and bevel options. (6 hrs)	• Creating objects using "Shapes" panel. Re-shaping of objects using • Compound Objects like Boolean, Terrain and Loft. Creating symmetrical objects using Lathe option. • Simple Animation of basic objects. Introduction to Particle Systems. • Low Polygon Modelling. (8 hrs)
Professional Skill 93 Hrs; Professional Knowledge 22 Hrs	Create customized database files using Microsoft Access and Visual Basic. (Mapped NOS: SSC/N0201 , SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)	203. Opening an existing and creating a new database with MS-ACCESS. (12 hrs) 204. Identifying the objects supported in MS-ACCESS (8 hrs) 205. Creating table in Data sheet and design view. (4 hrs) 206. Enter data and edit data. (4 hrs) 207. Data validation and verification in Access. (8 hrs) 208. Develop customized form for data entry. (08 hrs) 209. Develop queries. (04hrs)	• Database concepts - data, object and properties: Definition. • Elements of database in Access: table, form, query, report. • Creating tables in Datasheet and design view, setting field properties. • Editing data in table (10 hrs) • Developing customized form for data entry and editing. • Data validation and verification. • Developing and generate queries. • Developing and

		210. Generate reports for required output. (04 hrs) 211. Generate customized reports. (08 hrs)	generating reports.
		212. Setting relationship between tables. (04 hrs) 213. Setting relationship between tables and queries or both. (04 hrs) 214. Practice use of Visual basic with MS Access as front end. (12 hrs) 215. Create a simple application using Access and VB for a given specification. (08 hrs) 216. Import / Export data to / from Ms-Access. (1 hr). 217. Database back up and retrieval in Access. (04 hrs)	• Relational Database systems. Its advantages and applications Using Multiple tables, data entry, and generating reports (06 hrs) • Concept of Front end for database. • Software's used as Front-end. • Use of Visual basic as front end with access. • Development cycle. • Steps for developing simple software using Access and VB for a given application. • Database back up and retrieval. (06 hrs)

Engineering Drawing : 40 Hrs.

Professional Knowledge ED 40 Hrs.	Read and apply engineering drawing for different application in the field of work. (SSC/N9411)	**Engineering. Drawings** Introduction to Engineering Drawing and Drawing Instruments • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools. Symbolic representation – • Different symbols used in the related trades Reading of Network system Diagram& Hardware component

Workshop Calculation Science: 24 Hrs.

Professional Knowledge	Demonstrate basic mathematical	**Workshop Calculation Science** - **Unit, Fractions**

WCS 24 Hrs	concept and principles to perform practical operations. Understand and explain basic science in the field of study. (SSC/N9410)	Classification of unit system Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units Measurement units and conversion Factors, HCF, LCM and problems Fractions - Addition, substraction, multiplication & division Decimal fractions - Addition, subtraction, multilipication & division Solving problems by using calculator **Square root, Ratio and Proportions, Percentage** Square and suare root Simple problems using calculator Applications of pythagoras theorem and related problems Ratio and proportion Ratio and proportion - Direct and indirect proportions Percentage Precentage - Changing percentage to decimal and fraction **Basic Electricity** Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units Conductor, insulator, types of connections - series and parallel Ohm's law, relation between V.I.R & related problems Electrical power, energy and their units, calculation with assignments **Trigonometry** Measurement of angles Trigonometrical ratios Trigonometrical tables

Industrial Visit/ Project Work
Broad Areas:
a) Graphics designing project using Adobe PageMaker and Corel Draw.
b) Image editing project using Adobe Photoshop.
c) Create a simple web site using HTML of at least 5 web pages which will include Images, tables, charts,
lists and hyperlink on any topic like Student Information System, Book Store, and organizations etc.
d) Create a customized database using MS Access for an organization.

	SYLLABUS FOR INFORMATION TECHNOLOGY TRADE		
	SECOND YEAR		
Duration	**Reference Learning Outcome**	**Professional Skills (Trade Practical) with Indicative hrs.**	**Professional Knowledge (Trade Theory)**
Professional Skill 36 Hrs; Professional Knowledge 12 Hrs	Network Connectivity and Communications (Mapped NOS: SSC/N0922, SSC/N0202, SSC/N0901),	218. Identify network devices and their usages. Check network representations and usages in the network topologies. (4 hrs.) 219. Check LANs and WANs interconnection to the internet, Identify the four basic requirements of a reliable network, Setup a LAN with Internet connectivity, Identify some basic security threats and solutions for all networks (4 hrs.) 220. Practice an IOS device for configuration and to navigate, Test the command structure of IOS software, Configure a IOS Device using CLI (8 hrs.) 221. Use IOS commands to save the running configuration, Setup devices to communicate across	• Networks Affect Our Lives, Network Components, Network Representations and Topologies, Common Types of Networks. • Internet Connections, Reliable Networks, Network Trends, Network Security. • IOS Access, IOS Navigation, The Command Structure, Basic Device Configuration. • Save Configurations, Ports and Addresses, Configure IP Addressing, Verify Connectivity. • The Rules, Protocols, Protocol Suites, Standards Organizations. • Reference Models, Data Encapsulation, Data Access (12 hrs.)

		network media, configure a host device with an IP address, Verify connectivity between two end devices (4 hrs.)	
		222. Setup the types of rules that are necessary to successfully communicate, identify protocols that are necessary in network communication, Setup protocols and check whether adhering to a protocol suite or not, Check the role of standards organizations in establishing protocols for network interoperability. (8 hrs.)	
		223. Use of TCP/IP model and the OSI model to facilitate standardization in the communication process, configure a network so that data encapsulation allows data to be transported across the network, Test whether local hosts able to access local resources on a network or not. (8	

		hrs.)	
Professional Skill 36 Hrs; Professional Knowledge 15 Hrs	Ethernet Concepts (Mapped NOS: SSC/N0922, SSC/N0202, SSC/N0901),	224. Identify the purpose and functions of the physical layer in the network. Identify the basic characteristics of copper cabling (4 hrs.) 225. Identify UTP cable used in Ethernet networks, prepare UTP cable for ethernet network. Identify fiber- optic and co-axial cable, connect devices using wired and wireless media (8 hrs.) 226. Practice Conversion of numbers from decimal to binary systems and vice versa, Convert numbers from decimal to hexadecimal systems and vice versa. (8 hrs.) 227. Check the function of the data link layer in preparing communication for transmission on specific media, Check the characteristics of media access control methods on WAN and LAN topologies, check the characteristics and functions of the data link frame (8 hrs.) 228. Check the relationship	• Purpose of the Physical Layer, Physical Layer Characteristics, Copper Cabling. • UTP Cabling, Fiber- Optic and co-axial cabling, Wireless Media. • Binary Number System, Hexadecimal Number System. • Purpose of the Data Link Layer, • Topologies, Data Link Frame. • Ethernet Frame, Ethernet MAC Address, The MAC Address Table, Switch Speeds and Forwarding Methods (15 hrs.)

		between Ethernet sublayers and the frame fields. Identify Ethernet MAC address, Check the procedure to create MAC address table of a switch and forwarding of frames by a switch, Use switch forwarding methods and port settings available on Layer 2 switch ports (8 hrs.)	
Professional Skill 24 Hrs; Professional Knowledge 12 Hrs	Communicating Between Networks (Mapped NOS: SSC/N0922, SSC/N0202, SSC/N0901),	229. Practice on IP protocols for reliable communications in network layer. Check the role of the major header fields in the IPv4 packet and IPv6 packet, check how network devices use routing tables to direct packets to a destination network, check the function of fields in the routing table of a router (8 hrs.) 230. Observe and Compare the roles of the MAC address, the IP address and ARP, Check the operation of IPv6 neighbor discovery (8 hrs.) 231. Configure initial settings on a Cisco IOS router, configure two	• Network Layer Characteristics, IPv4 Packet, IPv6 Packet, How a Host Routes, Router Routing Tables. • MAC and IP, ARP, Neighbor Discovery. • How to Configure Initial Router Settings, how to configure interfaces, how to configure the Default Gateway (12 hrs.)

		active interfaces on a Cisco IOS router, configure devices to use the default gateway (8 hrs.)	
Professional Skill 40 Hrs; Professional Knowledge 14 Hrs	IP Addressing (Mapped NOS: SSC/N0922, SSC/N0202, SSC/N0901)	232. Configure an IPv4 address including the network portion, the host portion, and the subnet mask, Practice the characteristics and uses of the unicast, broadcast and multicast IPv4 addresses, Practice with public, private, and reserved IPv4 addresses, configure a network by subnetting, Calculate and configure IPv4 subnets for a /24 prefix (8 hrs.) 233. Calculate and configure IPv4 subnets for a /16 and /8 prefix, given a set of requirements for subnetting, implement an IPv4 addressing scheme, configure and setup a flexible addressing scheme using variable length subnet masking (VLSM), (8 hrs.) 234. Configure IPv6 Addresses, configure different types of IPv6	• IPv4 Address Structure, IPv4 Unicast, Broadcast, and Multicast, Types of IPv4 Addresses, Network Segmentation, Subnet an IPv4 Network. • Subnet a /16 and /8 Prefix, Subnet to Meet Requirements, Variable Length • Subnet Masking, Structured Design. • IPv4 Issues, IPv6 Addressing, IPv6 Address Types, GUA and LLA Static Configuration

		network addresses, configure static global unicast and link- local IPv6 network addresses (8 hrs.)	
		235. Configure global unicast addresses dynamically, configurelink-local addresses dynamically, Identify IPv6 addresses, implement a subnetted IPv6 addressing scheme. (8 hrs.) 236. Configure ICMP to test network connectivity, Use ping and traceroute utilities to test network connectivity (8 hrs.)	• Dynamic Addressing for IPv6 GUAs, Dynamic Addressing for IPv6 LLAs, IPv6 Multicast Addresses, Subnet an IPv6 Network. • ICMP Messages, Ping and Traceroute Testing (14 hrs.)
Professional Skill 24 Hrs Professional Knowledge 8 Hrs.	Network Application Communications (Mapped NOS: SSC/N0922, SSC/N0202, SSC/N0901)	237. Configure to manage the transportation of data in end-to-end communication in the transport layer. Check characteristics of the TCP and UDP, Configure TCP and UDP port numbers (8 hrs.) 238. Configure TCP session establishment and termination processes to facilitate reliable communication, check how TCP protocol data units are transmitted and acknowledged	• Transportation of Data, TCP Overview, UDP Overview, Port Numbers. • TCP Communication Process, Reliability and Flow Control, UDP communication. • Application, Presentation, and Session, Peer-to-Peer, Web and Email Protocols, IP Addressing Services, File Sharing Services (8 hrs.)

		to	
		guarantee delivery, Setup UDP client processes to establish communication with a server (8 hrs.) 239. Check how the functions of the application layer, session layer, and presentation layer work together to provide network services to end user applications, Check how end user applications operate in a peer-to- peer network, Configure and check how web and email protocols operate, configure and check how DNS and DHCP operate, Configure and check how file transfer protocols operate (8 hrs.)	
Professional Skill 20 Hrs Professional Knowledge 5 Hrs	Building and Securing a Small Network (Mapped NOS: SSC/N0922, SSC/N0202, SSC/N0901)	240. Configure basic security measures necessary on network devices, identify security vulnerabilities, Identify general mitigation techniques, configure network devices with device hardening features to	• Security Threats and Vulnerabilities, Network Attacks, Network Attack Mitigation, Device Security. • Devices in a Small Network, Small Network Applications and Protocols, Scale to Larger Networks,

		mitigate security threats (8 hrs.) 241. Identify the devices used in a small network, Identify the protocols and applications used in a small network, Setup a larger network with the small networks. Use the output of the ping and tracert commands to verify connectivity and establish relative network performance (4 hrs.) 242. Use host and IOS commands to acquire information about the devices in a network, use common network troubleshooting methodologies, Troubleshoot issues with devices in the network (8 hrs.)	Verify Connectivity. • Host and IOS Commands, Troubleshooting Methodologies, Troubleshooting Scenarios (5 hrs.)
Professional Skill 40 Hrs Professional Knowledge 14 Hrs	Install and configure Windows Server. (Mapped NOS: SSC/N0922, SSC/N0202, SSC/N0901)	**Server Installation, Configuration & Backup** 243. Identify Server Hardware. (4 hrs) 244. Install and configure Windows Server. (4 hrs) 245. Install and Configure Active Directory. (4 hrs) 246. Implementing AD Services. (4 hrs)	**Server Installation, Configuration & Backup** • Server concepts, Server Hardware, Installation steps, configuration of server. Concept of Active Directory. ADS • Overview, ADS Database, Active Directory Namespace, Logical & Physical Elements of AD.

		247. Configuration of broadband modem and sharing internet connection. (4 hrs) 248. Configure a server as web server. (8 hrs) 249. Configuring Mailbox Servers. (4 hrs) 250. Implementing 251. Backup and Recovery. (8 hrs)	• Introduction to Web Server • Introduction to Messaging Services • Concept of Backup and Recovery of Server.(14 hrs)
Professional Skill 19 Hrs Professional Knowledge 05 Hrs	Install and configure and Linux server. (Mapped NOS: SSC/N0922, SSC/N0202, SSC/N0901)	**Linux Server installation and configuration** 252. Install Linux Server. (3 hrs) 253. Create new user and group. (2 hrs) 254. Create public and data directory. (2 hrs) 255. Create an lmlhosts file. (2 hrs) 256. Check host file. (2 hrs) 257. Secure and run SWAT. (2 hrs) 258. 257. Filter ports. (2 hrs) Practice Telnet installation and configuration. (4 hrs)	**Linux Server installation and configuration** • Configuration Plan • Public and data directory • Host file • SWAT • Password Authentication Telnet (5hrs)
Professional Skill 20 Hrs; Professional Knowledge 05 Hrs	Perform Network Configuration, troubleshooting and Network Security. (Mapped NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504	**Network Security** 259. Practice on firewall technologies to secure the network perimeter. (4 hrs) 260. Practice LAN security considerations and implement endpoint and Layer 2 security features. (8 hrs)	**Network Security** • Modern Network Security Threats and the basics of securing a network. • Secure Administrative Access, LAN security considerations. • Network Security Devices.

		261. Configuration Wi-Fi to implement security considerations. (8 hrs)	• Cryptography. Wi-Fi security considerations.(09hrs)
Professional Skill 82 Hrs Professional Knowledge 24 Hrs	Image editing and graphic design using Adobe Illustrator and Flash. (Mapped NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)	**Raster & Vector Graphics** 262. Use fundamental techniques of drawing in pencil, charcoal and ink. Emphasis is on realistic representation and visual observation. (2 hrs) 263. Use advanced drawing giving emphasis on design and composition and experimental techniques in different media: creating area text, applying basic character settings, paragraph settings, creating text threads, creating text on a path, converting text to outlines. (2 hrs) 264. Using the basic selection tools, magic Wand and the Lasso tool, selecting objects by attribute, saving and reusing selections. (2 hrs) 265. Practice Appearances – Targeting objects attributes: adding multiple attributes, applying live effects, expanding	**Raster & Vector Graphics** • Traditional Design concepts • Traditional and digital applications of color, concept and composition. • Making Selections • Understanding Appearances • Working with Groups and Layers • Advanced Drawing and Path Editing • Working with Color • Object Transformation and Positioning • Use of Brushes • Use of Masks • Use of Symbols

		appearances, creating graphic styles. (2 hrs) 266. Modifying graphic styles: appearance palette settings, copying appearance. (2 hrs) 267. Working with Groups and Layers: defining and editing groups, working with Layers, Layers and object hierarchy, creating template layers, object, group, and layer attributes. (2 hrs) 268. Advanced Drawing and Editing Path: creating Live Paint groups, detecting gaps in Live Paint groups, path editing with Live Paint, using Offset Path, dividing an object into a grid, cleaning up errant paths. (4 hrs) 269. Working with Color: defining swatches, creating swatch groups and libraries, working with gradients, patterns, using the Color Guide, experimenting with color, finding colors with kuler, modifying color in artwork. (2 hrs) 270. Transformation and	

		Positioning: Rotating and scaling objects, reflecting and skewing objects, using the free Transform panel, Aligning objects. (2 hrs) 271. Distributing objects- Using Brushes: Creating a calligraphic brush, creating a scatter brush, creating an art brush, creating a pattern brush. (2 hrs) 272. Working with Masks: Understanding clipping masks, using layer clipping masks, creating opacity masks. (2 hrs)	
		273. Using Symbols: Defining and editing symbols, using the symbolism toolset. (2 hrs) 274. Applying Filters and Live Effects: Minding your resolution settings, Mapping artwork to 3Dobjects, using the Transform effect. (2 hrs) 275. Using the pathfinder effects: Using the Stylize effect, Scribble effect, Warp effect. (2 hrs) 276. Advanced Text Editing: taking advantage of	• Application of Filters and Live Effects • Advanced Text Editing • Designing for the Web • Creation of Blends • Working with Images • Performing Specialized Tasks Saving and printing

		Open type fonts, using the Glyphs panel, wrapping text around objects, checking spelling, using the change cash function, Setting tabs and leaders, managing fonts, dealing with legacy text. (2 hrs)	
		277. Web Designing using pixel preview, specifying web slicing, Optimizing web graphics, creating simple animations. (2 hrs)	
		278. Creating a basic Blends, using a blend to create an airbrush Effect, using a blend to create an animation, using a blend to evenly distribute. (2 hrs)	
		279. Working with Images: Placing images, using the Links panel, The Edit Original workflow, Live Trace, Rasterizing artwork, Object mosaic creating graphs, creating a lens flare, using gradient Mesh, Envelope Warps, Liquefy distortion tools, saving your Graphics Editing Tool Document, Printing your Graphics	• Working with Other programs (12 hrs)

	Editing Tool Document, Using the Crop Area tools, setting up page tiling. (4 hrs) 280. Adding XMP metadata Exporting programs: Exporting files for use in QuarkXPress, In Design, Word / excel / PowerPoint, image Editing Tool, Authoring Tool, Special effects Tool, Effects (Ps-Ai), Preferences. (2 hrs) **Introduction to Flash** 281. Practice on Tool Features, User interface, Image Editing Tool and Graphics, Editing Tool integration, Authoring Tool Video Technology, UI components. (4 hrs)	**Introduction to Flash** • About Flash and General over view - Stage and Work area of Flash, using guides, grid & rulers
	282. Practice on Creating and Importing Graphics Assets, Working with different graphic. (4 hrs) 283. Practice on formats - Importing bitmap graphics, working with layers and layer folder. (4 hrs) 284. Use the drawing tools, Using object and merge drawing,	• Using frames and key frames, working with time line. • Using layers - to create a layer, to create a layer folder, to show or hide a layer or folder, to view the contents of the layer as outlines, to change the layer height in the timeline, to change the order of the layers or

| | | Working with the colour panels, Creating and using Graphic symbols, using the Library panel. (8 hrs)
285. Practice on Text Effectively- Text tool, Adding and formatting static text, Changing font rendering methods, Adding input text fields, Embedding fonts in input text fields, Using for best practices. (4 hrs)
286. Practice on Creation of Animations - Working with the timeline, using key frames, blanks key frames and frames, creating motion tweens, Creating shape tweens, creating transition effects, using animation best practices. (8 hrs)
287. Practice on Basic Action Script - Using Script Assist, Adding actions to a frame, Creating and using Button symbols. (8 hrs) | folders. Using Guide layers.
• Drawing in Flash - to raw with a pencil tool, to paint with a brush tool, to draw with pen tool.
• Using colours in Flash, to use a gradient fill. Importing Artwork, Video and Audio. Different file formats in Video & Audio. Flash Compatible
Audio & Video file formats (12 hrs) |
| Professional Skill 40 Hrs;

Professional Knowledge | Editing Video and Audio using Adobe Premier.
(Mapped NOS: SSC/N0201, | **Video Editing: Tools to be Used Adobe Premier**
288. Practice to change Project settings, Preference settings, | **Introduction to Adobe Premier Project**
• Creating a Sequence |

12 Hrs	SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)		Asset Management, Sequences & Clips, Offline On-line Clips. (4hrs)	• Editing in the Timeline
		289.	Managing Clips: The Project panel, Views, The preview area, Organizing clips and bins, Duplicating and copying clips, Renaming clips, Finding clips (search function), Interpreting Footage, Unlinking and Re-linking Media, The Project Manager. (4hrs)	• Refining the sequence • Transitions • Audio
		290.	Creating a Sequence Editing Methods, In and Out Points, Sub Clips, Source and Target Tracks, Overlay and Insert Edits, Adding Clips by Dragging, 3- And 4-Point Edits, Lift and Extract, Storyboard Editing, Multiple and Nested Sequences. (4hrs)	• Tiles
		291.	Editing in the Timeline: The Time Ruler, Adding, Deleting and Renaming Tracks, Markers, Selecting, Splitting Clips, Speed, Duration and Reverse, Multicam Editing, Synchronizing Clips,	• Effects • Output(12hrs)

		Replace Clips. (4hrs)	
		292. Refining the sequence: Snapping, Trimming Methods, Trimming Clips, Ripple, Roll, Slip and Slide Edits, the Trim Panel, Split Edits (L and J Cuts). (4hrs)	
		293. Practice with Transitions: The Effects Panel, Understanding Transitions, Applying A Transitions, Editing A Transitions. (4hrs)	
		294. Working with Audio: The audio mixer, recording with the audio mixer, fading panning and balancing Effects, Corrective measures and Routing tracks. (4hrs)	
		295. Practice with Titles: Creating a title Text paths, Roll and crawl titles, Text configuration. (4hrs)	
		296. Working with Effects: Effect Types, Effect Properties, The Effects Control Panel, Key framing, Motion Effects, Opacity and Volume, Lighting Effects, Time warp (pixel motion Blending), Special effect Tool and	

		Premiere. (4hrs) 297. Making Output: Creating DVDs, Blu-Ray, SWF, MP4 and FLV Files, Media Encoder for DVD Makers using Clip Notes. (4hrs)	
Professional Skill 84 Hrs; Professional Knowledge 30 Hrs	Creation of Graphics Animation using Adobe After Effects and 3Ds Max. (Mapped NOS: SSC/N0201, SSC/N0501, SSC/N0502, SSC/N0503, SSC/N0504)	**Applying Adobe After Effects** 298. Practice on User interface. (2 hrs) 299. Creating and using compositions. (2 hrs) 300. Practice on Key framing and using time line. (2 hrs) 301. Practice on Looping animation. (2 hrs) 302. Practice on Editing motion path. (2 hrs) 303. Create the arrivals Bound Effects. (2 hrs) 304. Simulation between Authoring Tool & Special effects Tool. (2 hrs) 305. Apply filter effects and mask to components. (2 hrs) 306. Practice on Animate 3D transformations. (4 hrs) 307. Include a common loop sound. (4 hrs) 308. Practice on simple scripting in special effect Tool. (4 hrs)	**Introduction to Adobe After Effects** • Special effect Techniques • Introduction to User interface • Concepts of compositions, Key framing, Looping animation, motion path • Introduction to Bound Effects, Authoring Tool & Special effects Tool, filter effects and mask to compo ents • 3DA mation transformation use of common loop sound, simple scripting in special effect Tool • Rotoscoping, Chroma, 2D & 3D tracing, Green/Blue screen technique / shooting. Colour Correction (15 hrs)

		309. Practice on Rotoscoping, Chroma, 2D & 3D tracing, Green / Blue screen technique / shooting. Colour Correction. (8 hrs)	
		Working with 3Ds MAX 310. Practice on creating projects and Scenes. (4 hrs) 311. Practice on Transform tool basics, Pivot points, Grouping and parenting, modelling with primitives. (4 hrs)	**Introduction to 3Ds Max** • Fundamentals & concepts of Animation • 3D Animation Techniques
		312. Practice on User Interface - Setting up project, Views/panels, Hotbox, Viewing Geometry, Channel Box, Layer Box, Attributes Editor, And QWERTY Navigation. (4 hrs) 313. Working with the camera, over view of MEL, Outliner/ Hyper graph, Grouping /parenting Shelf Marking Menus. (4 hrs) 314. Practice on Modelling – Curve Tools / snapping, Revolving, History, Duplicating, Working with NURBS, Detaching surfaces, Grouping /	• User Interface • Modelling • Lighting /Rending • Character Setup & Animation • Dynamics (15 hrs.)

		Duplicating. (8 hrs)	
		315. Working with polygons, Sub-divisional surfaces, Split polygon Tool, Lofting, Extruding. (4 hrs)	
		316. Practice on MODELLING, POLYGON TOOLS, with PROXY, NORMALS, Lighting / Rendering. (4 hrs)	
		317. Practice on Hyper shade, Materials, Apply Materials, Making Shader Networks, Combining Ramps, Layered Textures, Intro to lights, Making Bump Maps. (8 hrs)	
		318. Working with Shadows, UV Mapping, Specular Maps, Paints FX, Render View, Camera Settings, Render Globals, TOON SHADER. (8 hrs.)	
Professional Skill 44 Hrs; Professional Knowledge 12 Hrs	Designing Webpage in HTML embedding CSS, JavaScript. (Mapped NOS: SSC/N0503, SSC/N0901)	319. CSS – Practice on configuring backgrounds, border, box model, font, text, column and colors. (4 hrs) 320. Practice on configuring Table, speech, list & markers, animations, transitions, UI and	What is CSS (Cascading Style Sheet) and its uses? Advantages of using CSS, Syntax and example of CSS. Types of CSS, How to specify CSS? CSS comments, fonts, font-family, text, background and borders. How to use Table, list, markers, animations, transitions, UI and pseudo-class.

		pseudo-class. (4 hrs) 321. Practice on pseudo-element, absolute measurement, relative measurement, angles, time, frequency and colors. (4 hrs) 322. Practice on selector types, outline, 3D / 2D transform, generated content, line box, hyperlink, and positioning. (4 hrs)	How to use pseudo-element, absolute measurement, relative measurement, angles, time, frequency and colors. Explain selector types, outline, 3D / 2D transform, generated content, line box, hyperlink and positioning. Limitations of CSS. (4 Hrs.)
		JAVA Script– 323. Practice using Java Script in an HTML Document, Hiding Java Script from old Web Browsers. (2 hrs) 324. Basic Syntax Used in Java Script Commands, Variables - Assigning Values to Variables, Concatenating String Variables. (2 hrs) 325. Functions- Creating & Calling Functions, Sending Parameters to a Function, Receiving Parameters out of a function, Variable scope & Lifetime, Functions Called by Events. (2 hrs) 326. Flow Control Structures - If Structure, If Else Structure, For Loop, While Loop, For/in	*JAVA Script*- • Introduction to Java Script, Where does Java Script Fit in? Comparing Java Script to VBScript, • Comparing Java Script to Java, The Purpose of Java Script, Prerequisites, Using Java Script in an HTML Document, Hiding Java Script from old Web Browsers. • Basic Syntax Used in Java Script Commands, Variables, Functions, Flow Control Structures, Operators, String Processing, Objects, History Object, Date Object, Using Objects like Arrays, Events.(8 hrs)

		Structure. (2 hrs)	
		327. Operators - Unary Operators, Numeric Operators, Logical Operators. (2 hrs)	
		328. String Processing - Length, Converting to all Upper or Lower Case, Index of, Last Index of, Char At, Substr. (2 hrs)	
		329. Objects -Creating an Object, Adding Functions to an Object, Multiple Instances of an Object type. (4 hrs)	
		330. History Object - Accessing the History Object, Creating Buttons, History. Go Method. (4 hrs)	
		331. Date Object - Creating a Date Object, Setting the Date & Time by a Single String, Separating Variables with Commas, Displaying the Date & Time, Time Zones, Extracting the Date, Extracting the Hrs, Set Date Method, Set Time, Non-Data Object Functions. (4 hrs)	
		332. Using Objects like Arrays -Creating an Array, For Loop, Events -Time Status,	

		Buttons. (4 hrs)	
Professional Skill 18 Hrs; Professional Knowledge 05 Hrs	Designing Webpage using Bootstrap. (Mapped NOS: SSC/N0503, SSC/N0901)	**Introduction to Bootstrap** 333. Practice on Bootstrap components like Alerts, Badge, Breadcrumbs, buttons. (2 hrs) 334. Practicing Bootstrap button group, cards, carousel. (2 hrs) 335. Practicing Collapse and Accordion, custom forms, dropdowns, forms. (2 hrs) 336. Practice on Input group, jumbotron, List group, media object. (2 hrs) 337. Practice on Nav, Navbar, bootstrap modal (plugin). (2 hrs)	**Introduction to Bootstrap** • What is bootstrap, explain how to use bootstrap components – alerts, badge, breadcrumbs, buttons. • How to use button group, cards, carousel. • How to use collapse, accordion, custom forms, dropdowns, forms • Explain Input group, jumbotron, list group, media object. • How to use Nav, Navbar, bootstrap modal (plugin).
Professional Skill 36 Hrs Professional Knowledge 9 Hrs	Install and configure MySQL (Mapped NOS: SSC/N0503, SSC/N0901)	351. Practice Configuration of MySql. (2 hrs) 352. Demonstrate Server Client architecture. (2 hrs) 353. Practice on Table Creation Rules. (2 hrs) 354. Practice on MySQL syntac and creating database design. (4 hrs) 355. Practice on data migration. (4 hrs) 356. Practice on Importing and exporting formats. (4 hrs) 357. Practice on data tunneling. (4 hrs)	• Table Creation Rules • Dropping a Table • The SQL-INSERT Command • Inserting NULL • Viewing data (SQL- SELECT) • Updating Data in a table (The SQL-UPDATE command) • Deleting rows of data (The SQL-DELETE command) • Viewing the structure of an already existing table (SQL-DESCRIBE command): MySQL

		358. Practice on Database repair and archival. (4 hrs) 359. Practice on cross database syntax equivalents. (4 hrs) 360. Preparation of Database Project in any Industry/ organization. (4 hrs)	Scripting. (9 hrs)
Professional Skill 22 Hrs Professional Knowledge 05 Hrs	Create and publish Web pages in Local web server. (Mapped NOS: SSC/N0503, SSC/N0901)	361. Create a Web page using HTML, CSS, VB Script and Java Script. By installing and configuring IIS convert your windows PC into web server. (08hrs) 362. Install any open source web server like Apache / Wamp. Publish / Host website in the local web server. (06hrs) 363. Blog Creation - Create a blog in free blogging service like blogspot.com, www.blogger.com, wordpress etc., add themes. Maintaining Blog.(8hrs)	• Design issues, URL, Home Page, Web Browser, Network Server, IIS, Web Server. • Publishing / hosting website in a network server / web server. Web Auditing, VPN Account, Remote updating. • Define Blog, History, Blog Taxonomy, What to Blog about? How to Blog - Self hosted or free blogging service, Difference between a blog and a website.(05hrs)
Professional Skill 18 Hrs; Professional Knowledge 05 Hrs	Python : Basics I (Mapped NOS: SSC/N0503, SSC/N0901)	364. Practice on the print() function, formatting the output (2 hr.) 365. Practice literals (integers, floats, strings, Boolean values) (2 hr.) 366. Practice operators and	• the print() function, formatting the output • literals (integers, floats,strings, Boolean values) • operators and expressions, arithmetic operators,

		expressions, arithmetic operators, operators and their priorities, operators and their bindings (2 hr.) 367. Practice variables, naming and assigning variables, shortcut operators (2 hr.) 368. Practice comments (2 hr.) 369. Practice output vs. input, inputting data with the input () function (4 hrs.) 370. Converting strings into numbers, simple interactive programs, String operators, converting numbers into strings (4 hrs.)	operators and their priorities, operators and their bindings • variables, naming and assigning variables, shortcut operators • comments • output vs. input, inputting data with the input() function • converting strings into numbers, simple interactive programs, string operators, converting numbers • into strings (5 hrs.)
Professional Skill 36 Hrs Professional Knowledge 12 Hrs	Python : Basics II (Mapped NOS: SSC/N0503, SSC/N0901)	371. Asking questions and receiving answers, relational operators (4 hrs.) 372. Practice conditions and conditional execution, the if statements, the (4 hrs.) 373. Practice if-else statements, the elif clause (4 hrs.) 374. Practice loops (while, for, break, continue) (4 hrs.) 375. Practice computer logic and its operators,	• asking questions and receiving answers, relational operators. • conditions and conditional execution, the if statements. • if-else statements, the elif clause. • loops (while, for, break, continue). • computer logic and its operators, logical values vs. single bits. • bitwise operators, dealing with single bits. • sorting lists (the bubble

		logical values vs. single bits (4 hrs.) 376. Practice bitwise operators, dealing with single bits (4 hrs.) 377. Practice sorting lists (the bubble sort algorithm) (4 hrs.) 378. Practice storing lists, slices, the in and not in operators (4 hrs.) 379. Practice lists in advanced applications (lists within lists, list comprehension, matrices, 3rd dimension) (4 hrs.)	sort algorithm). • storing lists, slices, the in and not in operators. • lists in advanced applications (lists within lists, list comprehension, matrices, 3rd dimension) (12 hrs.)
Professional Skill 16 Hrs; Professional Knowledge 12 Hrs	Basics III (Mapped NOS: SSC/N0503, SSC/N0901)	380. Practice designing and writing functions (4 hrs.) 381. Practice parametrized functions, defining and using function parameters, shadowing, positional arguments, Keyword arguments, mixed arguments, sorting parameter default values (4 hrs.) 382. Practice returning a result from a function (the return statement, returning a value, the None value, returning the non-None value, argument vs. parameter compatibility, a list as	• designing and writing functions. • parametrized functions, defining and using function parameters, shadowing, positional arguments, keyword arguments, mixed arguments, sorting • parameter default values. • returning a result from a function (the return statement, returning a value, the None value, returning the non-None value, argument vs. parameter compatibility, a list as a function's result). • tuples and dictionaries

		a function's result) (4 hrs.) 383. Practice tuples and dictionaries (sequence types and mutability, creating and using tuples, creating and using dictionaries) (4 hrs.)	(sequence types and mutability, creating and using tuples, creating and using dictionaries) (12 hrs.)
Professional Skill 32 Hrs; Professional Knowledge 10 Hrs	Intermediate I (Mapped NOS: SSC/N0503, SSC/N0901)	384. Practice using and importing modules (4 hrs.) 385. Working with standard modules (4 hrs.) 386. Practice functions from the math module, functions from the random (4 hrs.) 387. Practice module, functions from the platform module (4 hrs.) 388. Practice modules and packages (4 hrs.) 389. Handling errors, failures, exceptions (4 hrs.) 390. Practice characters and strings vs. computers, the nature of strings in Python, string methods, strings in action (comparing strings, sorting strings, strings vs. numbers) (4 hrs.) 391. Practice simple programs (4 hrs.)	• using and importing modules. • working with standard modules. • functions from the math module, functions from the random. • module, functions from the platform module. • modules and packages. • errors, failures, exceptions. • characters and strings vs. computers, the nature of strings in Python, string methods, strings in action (comparing strings, sorting strings, strings vs. numbers). • simple programs (10 hrs.)

Professional Skill 36 Hrs; Professional Knowledge 8 Hrs	Intermediate II NOS (SSC/N0503), NOS (SSC/N0901)	392. Practice the basic concepts of object programming, classes (4 hrs.) 393. Working with a stack (4 hrs.) 394. Practice properties (instance variables, class variables, checking an attribute's existence) (4 hrs.)	• the basic concepts of object programming, classes. • a stack. • properties (instance variables, class variables, checking an attribute's existence).
		395. Practice methods (the inner life of classes and objects, reflection and introspection, classes and methods in detail) (4 hrs.) 396. Practice inheritance (finding properties and methods, building a hierarchy of classes, inheritance vs. composition, single inheritance vs. multiple inheritance) (4 hrs.) 397. Practice exceptions – advanced topics, creating and using exceptions (4 hrs.) 398. Practice generators and closures (the yield statement, building generators, list	• methods (the inner life of classes and objects, reflection and introspection, classes and methods in detail). • inheritance (finding properties and methods, building a hierarchy of classes, inheritance vs. composition, single inheritance vs. multiple inheritance). • exceptions – advanced topics, creating and using exceptions. • generators and closures (the yield statement, building generators, list comprehensions – advanced topics, the lambda function). • processing files (accessing files from Python code,

		comprehensions– advanced topics, the lambda function) (4 hrs.)	file names, file streams, file handles, opening the streams, selecting text and binary modes, pre-opened streams, closing streams, diagnosing stream problems).
		399. Processing files (accessing files from Python code, file names, file streams, file handles, opening the streams, selecting text and binary modes, pre-opened streams, closing streams, diagnosing stream problems) (4 hrs.) 400. Working with real files (dealing with text files, working with binary files, stream – reading and writing bytes, copying files (4 hrs.)	
Professional Skill 30 Hrs; Professional Knowledge 21 Hrs	Designing Website using Dreamweaver application and open source software. (Mapped NOS: SSC/NO501) Configure and secure network against threat, vulnerability and risk for information security. (Mapped NOS: SSC/NO503)	Dreamweaver ***Dreamweaver*** 401. Create Web sites with hyperlinks and graphic images.(2 hrs) 402. Use page layout tools such as tables, frames, and layouts.(2 hrs) 403. Utilize Cascading Style Sheets (CSS), HTML, rollovers, behaviors, and forms.(2 hrs) 404. Incorporate Dreamweaver with related software such as Macromedia Fireworks and Flash.(2	**Overview of Information Security** **Overview of Information Security** • Understanding Information Security - Need of the Information security, Basics of IS (CIA), History and evolution of IS, Dimensions of Information Security, Intranet/Internet, Information Security and Cyber Security relationship • Why Care About Security? - Challenges to Information Security, Benefits of Information of Security,

		hrs) 405. Incorporate Dreamweaver with related PHP, VBScript, JavaScript, My SQL etc. (2 hrs) 406. Manage Web sites with directories and different types of computer files. (2 hrs)	Understanding techniques to enforce IS in an organization, Identifying tools to enforce Information Security, Identifying frameworks to enforce Information Security • Overview of Information Security Threats Types of threats - DDoS, Malicious codes, Espionage, etc Identification of Threats - Probing of threats, Scanning of threats, Modus Operandi, Sources of Threats, • External threats, Internal threats, Best Practices or Guidelines used to Identify Threats -Conduct regular education and awareness trainings for employees and third parties, Best Practices or Guidelines used in mitigation of threats, Deploying up to date technology. • Maintaining Systems and Procedures, Educating Users, Conducting regular education and awareness trainings for employees and third parties Collaborate with peers and experts through different forums to understand contemporary issues and solutions. (11 hrs)
		Open Source Tools for Web Designing	**Information Security Vulnerabilities**

| | | 407. Practice on open source tools for web designing and its related work like: Text Editor - Aptana Studio. (2 hrs)
 408. WYSIWYG web page editor – KompoZer, source code editor - Notepad++, plugin for Firefox - Firebug, highly stable and feature rich web development environment - Quanta Plus. (2 hrs)
 409. Cross platform text editor – j Edit, versatile graphics manipulation package-GIMP, cross operating system diagram creation application –Dia. (2 hrs)
 410. Work with graphics application - Krita, vector graphics editor –Inkscape. (2 hrs)
 411. Install & work with ftp application –File Zilla, SFTP client and FTP client – Win SCP. (2 hrs)
 Overview of Information Security
 412. Demonstrate Video show on Information Security. (2 hrs)
 Overview of Security threats | Why do Information Security Vulnerabilities exists - Types of Technical Vulnerabilities, Types of Native Vulnerabilities, Understanding Security Vulnerabilities, Flaws in Software or Protocol Designs, Weaknesses in How Protocols and Software Are Implemented, Weaknesses in System and Network Configurations, Weaknesses in Web or Cloud applications, Weaknesses in Online e-transactions, Browser Security and Role of cookies and pop-ups, Security holes in Browser, Web Applications, OS, and Smart phones, Identifying role of Social sites and media in cyber security and vulnerability Understanding Vulnerability Assessment Tools and Techniques, Techniques to Exploit Vulnerabilities, Techniques to Fix security Vulnerabilities
 Risk Management
 What is Risk?, Relationship between Threat, Vulnerability, and Risk What Is the Value of an Asset? What Is a Threat Source/Agent? Examples of Some Vulnerabilities that are Not Always Obvious What Is a Control?, What Is Risk Likelihood and consequences? What Is Impact?, Control Effectiveness Risk Management, Purpose of |

		413. Demonstrate Video show on Security Threats, Mock test on security threats. (2 hrs) **Information Security Vulnerabilities** 414. Observe using Video show on Security Vulnerabilities. (2 hrs) **Risk Management** 415. Demonstrate Video show on Risk Management Mock test on Risk Management the Vulnerabilities, Identify security vulnerabilities on a regular basis using requisite tools and processes. How to fix the security gaps and holes, Identifying liabilities of service providers, software vendors, Software authors, system owners, and third parties, Best Practices and Guidelines to mitigate. (2 hrs)	Risk Management, Risk Assessment (Phases), Why Is Risk Assessment Difficult?, Types of Risk Assessment, Different Approaches to Risk Analysis, Best Practices and Guidelines in Assessing and Calculating Risks Develop and implement policies and procedures to mitigate risks arising from ICT supply chain and outsourcing. Best Practices and Guidelines in Mitigating Risk.(10 hrs)
Professional Skill – 43 hrs Professional Knowledge 10 Hrs.	Create workbooks with advanced formulas, macros, charts, pivot tables and demonstrate ability to use Power tools. (Mapped NOS: SSC/N0506,	**Data Visualization or analysis using Excel – (43 hrs)** **Create advanced formulas and macros (16 hrs)** 416. Create and modify simple macros (4 hrs) 417. Perform form controls and create simple data	**Advanced Excel Concepts - Theory** • MS excel revision (row, columns, basic formatting, insert menu, print setup etc Look up introduction and functions • Types of references and cell naming

		entry form with macros. (4 hrs)	• Excel Linkage Custom Format and Excel Protection
	SSC/N0501)	418. Look up data by using functions. (4 hrs)	• Tips and tricks
		419. Use advanced date functions. (4 hrs)	• Pivot table and Pivot chart
		Manage advanced charts and tables (8 hrs)	• Conditional formatting
		420. Create and modify advanced charts. (4 hrs)	• Advanced Graphs
		421. Create and modify PivotTables. (4 hrs)	**(10 hrs)**
		Use Power Query and Power BI (19 hrs)	
		422. Create a Power Query, Power Query Function. Invoking the Power Query function and combining queries. Organize the workbook queries (8 hrs)	
		423. Use Power BI for simple data visualizations. (8 hrs)	
		424. Make a dashboard in Excel (3 hrs)	
Professional Skill –8 hrs Professional Knowledge 2 Hrs.	Explain Cloud concepts & its services. (Mapped NOS: SSC/N8301)	**Cloud Computing (8 Hrs)** **Working with Cloud Services (6hrs)** 425. Practice with IaaS using free cloud services. (2 hrs) 426. Practice with PaaS using free cloud services. (2 hrs) 427. Practice with SaaS using free cloud services. (2 hrs)	**Introduction to Cloud Computing(2 hrs)** • Benefits of cloud services, different categories. • Resources available in cloud.

		Web hosting in Cloud (2hrs)	
		428. Host a website in a free cloud. (2 hrs)	
Workshop Calculation Science: 24 Hrs.			
Professional Knowledge 24 Hrs	Demonstrate basic mathematical concept and principles to perform practical operations. Understand and explain basic science in the field of study. (Mapped Nos:NOS: SSC/N9402)	**Workshop Calculation Science -** **Algebra** Algebra - Addition , subtraction, multiplication & division Algebra - Theory of indices, algebraic formula, related problems **Profit and Loss** Profit and loss - Simple problems on profit & loss Profit and loss - Simple and compound interest **Estimation and Costing** Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade Estimation and costing - Problems on estimation and costing	

Industrial Visit /Project Work

Broad Areas:

a) Graphics designing project using Adobe Illustrator and Flash.

b) Create a multimedia project using Adobe after Effects and 3Ds Max.

c) Preparation of Database Project in any Industry /organization using My SQL.

d) Create a Website using Dreamweaver and host it in a local server.

SYLLABUS FOR CORE SKILLS
1.   Employability Skills(Common for all CTS trades) (120Hrs + 60 Hrs)

Learning outcomes, assessment criteria, syllabus and Tool List of Core Skills subjects which is common for a group of trades, provided separately in www.bharatskills.gov.in/ dgt.gov.in

List of Tools & Equipment			
INFORMATION TECHNOLOGY (For batch of 24 candidates)			
S No.	Name of the Tool & Equipment	Specification	Quantity
A. TRAINEES TOOL KIT			
1.	Basic Analogue Electronics Trainer		5 Nos.
2.	SMPS Trainer		4 Nos.
3.	Insulated Screw Driver (different types)		25(24+1) Nos.
4.	Knife double bladed electrician		25 (24+1) Nos.
5.	Insulated handle thin connector screw driver		25 (24+1) Nos.
6.	Line tester		25 (24+1) Nos.
7.	Heavy duty screw driver		25 (24+1) Nos.
8.	Combination plier		25 (24+1) Nos.
9.	Long nose plier		25 (24+1) Nos.
10.	Tweezer		25 (24+1) Nos.
11.	Phillips type screw driver set		25 (24+1) Nos.
12.	Wire stripper		25 (24+1) Nos.
13.	Soldering iron	20/25watts	25 (24+1) Nos.
14.	Desoldering pump		25 (24+1) Nos.
15.	Digital Multimeter-hand held		25 (24+1) Nos.
16.	Temperature controlled soldering/ desoldering station		7 Nos.
17.	SMD soldering/desoldering station		7 Nos.
18.	Wire gauge set		7 Nos.
19.	Permanent magnet bar		12 Nos.

20.	Solenoid with core		12 Nos.
21.	Electric bell		12 Nos.
22.	Battery storage lead acid	6V & 12 V	7 each
23.	Maintenance Free Battery		5 Nos.
24.	Hydrometer		8 Nos.
25.	Battery charger		5 Nos.
26.	Rheostat variable values		8 Nos.
27.	Variable resistance /potentiometer		7 Nos.
28.	DC & AC ammeter (table model for lab experiments)	0-50 mA	7 Nos.
29.	DC & AC ammeter (table model for lab experiments)	0-500 mA	7 Nos.
30.	DC & AC ammeter (table model for lab experiments)	0-1mA	7 Nos.
31.	DC & AC ammeter (table model for lab experiments)	0-1 A	7 Nos.
32.	Analog Multimeter		7 Nos.
33.	LCR meter		7 Nos.
34.	Dual Trace Oscilloscope	20 MHz	5 Nos.
35.	Function Generator		5 Nos.
36.	Pulse Generator		5 Nos.
37.	Bread board for connecting various components i.e. diode, resistances, capacitors etc of different dimensions		48 Nos.
38.	Lug boards for circuit wiring		48 Nos.
39.	Regulated DC Power Supply	0-30 V, 2 Amp	25 (24+1) Nos.
40.	SMPS of PC		12 Nos.
41.	PC Pentium IV or latest configuration (for testing with SMPS)		5 Nos.
42.	UPS		As required
43.	Printer laser (B& W)		1 No.
44.	Transformer	0-12 V, 6-0-6 V, 1 Amp	05 each
45.	Rubber gloves		12 Nos.
46.	PCB, solder flux etc& electronic components		As required
47.	Wires, cables Plug sockets switches		As

	of various types and other consumables		required
48.	Resistors, Capacitors, Inductors, Diodes, Transistors, Thyristors, ICs etc.		As required
49.	Spare Transformers and power devices required for servicing SMPS		As required
50.	Various types of Button Cells		As required
51.	Connecting screwdriver 100 mm		25 (24+1) Nos.
52.	Neon tester.	500 V	25 (24+1) Nos.
53.	Screw driver set	(set of 5)	25 (24+1) Nos.
54.	Insulated combination pliers	150 mm	25 (24+1) Nos.
55.	Insulated side cutting pliers	150 mm	25 (24+1) Nos.
56.	Long nose pliers	150 mm	25 (24+1) Nos.
57.	Soldering iron	25 W. 240 V.	25 (24+1) Nos.
58.	Electrician knife		25 (24+1) Nos.
59.	Tweezers 100mm		25 (24+1) Nos.
60.	Soldering Iron Changeable bits	15W	25 (24+1) Nos.
61.	Crimping tool (pliers)		2 Nos.
62.	Magneto spanner set		2 Nos.
63.	Screw driver	150mm	5 Nos.
64.	Steel rule	150mm	2 Nos.
65.	Scriber straight	150mm	2 Nos.
66.	Soldering Iron	240W	1 Nos.
67.	Allen key set	(set of 9)	2 Nos.
68.	Tubular box spanner	(set of 6nos)	1 No.
69.	Magnifying lenses	75mm	3 Nos.
70.	Continuity tester		7 Nos.
71.	Soldering iron	10W	7 Nos.
72.	Cold chisel	20mm	1 No.
73.	Scissors	200mm	1 No.
74.	Handsaw	450mm	1 No.

B. WORKSHOP FURNITURE			
75.	Instructor table & chair		01 each
76.	Suitable Table Teak Wood fitted with Back Panel complete with different types of meters/switches, AC/DC supplies etc. required for testing of electronic circuits. Insulation mats to cover below the table.		As required
77.	Stool cum chair		20 Nos.
78.	Computer Table, Printer Table, Stools		As required
79.	Green Glass Board		1 No.
80.	Metal Rack		As required
81.	Locker with 10 drawers (standard size) for 20 trainees		2 Nos.
82.	Storage Almirah		As required
83.	Book shelf (Glass panel)		1 No.
84.	Fire fighting equipment	Arrange all proper NOCs and equipments from Municipal/Competent authorities.	
85.	Computer Maintenance Tables of Suitable sizes		As required
86.	Screwdriver Set of	min. 5 bits (Combination of star & minus) + 1 ext. rod	1 Set
87.	Crimping Tool for BNC and RJ-45 connectors		1 No. Each
88.	Punching Tool		1 No.
C. HARDWARE			
89.	Desktop Computer	CPU: 32/64 Bit i3/i5/i7 or latest processor, Speed: 3 GHz or Higher. RAM:-4 GB DDR-III or Higher, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB Keyboard and Monitor (Min. 17 Inch. Licensed Operating System and Antivirus compatible with trade related software.	25 (13 nos. connected in LAN, 12 for Assy & Maint. Practice)
90.	Desktop Computer (Server)	CPU: 32/64 Bit i3/i5/i7 or latest processor, Speed: 3 GHz or Higher. Cache Memory: - Minimum 3 MB or better. RAM:-8 GB DDR- III or Higher.	1 No.

		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. 17 Inch), Standard Ports and connectors. DVD Writer, Speakers And Mic. Licensed Windows Operating System / OEM Pack (Preloaded), Antivirus / Total Security	
91.	Broad Band Internet Connection		1 No.
92.	Dual Trace Oscilloscope	20 MHz	2 Nos.
93.	Digital trainer kit		4 Nos.
94.	Logic Probes/Logic Pulser		4 Nos.
95.	Digital IC tester		4 Nos.
96.	Function Generator		4 Nos.
97.	Pulse Generator		4 Nos.
98.	Digital ICs		As required
99.	DC regulated power supply	5 volts and 12 volts	12 Nos.
100.	Digital Multimeter		12 Nos.
101.	Analog Multimeter		8 Nos.
102.	Digital LCR Meter		3 Nos.
103.	Bread Boards for circuit wiring and testing		20 Nos.
104.	Meggar	500V	2 Nos.
105.	Ammeter	(0-10 mA), (0-50mA), (0-100mA) (table model)	02 each
106.	Voltmeter	(0-1V), (0-10V), (0-30V) (table model)	02 each
107.	Different types and makes o		10 Nos.
108.	External HDD		12 Nos.
109.	CD ROM Drive		12 Nos.
110.	Display card		12 Nos.
111.	Ethernet card		12 Nos.
112.	Computer monitor of different types	15"/17"	4 Nos.
113.	Cabinet with SMPS		12 Nos.
114.	Keyboard and mouse		12 each
115.	Thumb drive	latest specification	12 Nos.
116.	Internal PCI modems of at least		

	four different makes and types		1 each
117.	External modems of at least two different makes and types		1 each
118.	COMBO drives at least four different makes and types		1 each
119.	Dot matrix printer		2 Nos.
120.	Inkjet printer		2 Nos.
121.	Laser printer	B & W	2 Nos.
122.	Scanner		1 No.
123.	UPS		As required
124.	Soldering iron		25 (24+1) Nos.
125.	De-soldering pump/gun		25 (24+1) Nos.
126.	Temperature controlled soldering/ desoldering station		4 Nos.
127.	Computer Tool kit for students		25 (24+1) Nos.
128.	Screw Driver Set - Star/Flat of different sizes		4 each
129.	Long Nose Plier		12 Nos.
130.	Combination Plier		5 Nos.
131.	Tweezer		25 (24+1) Nos.
132.	Wire Stripper		10 Nos.
133.	IC Puller		25 (24+1) Nos.
134.	Vacuum Cleaner		1 No.
135.	Hand blower		1 No.
136.	Hand Brush		As required
137.	Silicon grease		As required
138.	Heat sink agent		As required
139.	RAM	512 MB	As required
140.	CPU different types		As required
141.	HUB/Switch	8/16 port	4 Nos.
142.	Cable broadband connection		1 No.
143.	Network Interface Card		12 Nos.
144.	Modem (Internal & External)		1 each
145.	Router		1 No.
146.	Crimping tools for network cable		4 Nos.
147.	UTP cable		As required

148.	RJ 45 connectors		As required
149.	Outlet points / Wall outlets		As required
150.	Vacuum cleaner		1 No.
151.	Laptop, Notebook		01 each
152.	Intel Mobile Desktop based PC with LCD monitor	CPU: 32/64 Bit i3/i5/i7 or latest processor, Speed: 3 GHz or Higher. RAM:-4 GB DDR-III or Higher, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB Keyboard and Monitor (Min. 17 Inch. Licensed Operating System and Antivirus compatible with trade related software.	01 no
153.	Tablet		04 Nos.
154.	Printers: LaserJet, desk jet, passbook, mfd		01 each
155.	Network Printer		01 No.
156.	online UPS		As required
157.	LAN Cards, Wi-fi LAN Cards		06 Nos. each.
158.	LCD/DLP Projector/Interactive Smart Board		01 No.
159.	Power Meter		02 Nos.
160.	Crimping Tools		06 Nos.
161.	Computer Toolkits		06 Nos.
162.	Computer Spares:		As required
163.	Motherboards (of different make)		4 Nos.
164.	Cabinets		4 Nos.
165.	Processors (of different make)		4 Nos.
166.	Hard Disk different types	500 GB or better	4 Nos.
167.	Optical Drives		4 Nos.
168.	LCD/LED/TFT Monitors		2 Nos.
169.	Pen Drives		4 Nos.
170.	External Hard disk		2 Nos.
171.	External DVD Writer		2 Nos.
172.	Keyboards		4 Nos.
173.	Mouse		4 Nos.
174.	Anti-static pads		4 Nos.
175.	SMPS		4 Nos.
176.	Digital Multimeters		12Nos.
177.	Blu-Ray drive and player		2 Nos.
178.	External Hard Disk		2 Nos.

179.	Digital Camera		2 Nos.
180.	HD Display		2 Nos.
181.	Network storage		2 Nos.
182.	Card Reader		2 Nos.
183.	Game video card		2 Nos.
184.	Web Cam		2 Nos.
185.	Surround sound speakers		2 Nos.
186.	Different types of memory cards		2 Nos. each
187.	Laptop kits		12Nos.
188.	Laptop spares: Cabinet with display, memory, hard disk, battery pack, keyboard membrane, chargers		As required
189.	SMPS Trainer kit		2 Nos.
190.	UPS Trainer kit		As required
191.	Power electronics Trainer kit		2 Nos.
192.	Post error debugging card		4 Nos.
193.	SMPS Tester		4 Nos.
194.	PCI slot Testing tool		4 Nos.
195.	Wireless Network Adapter		6 Nos.
196.	Wireless Access Point		4 Nos.
197.	Router		4 Nos.
198.	Managed Layer 2 Ethernet Switch	8/16/24 port	2 Nos.
199.	Managed Layer 3 Ethernet Switch	8/16/24 port	2 Nos.
200.	Network Training System		2 Nos.
201.	LAN Protocol Simulation and Analyser Software		2 Nos.
202.	Network and Internet security trainer		2 Nos.
203.	LAN cable tester		2 Nos.
204.	Network cables - UTP		As required
205.	Network Cables - coaxial, flat, ribbon		As required
206.	LAN Cards, wi-fi LAN Card		05 Nos. each
207.	Connectors for cables		As required
208.	Power Meter		2 Nos.
209.	Media Convertor		4 each
210.	UTP jack panel	8/16/24 port	2 Nos.
211.	SC Couplers		12Nos.
212.	SC Pigtails		12Nos.
213.	Fluke Meter		2 Nos.

214.	Crimping Tools		6 Nos.
215.	Switch with POE ports		2 Nos.
216.	POE adapters		2 Nos.
217.	Network Camera (Outdoor / Indoor)		2 No. each
218.	Fibre Optics cable with LC connector		As required
219.	LC connector module		As required.
220.	Workstation for multimedia	i700 (i7) PROCESSOR or Quad core or Higher, 8 GB RAM, 1 Terabyte HDD, 22" TFT Monitor101 DVD OR BLU-RAY WRITER, KEYBORD/INTERNET, USB Optical Mouse, USB Keyboard with latest license of OS	2 Nos.
221.	Colour Laser Printer		1 No.
222.	Optical Scanner (Desk Top Type)		1 No.
223.	Web Cam (Digital Camera)		1 No.
224.	DVD or Blu-ray writer		2 Nos.
225.	UPS for NODES and server		As required.
226.	Room temperature thermometer		1 No.
227.	Digital Still SLR Camera		1 No.
228.	Digital Video Camera		1 No.
D. SOFTWARE (Licensed Version)			
229.	Microsoft Window	latest version	01 + 10 licenses
230.	MS Office	latest version	01 + 10 licenses
231.	Anti virus	latest version	11 Nos.
232.	Network troubleshooting utilities	latest version	4 Nos.
233.	Linux Server	latest version	1 No.
234.	Adobe PageMaker	latest version	11 licenses
235.	Corel Draw	latest version	11 licenses
236.	Adobe Photoshop	latest version	11 licenses
237.	Adobe Premiere	latest version	11 licenses
238.	Sound Forge	latest version	11 licenses
239.	3D STUDIO Max	latest version	11 licenses
240.	Visual Basic	latest version	11 licenses
241.	Network Management Software	latest version	01 No.
242.	Data recovery software	latest version	2 Nos.
243.	LINUX Server Operating System (Samba / Su-se)	latest version	01 No.

244.	Open source Pc Utility / Tweak Software	latest version	As available
245.	Adobe Photoshop (academic edition with 10 user license)	latest version	1 No.
246.	3D STUDIO Max (academic edition with 10 user license)	latest version	1 No.
247.	Adobe Flash (academic edition with 10 user license)	latest version	1 No.
248.	Adobe Dreamweaver (academic edition with 10 user license)	latest version	1 No.
249.	Adobe premier Suite (academic edition with 10 user license)	latest version	1 No.
250.	Python	latest version	1 No.
NOTE: - All the tools and equipment are to be procured as per BIS specification.			

ABBREVIATIONS:

CTS	Craftsmen Training Scheme
ATS	Apprenticeship Training Scheme
CITS	Craft Instructor Training Scheme
DGT	Directorate General of Training
MSDE	Ministry of Skill Development and Entrepreneurship
NTC	National Trade Certificate
NAC	National Apprenticeship Certificate
NCIC	National Craft Instructor Certificate
LD	Locomotor Disability
CP	Cerebral Palsy
MD	Multiple Disabilities
LV	Low Vision
HH	Hard of Hearing
ID	Intellectual Disabilities
LC	Leprosy Cured
SLD	Specific Learning Disabilities
DW	Dwarfism
MI	Mental Illness
AA	Acid Attack
PwD	Person with disabilities