



QUALIFICATION FILE

Assistant Technician-IT Installation

☐ Short Term Training (STT) ☒ Long Term Training (LTT) ☐ Apprenticeship
☐ Upskilling ☐ Dual/Flexi Qualification ☐ For ToT ☐ For ToA

☒ General ☐ Multi-skill (MS) ☐ Cross Sectoral (CS) ☐ Future Skills ☐ OEM

NCrF/NSQF Level: 3.5

Submitted By:

NETTUR TECHNICAL TRAINING FOUNDATION
23/24, II PHASE, PEENYA INDUSTRIAL AREA,
BENGALURU – 560058, KARNATAKA

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Section 1: Basic Details

1.	Qualification Name	Assistant Technician IT Installation	
2.	Sector/s	IT- ITeS	
3.	Type of Qualification: ☒ New ☐ Revised ☐ Has Electives/Options ☐ OEM	NQR Code & version of existing/previous qualification: (change to previous, once approved)	Qualification Name of existing/previous version: Assistant Technician IT Installation
4.	a. OEM Name b. Qualification Name (Wherever applicable)	NA	
5.	National Qualification Register (NQR) Code & Version (Will be issued after NSQC approval)	QG-3.5-IT-01983-2024-V1-NTTF	6. NCrf/NSQF Level: 3.5
7.	Award (Certificate/Diploma/Advance Diploma/ Any Other (Wherever applicable specify multiple entry/exits also & provide details in annexure)	Certificate	
8.	Brief Description of the Qualification	Manage and install different operating system - Windows and Linux. Create HTML documents with various tags. Development of operating System and new programming languages. Identify different Networks and how devices access local and remote network resources. Design and build a simple database system. The subjects covered in this Programme are – English, Mathematics, Applied Science, Algorithm Problem Solving Technique and Flow Charts, Basics of Electrical and Electronics, Basics of Electrical and Electronics Lab, Basics of Computer LAB, PC Hardware LAB, HTML and CSS LAB, Employability Skill, Computer Networks, C Programming, Database Management System, Database for data centre, Unix, Applications of Analog and Digital Circuits, Database Lab, C Programming Lab, Unix Lab, Computer Networks Lab, OJT	

9.	Eligibility Criteria for Entry for Student/Trainee/Learner/Employee	a. Entry Qualification & Relevant Experience: <table border="1" data-bbox="919 256 2011 609"> <thead> <tr> <th data-bbox="919 256 993 354">S. No.</th> <th data-bbox="993 256 1759 354">Academic/Skill Qualification (With Specialization - if applicable)</th> <th data-bbox="1759 256 2011 354">Required Experience (with Specialization)</th> </tr> </thead> <tbody> <tr> <td data-bbox="919 354 993 609">1</td> <td data-bbox="993 354 1759 609"> Minimum 10th Pass OR 8th pass + 2 years ITI in following trades: Computer operator & programming assistant, Desktop Publishing Operator, Computer maintainance, Multimedia & animation OR 8th pass + Level 3.0 in relevant trade </td> <td data-bbox="1759 354 2011 609">NA</td> </tr> </tbody> </table>						S. No.	Academic/Skill Qualification (With Specialization - if applicable)	Required Experience (with Specialization)	1	Minimum 10 th Pass OR 8 th pass + 2 years ITI in following trades: Computer operator & programming assistant, Desktop Publishing Operator, Computer maintainance, Multimedia & animation OR 8 th pass + Level 3.0 in relevant trade	NA												
S. No.	Academic/Skill Qualification (With Specialization - if applicable)	Required Experience (with Specialization)																							
1	Minimum 10 th Pass OR 8 th pass + 2 years ITI in following trades: Computer operator & programming assistant, Desktop Publishing Operator, Computer maintainance, Multimedia & animation OR 8 th pass + Level 3.0 in relevant trade	NA																							
10.	Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))	Total Credits – 40			11. Common Cost Norm Category (I/II/III) (Wherever applicable): NA																				
12.	Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)	NA																							
13.	Training Duration by Modes of Training Delivery (Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)	☐ Offline ☐ Online ☒ Blended <table border="1" data-bbox="924 836 1984 1079"> <thead> <tr> <th data-bbox="924 836 1186 966">Training Delivery Modes</th> <th data-bbox="1186 836 1333 966">Theory (Hours)</th> <th data-bbox="1333 836 1480 966">Practical (Hours)</th> <th data-bbox="1480 836 1638 966">OJT / Project Mandatory (Hours)</th> <th data-bbox="1638 836 1858 966">OJT Recommended (Hours)</th> <th data-bbox="1858 836 1984 966">Total (Hours)</th> </tr> </thead> <tbody> <tr> <td data-bbox="924 966 1186 1031">Classroom (offline)</td> <td data-bbox="1186 966 1333 1031">500</td> <td data-bbox="1333 966 1480 1031">490</td> <td data-bbox="1480 966 1638 1031">90</td> <td data-bbox="1638 966 1858 1031">-</td> <td data-bbox="1858 966 1984 1031">1080</td> </tr> <tr> <td data-bbox="924 1031 1186 1079">Online</td> <td data-bbox="1186 1031 1333 1079">120</td> <td data-bbox="1333 1031 1480 1079">-</td> <td data-bbox="1480 1031 1638 1079">-</td> <td data-bbox="1638 1031 1858 1079">-</td> <td data-bbox="1858 1031 1984 1079">120</td> </tr> </tbody> </table> (Refer Blended Learning Annexure for details)						Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT / Project Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)	Classroom (offline)	500	490	90	-	1080	Online	120	-	-	-	120
Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT / Project Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)																				
Classroom (offline)	500	490	90	-	1080																				
Online	120	-	-	-	120																				
14.	Aligned to NCO/ISCO Code/s (if no code is available mention the same)	NCO Code – 2015/3513.9900, 2015/7422.9900																							
15.	Progression path after attaining the qualification (Please show Professional and Academic progression)	Professional Progression: After Completion of 3 years of Full Time Programme and after 3 years of Industry Experience the Job Holder can work as Software Engineer, Desktop Support Engineer, Test Engineer,																							

		Academic Progression: Advance Certificate: Technician-IT Support(level 4.0), Diploma in Computer Engg IT Infrastructure, Post-Diploma, B VoC and B.Tech Degree Course in Relevant Areas.	
16.	Other Indian languages in which the Qualification & Model Curriculum are being submitted	Hindi	
17.	Is similar Qualification(s) available on NQR-if yes, justification for this qualification	☐ Yes ☒ No URLs of similar Qualifications: NA	
18.	Is the Job Role Amenable to Persons with Disability	☐ Yes ☒ No If "Yes", specify applicable type of Disability:	
19.	How Participation of Women will be Encouraged	Yes - Admission open to women candidates (30% seats reserved for women candidates)	
20.	Are Greening/ Environment Sustainability Aspects Covered (<i>Specify the NOS/Module which covers it</i>)	☐ Yes ☒ No	
21.	Is Qualification Suitable to be Offered in Schools/Colleges	Schools ☐ Yes ☒ No Colleges ☐ Yes ☒ No	
22.	Name and Contact Details of Submitting / Awarding Body SPOC (<i>In case of CS or MS, provide details of both Lead AB & Supporting ABs</i>)	Name: Mr. R Rajagopalan Position in the Organization: Joint Managing Director Email: rg@nttf.co.in Tel number: 080 – 28390215 Contact No.: 9844013448 Website: nttftrg.com	
23.	Final Approval Date by NSQC: 31 Jan 2024	24. Validity Duration: 3 years	25. Next Review Date: 01 Feb 2027

Section 2: Module Summary

NOS/s of Qualifications (In exceptional cases these could be described as components)

Mandatory Module / NOS/s: Specify the training duration and assessment criteria at NOS/ Module level. For further details refer curriculum document.

Th.-Theory **Pr.-Practical** **OJT-On the Job** **Man.-Mandatory Training** **Rec.-Recommended** **Proj.-Project**

Sl. No.	NOS/Module Name	NOS/ Module Code & Version	Core/ Non-Core	NCr F/ NS QF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) (if applicable)
Semester – 1																
1	Communication – English	CP08101T, V1.0	Core	3.5	20	60	-	-	-	60	62.5	-	-	37.5	100	
2	Applied Mathematics-I	CP08102T, V1.0	Core	3.5		60	-	-	-	60	100	-	-	-	100	
3	Applied Science	CP08103T, V1.0	Core	3.5		40	-	-	-	40	100	-	-	-	100	
4	Algorithm, Problem Solving Technique and Flow Charts	CP08104T, V1.0	Core	3.5		80	-	-	-	80	100	-	-	-	100	
5	Basics of Electrical and Electronics	CP08105T, V1.0	Core	3.5		40	-	-	-	40	100	-	-	-	100	
6	Basics of Electrical and Electronics Lab	CP08106P, V1.0	Core	3.5		-	70	-	-	70	-	80	-	20	100	
7	Basics of Computer and Applications installation Lab	CP08107P, V1.0	Core	3.5		-	60	-	-	60	-	80	-	20	100	
8	PC Hardware Assembly, Diagnosis and OS configuraion Lab	CP08108P, V1.0	Core	3.5		-	80	-	-	80	-	80	-	20	100	
9	HTML and CSS Lab	CP08109P, V1.0	Core	3.5		-	80	-	-	80	-	80	-	20	100	
10	Employability Skill	CP08110T, V1.0	Core	3.5		30	-	-	-	30	75	-	-	25	100	
Duration (in Hours)/ Total Marks					20	310	290	-	-	600	537.5	320	-	142.5	1000	
Semester – 2																
11	Setting and Configuring Computer Networks-I	CP08201T, V1.0	Core	3.5	20	60	-	-	-	60	100	-	-	-	100	
12	Applied Mathematics-II	CP08203T, V1.0	Core	3.5		40	-	-	-	40	100	-	-	-	100	
13	C Programming	CP08204T, V1.0	Core	3.5		60	-	-	-	60	100	-	-	-	100	
14	Database Management System, Data base design for data center and ticketing management system	CP08205T, V1.0	Core	3.5		40	-	-	-	40	100	-	-	-	100	
15	Applications of Analog and Digital Circuits	CP08206T, V1.0	Core	3.5		40	-	-	-	40	100	-	-	-	100	
16	Unix-Configuraion and shell programming	CP08207T, V1.0	Core	3.5		40	-	-	-	40	100	-	-	-	100	
17	Database Lab	CP08209P, V1.0	Core	3.5		-	60	-	-	60	-	80	-	20	100	
18	C Programming Lab	CP08210P, V1.0	Core	3.5		-	60	-	-	60	-	80	-	20	100	

19	Unix Configuraion and shell programming Lab	CP08211P, V1.0	Core	3.5	-	40	-	-	40	-	80	-	20	100	
20	Setting and Configuring Computer Networks-I Lab	CP08212P, V1.0	Core	3.5	-	40	-	-	40	-	80	-	20	100	
21	Employability Skill	CP08213T, V1.0	Core	3.5	30	-	-	-	30	75	-	-	25	100	
22	OJT	CP08214P, V1.0	Core	3.5	-	-	90	-	90	-	75	-	25	100	
Duration (in Hours)/ Total Marks					2	310	200	90	-	600	675	395	-	130	1200
Total					40	620	490	90	-	1200	1212.5	715	-	272.5	2200

Elective Modules/ NOS/s: NA

Sl. No.	NOS/Module Name	NOS/Module Code & Version (if applicable)	Core/ Non-Core	NCrF/ NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) (if applicable)
1.																
2.																
Duration (in Hours) / Total Marks																

Optional Modules/ NOS/s: NA

Sl. No.	NOS/Module Name	NOS/Module Code & Version (if applicable)	Core/ Non-Core	NCrF/ NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) (if applicable)
1.																
2.																
Duration (in Hours) / Total Marks																

Assessment - Minimum Qualifying Percentage

Please specify **any one** of the following:**Minimum Pass Percentage:**

(Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)

To pass the Qualification, the trainee should score Minimum 40% in each Theory module, 50% in each Practical module and 60% in Project work / Internship and viva-voce.

Section 3: Training Related

1.	Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	Diploma in relevant field with 3 years as trainer or industry experience B. Tech or BE with 2 years of trainer or industry experience
2.	Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	Diploma in relevant field with 5 years as trainer or industry experience B. Tech or BE with 5 years of trainer + industry experience
3.	Tools and Equipment Required for Training	☒ Yes ☐ No (If "Yes", details to be provided in Annexure)
4.	In Case of Revised Qualification, Details of Any Upskilling Required for Trainer	NA

Section 4: Assessment Related

1.	Assessor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Diploma with 4 years as trainer or industry experience B. Tech or BE with 3 years as trainer or industry experience
2.	Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Diploma or B. Tech or BE with 2 years of experience
3.	Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Diploma with 4 years as trainer or industry experience B. Tech or BE with 3 years as trainer or industry experience
4.	Assessment Mode (Specify the assessment mode)	Blended theory (online and offline in the centre) and practical
5.	Tools and Equipment Required for Assessment	Same as for training ☒ Yes ☐ No (details to be provided in Annexure-if it is different for Assessment)

Section 5: Evidence of the need for the Qualification

Provide Annexure/Supporting documents name.

1.	Research Reports: The following reports establish the Skilled Resource requirement for Computer Hardware and IT areas. 1. MSDE/ NSDC Report on Human Resources and Skill Requirements in the IT and ITes Sector (2013- 2017, 2017 – 2022) 2. Annual Report 2021-22 of Ministry of Electronics and Information Technology The above Reports predict Higher growth in IT Sector which call for large number of Hardware and Networking Technicians.
2.	Latest Market Research Reports or any other source (not older than 2 years) (Yes/ No): Report by India Brand EQUITY Foundation on Indian IT and BPM Industry-2022 The Report Forecast a higher growth in demand for Skilled Man power with Computer and IT skills.
3.	Government /Industry initiatives/ requirement (Yes/No): YES Study on Job Role of the Future by Indian Institute of Skills. National policy for skill Development and Entrepreneurship 2015 by MSDE has predicted skilled manpower requirement across key sectors by 2022 and has framed many initiatives.
4.	Number of Industry validation provided: 38
5.	Estimated nos. of persons to be trained and employed: 500/ year
6.	Evidence of Concurrence/Consultation with Line Ministry/State Departments: (Letter to be sent to the concerned ministry and copy attached) If “No”, why: Under Process

Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name.

1.	Annexure 1: NCrF/NSQF level justification based on NCrF level/NSQF descriptors (Mandatory)	Yes
2.	Annexure 2: List of tools and equipment relevant for qualification (Mandatory, except in case of online course)	Yes
3.	Annexure 3: Industry Validations Summary	Yes
4.	Annexure 4: Training & Employment Details	Yes
5.	Annexure 5: Blended Learning (Mandatory, in case selected Mode of delivery is “Blended Learning”)	Yes
6.	Annexure 6: Detailed Assessment Criteria (Mandatory)	Yes
7.	Annexure 7: Assessment Strategy (Mandatory)	Yes
8.	Annexure 13: Multiple Entry-Exit Details (Mandatory, in case qualification has multiple Entry-Exit)	No
9.	Annexure: Acronym and Glossary (Optional)	Yes
10.	Supporting Document: Model Curriculum (Mandatory – Public view)	Digital content available to trainees through Edusquares ERP (Will be made public after the qualification is approved) (Annexure 8)
11.	Supporting Document: Career Progression (Mandatory - Public view)	Yes (Annexure 9)
12.	Supporting Document: Occupational Map (Mandatory)	Yes (Annexure 11)
13.	Supporting Document: Assessment SOP (Mandatory)	Yes (Annexure 10)
14.	Supporting Document: Key Learning Outcome	Yes (Annexure 12)
15.	Any other document you wish to submit:	No

Annexure 1: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
Professional Theoretical Knowledge/Process	Explain fundamentals of mathematics. Understand and appraise the Applied Science Concepts. Explain force, motion, momentum and conservation of Energy. Explain algorithm and flowcharts. Knowledge on Electronics, Electrical and Digital Circuits. Examine router hardware and How switching operates in a small to medium-sized business network. Explain data types, operators and expressions, Decision making and looping in writing 'C' Program. Discuss database concepts, structures and query language. Basic concepts of UNIX operating system. Perform File permissions.	Perform determinants, matrices, complex numbers, Trigonometry, differential calculus and statistics. Able to perform basic applied science skills. Analyzing and Applying Force, Motion, and Energy Principles. Develop algorithms and flowcharts. Analyze the basic electrical Circuits to understand the Electricals laws like Ohms law, Kirchhoff's law & its Behaviour in circuits. Implement basic network connectivity between devices. Develop software applications using C Program. Create, Modify, Rename, And Delete Databases. Extract the UNIX system information. Configure Unix/Linux Systems.	3.5

Professional and Technical Skills/ Expertise/ Professional Knowledge	Explain the basic electrical and diode Application circuits. Evidence Explain different number system representation and conversion from one to another. Ability to identify parts of computer, Dos commands and Microsoft products. Install and Troubleshoot PC Hardware and OS. Create and design various webpages. Create C programs for simple Engineering Applications. Demonstrate initial settings on a network device and Implement basic network connectivity between devices. Perform various operators in Database.	Familiarize the basic electrical Circuits. Study of Simple IC and working to demonstrate the Digital circuits. Identify Input and Output Devices and perform DOS Commands. Manage and install different operating system- Windows and Linux. Create HTML documents with various tags. Development of operating System and new programming languages. Identify different Networks and how devices access local and remote network resources. Design and build a simple database system.	3.5
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	Able to work effectively in a team Able to Communicate with Peers Describe good behaviour and work ethics. Explain constitutional values. Able to work as a Professional	Adopt the changes and work in a team Good verbal and written communication with Peers, Supervisors Demonstrate responsible behaviour, good work culture valued citizens of the country. Perform day to day activities effectively, report day to day happenings from time to time and write official / personal communication to the superiors. Maintain Professionalism at work place	3.5

Broad Learning Outcomes/Core Skill	Fundamental Computer Skills. Programming and Algorithmic Thinking. Web Development. Database Management.	Demonstrate proficiency in using basic computer hardware, software, and operating systems. Write and understand simple programs, algorithms, and code logic. Design and build websites using HTML, CSS, and JavaScript. Create and manage databases, as well as perform data queries and manipulation.	3.5
Responsibility	Aware of Personal/Industrial goals. Adapt to changes in the work area. Able to assemble, install and repair electronic components and systems.	Work with caution and with due diligence to safety. Able to Carry out design, develop, test, produce and operate electrical and electronic equipment and systems. Can work with minimum supervision.	3.5

Annexure 2: Tools and Equipment (Lab Set-Up)**List of Tools and Equipment: Batch Size: 30****ELECTRONICS LAB**

Sl. No.	Tool / Equipment Name	Specification	Quantity
1	Digital Oscilloscope	No of Channels - 2, Bandwidth: DC - 50 MHz	8
2	Variable Regulated Power supply	0-30V/1A	8
3	Function Generator	Frequency Range: 0.3 Hz to 3 MHz, Functions: Sine, Square, Triangle, DC Sweep	3
4	Digital Trainer Kit	Fixed +5V/ 1A, 16pin ZIF Socket, Logical switch with I/O Indicators, 4mm patch cords with short circuit & Overload Protection.	8
5	Electronics Work Bench	(L x B x H)1200mm x 1180mm x 800mm, saddle mount -1200mm x 520mm x 350mm	3

COMPUTER HARDWARE MAINTANENCE AND NETWORKING LAB

Sl. No.	Tool / Equipment Name	Specification	Quantity
1	Crimping Tool	D-Link Modular Plug Crimper	3
2	Screwdriver Set	-	3
3	Star Screwdriver set	-	3
4	Cutting Plier	-	3
5	LAN Tester	-	4
6	Wire Stripper	-	4
7	Soldering Iron with Kit	25W	3
8	Digital Multimeter	3.5DMM	3
9	Network Switch	8 PORTS	2
10	Post Cards	Motherboard debug Card.	4
11	ESD Gloves	-	4
12	Dot Matrix Printer	Non-working for demo	2
13	Ink Jet Printer	Non-working for demo	2
14	Laser Jet Printer	non-working for demo	2

15	Punching Tool	-	2
16	Motherboards		3
17	ATX Cabinet	IATX Cabinet	3
18	RAM all Models	2*DDR1(4 GB),2*DDR2 (4 GB),2*DDR3(4GB), 4*DDR4(4 GB)	10
19	ATX SMPS	450 W	3
20	Laptop Motherboard with Adapter	Old Non-working Laptop	4
21	Motherboard debug Tool		2

SOFTWARE REQUIREMENT

Sl. No.	Tool / Equipment Name	Specification
1	Office 365	Licensed version in Laptops
2	SQL Server Management Studio 2019	Developer Version
3	Microsoft SQL Version Studio 18	Open Source
4	Typing Master	Open Source
5	Ubuntu OS	Open Source
6	Turbo C++ 3.7.8.9	Open Source
7	TINKERCAD	Open Source – Online
8	CISCO Packet Tracer 8.1	Academic Support Centre
9	All Browser	Open Source

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. White board
2. Projector with screen / Smart TV
3. Laptop / computer

Note:

The Tools, Equipment, Software and other lab facilities are shared between Qualifications and batches.

Annexure 3: Industry Validations Summary

Provide the summary information of all the industry validations in table. This is not required for OEM qualifications.

Sl. No.	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile (if available)
1	Anvation Lab	Mr.Alok Pugalia		Bangalore	8297188867	alok.pugalia@anvationlabs.com	
2	Go Digit	Mrs.Deepthy		Bangalore	7219166216	deepthy.m@godigit.com	
3	Delopt	Mrs.Seema		Bangalore	9845094553	hr@delopt.co.in	
4	Lucid Imaging	Mrs.Vidhya		Bangalore	7619211007	vidhya@lucidimaging.in	
5	Applied Materials	Mr.John		Bangalore	8066283840. 7338636327	John_Kumar@contractor.amat.com, Vidya_Bheemaiah@amat.com	
6	ThoughtWorks	Mr.Ganesh		Bangalore	8754491374	stepchennai@thoughtworks.co m	
7	Samsung	Mr.Sumit		Bangalore	8826363651	sumit.premi@samsung.com	
8	By Tech India	Mr.Murali		Bangalore	7760965733	hradmin.blr@bytechindia.com	
9	Unibiz	Mrs.Prachi		Bangalore	080-40431501	Prachih@in.unibiz.com	
10	Aliment Software Technologies	Mrs.Jayanthi		Bangalore	9900179294	jayanthi@alimentglobal.com	
11	Everest IMS	Mrs.Soumya		Bangalore	9663375546	hr@everest-ims.com	
12	Quali Test	Mr.Mathew		Bangalore	9620774897	mathai.mathew@qualitestgroup.com	
13	Happiest Mind	Mr.Balaji		Bangalore	8061960731	Not available	
14	UncannyVision	Mr.Kiran		Bangalore	9743607299	kiran.sonar@uncannyvision.com	
15	Toshiba	Mr.Sermaichamy		Bangalore	8884575263	seemai@wimerasys.com	
16	Smart Ice	Mr.Ravikumar		Bangalore	8867106900	Not available	
17	Diya Systems	Mr.Srinivas bhat		Bangalore	7022627311	shrivas.b@glowtouch.com	
18	Hgs	Mr.Thomotharan		Bangalore	9743501143	Not available	
19	Tata Elxsi Ltd	Ms.Chaitra.M		Bangalore	8022979687	chaithram @tataelxsi.co.in	
20	Pari Automation	Mr.Dheraj		Bangalore	8380097138	dhirajc@parirobotics.com	

21	NI	Mr.Harsha Thammaiah		Bangalore	9591997400	niranjan.bv@ni.com	
22	L&T	Mr.SamirMahato		Bangalore	9740800907	Samir.Mahato@LntTechservices.com	
23	Shiksha Infotech	Mrs.Jyothi		Bangalore	9976048657	jyoti.katare@shikshainfotech.com	
24	By Tech India	Mr.Murali		Bangalore	7760965733	hadmin.blr@bytechindia.com	
25	CovalenceSystems	Mr. Ravi V		Bangalore	NIL	ravi.veeraswamy@covalensedigital.com	
26	Nxt-Gen	Mr.Suveen		Bangalore	9886302009	suveen@nxtgen.com	
27	Frontier	Mrs.Renee		Bangalore	9844244299	renee@frontier.in	
28	Tarems Technology	Mr.Prashanth Murunnikara/ Mr. Subhbrata Maity		Bangalore	9886488014/ 9740793456	prasanth.murunnikara@tarams.com	
29	Computer Sciences Corporation India Pvt Ltd	Mr.ArhamHusain		Bangalore	9980076150/ 8032485136	ahusain2 @csc.com	
30	Melange Systems Private Limited,	Mr.Sairam Kummara/ Mr.vijay		Bangalore		vijay@melangesystems.com/ sairam.kummara@melangesystems.com	
31	Skypro Technologies	Mr. Hussain		Bangalore	080-22979687 / 9886886884	athiya@skyprotechnologies.com/ hussain@skyprotechnologies.com	
32	Kites Software India Pvt.Ltd	Mr.Sreejith		Bangalore	9916320857/ 8892963692/ 9731969978	sreejith@kitesnet.com	
33	Terance System India Pvt.Ltd	Mr.Nandhan		Bangalore	09846700726 0484-2345686	nandan.ajeton@gmail.com	
34	Future Focus Infotech	Mr.SidharthaAhiuwalia		Bangalore	9845029428	sidhartha @focusite.com	
35	Virtual Technologies	Mr.Vishvanadhan		Bangalore	9845481482	virtualtech@vsnl.net	
36	Baryons Solutions	Ms.Shweta		Bangalore	9448352924, 080-25563591	shweta@baryonssoftsolutions.com	
37	Acropetals Technology	Mrs.Vandana		Bangalore	2536 6478 / 2554 2904	vandana.rao@acropetal.com	
38	Collabera Technologies	Mrs.Devaki S		Bangalore	8939182320, +91-449018400	devaki.selvarangam@collabera.com	

Annexure 4: Training & Employment Details**Training and Employment Projections:** Data to be provided year-wise for next 3 years

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
2023	400	More than 5000	200	More than 2000	-	-
2024	500	More than 5000	250	More than 2000	-	-
2025	600	More than 5000	300	More than 2000	-	-

Training, Assessment, Certification, and Placement Data for previous versions of qualifications: (Previous years)

Qualification Version	Year	Total Candidates				Women				People with Disability			
		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed
	2017- 2020	209	180	179	179	79	74	74	74	NIL			
	2018 - 2021	153	142	141	141	41	40	40	40				
	2019 - 2022	162	159	150	150	42	42	38	38				

Applicable for revised qualifications only, data to be provided year-wise for past 3 years.

List Schemes in which the previous version of Qualification was implemented:1st year of Three years Full Time Programme**Content availability for previous versions of qualifications:**
☐ Participant Handbook
 ☐ Facilitator Guide
 ☒ Digital Content
 ☐ Qualification Handbook
 ☒ Any Other: In NTTF LMS and Edusquares ERP

Languages in which Content is available: English.

Annexure 5: Blended Learning**Blended Learning Estimated Ratio & Recommended Tools: NOT APPLICABLE****Refer NCVET “Guidelines for Blended Learning for Vocational Education, Training & Skilling” available on:**<https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf>

Sl. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline : Online Ratio
1	Theory/ Lectures - Imparting theoretical and conceptual knowledge	Physical classroom, LMS, Web based	80:20
2	Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	Physical classroom, Workshops, Mock sessions, Case study, Role play, Group Discussions, LMS	85:15
3	Showing Practical Demonstrations to the learners	Workshop / Lab, Video recording, Simulators	70:30
4	Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	Workshop machines, Lab equipment, Simulators, Mini projects, Project	70:30
5	Tutorials/ Assignments/ Drill/ Practice	Class assignments, LMS assignments, Simulators	60:40
6	Proctored Monitoring/ Assessment/ Evaluation/ Examinations	Physical classroom, Labs, Workshop, Quiz tests, Project	75:25
7	On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	Industry	100:00

Annexure 6: Detailed Assessment Criteria

Detailed assessment criteria for each NOS/Module are as follows:

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Semester -1					
Communication - English	Parts of Speech-Form meaningful Sentences	12.5	-	-	-
	Verb Tenses-Use of right verb and tenses	10	-	-	5
	Language and Skill Development Exercises – Exercises on writing sentences	10	-	-	-
	Writing Skills-Writing letters and reports	15	-	-	-
	Sentences-Forming right sentences	15	-	-	10
	Language Skill Development-Oral communication skills	-	-	-	22.5
	Total Marks	100			
Applied Mathematics - I	Fundamentals of Mathematics-Solving arithmetical problems	20	-	-	-
	Matrices and Determinants-Solving Problems	20	-	-	-
	Complex Numbers -Understanding Complex Numbers	10	-	-	-
	Trigonometry-Application in Engineering	20	-	-	-
	Differential Calculus-Fundamentals	15	-	-	-
	Statistics-Application in Engineering	15	-	-	-
	Total Marks	100			
Applied Science	Physical World-Physical quantities & units	10	-	-	-
	Force, Motion and Energy –Definition & units	10	-	-	-
	Composition and Resolution of Forces-Resolving Forces	8	-	-	-
	Friction-Definition, Application in Engineering	8	-	-	-
	Equilibrium of Forces-Determining equilibrium of forces	8	-	-	-
	Centre of Gravity and Moment of Inertia-Determining for different objects	12	-	-	-
	Properties of Solids and Fluids- Properties of Solids and Fluids-	12	-	-	-
	Heat-Definition, Unit	12	-	-	-
	Industrial Chemistry-Introduction to pollution, Corrosion	12	-	-	-
	Renewable Energy-Introduction to wind and solar energy	8	-	-	-
	Total Marks	100			
Algorithm, Problem solving Technique and Flow Charts	Introduction to Algorithm –Develop Algorithms and Flowcharts	10	-	-	-
	Method for Developing an Algorithm –Methods and Application	40	-	-	-
	Pseudo code (or Program Design Language)- Types and Application	10	-	-	-
	Problem solving Techniques	40	-	-	-
	Total Marks	100			
Basics of Electrical and Electronics	Atomic Structure and Introduction to electron current-Basic electron theory, ohms law, Concepts of ideal voltage and current source	10	-	-	-
	Resistors and Kirchhoff's law-Applications of KVL and KCL, Resistors Series and Parallel	10	-	-	-

	Capacitors- Principles of working, capacitors series and parallel	10	-	-	-
	Fundamentals of AC- Characteristics of different Waveforms, Instantaneous value	10	-	-	-
	Basic Semiconductor and P.N. junction Theory-Conduction in semiconductor Junction characteristics and application	10	-	-	-
	Semiconductor Diodes, Zener Diodes and LED-. - Application and characteristics	15	-	-	-
	Number Systems –Conversion of different types of number systems and arithmetic	15	-	-	-
	Digital Fundamentals-Types and Applications of Logical gates	20	-	-	-
Total Marks		100			
Employability Skill	Employability skills-Importance and applicability	20	-	-	5
	Behavior skills-Positive Attitude and Good Team work	20	-	-	5
	Constitutional Values and Citizenship, Awareness of our constitutional values	35	-	-	15
	Total Marks	100			
Basics of Electrical and Electronics Lab	Familiarization of Toolkit, CRO, Function Generator, Digital Millimeter	-	10	-	5
	Color coding of resistor	-	5	-	-
	Verification of Ohm 's law, KVL and KCL	-	10	-	5
	Rectifiers - Half Wave rectifier and center-tapped Full Wave rectifier	-	10	-	-
	Familiarization of Logic Gates	-	10	-	-
	Verification of Half adder and full adder circuit	-	10	-	5
	Characteristics of diode and Zener diode	-	10	-	-
	Simplification of given Boolean equation using Karnaugh Map	-	15	-	5
Total Marks		100			
Basics of Computer and Applications installation Lab	Components of Computer-Input and Output devices	-	10	-	5
	DOS Commands	-	10	-	-
	Typing Tutorial	-	15	-	5
	Creating Document, Applications-DOS, NOTEPAD, PAINT, CALCULATOR	-	15	-	-
	M S-Office	-	20	-	5
	Internet	-	10	-	5
	Total Marks	100			
PC Hardware Assembly, Diagnosis and OS installation	Electrical and Health Safety	-	10	-	-
	Basic concepts & terminologies used in PC's	-	10	-	5
	Desktop Accessories-Identification motherboard and Microprocessors	-	10	-	5
	Dis-assembly& Assembly of an ATX system	-	10	-	5
	Configuring BIOS setting and OS installation	-	15	-	-
	Laptop Technologies	-	15	-	5
	Study of Networking Basics	-	10	-	-
Total Marks		100			

HTML and CSS Lab	Create website using HTML tags	-	10	-	5
	Create a HTML document with various tags	-	10	-	5
	Create lists-ordered list, Unordered list and definition list.	-	10	-	-
	Link to multiple web pages.	-	10	-	-
	Create html document with following tags- Img, Imagemap, Tables	-	10	-	5
	Form Validation	-	20	-	5
	Add style to the HTML document, Apply various styles	-	10	-	-
	Total Marks		100		
Semester -2					
Setting and Configuring Computer Networks - I	Basic Network Connectivity and Communications-Basic configuration	10	-	-	-
	Physical Layer, Number Systems, Data Link Layer-Types of cabling and number systems.	15	-	-	-
	Communicating Between Networks-Routing and configurations	10	-	-	-
	IP Addressing-Types and Applications of IP Address	25	-	-	-
	Network Application Communications, Switching Concepts	10	-	-	-
	VLANs & Inter-VLAN Routing	15	-	-	-
	Redundant Networks	15	-	-	-
	Total Marks		100		
Applied Mathematics -II	Percentage, Ratios and Proportions-Application in Engineering	10	-	-	-
	Analytical Geometry-Introduction and Application in Engineering	25	-	-	-
	Integral Calculus-Basics of calculus	20	-	-	-
	Correlation and Regression-Types of Analysis and Applications	25	-	-	-
	Probability and Distribution-Application	20	-	-	-
	Total Marks		100		
C Programming	Overview of C, Variables and Data Types-Applications and types of data type	10	-	-	-
	Operators and Expressions-Types and Use of operators	10	-	-	-
	Managing Input and Output Operations	5	-	-	-
	Decision Making, Branching and Looping-Types and Applications.	10	-	-	-
	Arrays, Strings-Types of Arrays and Applications.	15	-	-	-
	User-Defined Functions-Types of functions and its applications	20	-	-	-
	Structures and Unions-Applications	15	-	-	-
	Pointers, File Management in C	15	-	-	-
	Total Marks		100		
Database Management System, Data base design for data center and ticketing management system	Introduction to Database System- Types and Application	15	-	-	-
	Data Models, Normalization-Types and Application, Database for data centre	15	-	-	-
	SQL-Various commands and uses	20	-	-	-
	Advance SQL-Types of joins, index and Triggers	20	-	-	-
	Transact-SQL- Stored Procedure	15	-	-	-
	Database Administration (Backup and Recovery)	15	-	-	-

	Total Marks	100			
Applications of Analog and Digital Circuits	Transistors –Types and applications of transistors	15	-	-	-
	Introduction to MOSFET-Types and Configurations	15	-	-	-
	Data selection and Distribution circuits	15	-	-	-
	Sequential Circuits-Counters and Registers its types and applications	30	-	-	-
	Memories, Logical Families, Data Converters	25	-	-	-
	Total Marks	100			
Unix	Introduction to UNIX-Features of UNIX	10	-	-	-
	File System-Types of files, Working with File and Directory	10	-	-	-
	File Attributes-Types of permissions and Applications	10	-	-	-
	UNIX Editors-Types of Editors	10	-	-	-
	The Shell-Types of shell	10	-	-	-
	Simple Filters-Filters command and its applications	20	-	-	-
	The Process-Types of process, Job Scheduling and its applications	10	-	-	-
	Shell Programming-Applications	20	-	-	-
	Total Marks	100			
Employability Skill	Effective learning skills	20	-	-	5
	English skills-Writing Skills	20	-	-	5
	Communication skills-Effective Oral and Written Communication	35	-	-	15
	Total Marks	100			
Database Lab	Creating Databases, Modify Databases, viewing Databases	-	10	-	5
	Creating tables with user defined data types and inserting values	-	15	-	-
	Data Manipulation languages	-	15	-	5
	Perform Arithmetic, Relational, Logical, special operations	-	15	-	5
	Perform different join operations	-	15	-	5
	Perform different Store procedures	-	10	-	-
	Total Marks	100			
C Programming Lab	Perform arithmetic operators using various data types	-	10	-	-
	Perform various decision-making statements	-	15	-	5
	Perform various decision looping statements	-	10	-	-
	Types of arrays and its functions	-	15	-	5
	String and String functions	-	15	-	5
	Structure, pointer and its applications	-	15	-	5
	Total Marks	100			
Unix Lab	Executing Basic Commands	-	10	-	-
	Different operations by creating, viewing and different types of listing the files using the UNIX command cat, vi, vim, nano, touch and ls	-	15	-	5
	Different operations by Copying, moving and deleting the files between newly created directories.	-	15	-	5
	Execute a privileged command by local user using su command, Different	-	15	-	5

	process				
	File Permissions	-	10	-	-
	Shell script Programs	-	15	-	5
Total Marks		100			
Setting and Configuring Computer Networks -I Lab	Configure Initial Switch Settings	-	15	-	-
	Implement Basic Connectivity	-	10	-	5
	Connect a Wired and Wireless LAN	-	15	-	-
	Connect a Router to a LAN	-	10	-	5
	Verify Directly Connected Networks, VLAN Configuration	-	15	-	5
	Configure Trunks, Router-on-a-Stick Inter-VLAN	-	15	-	5
Total Marks		100			
OJT	On the Job Training in the relevant sector	-	75	-	25
	Total Marks	100			

Annexure 7: Assessment Strategy

1. ASSESSMENT STRATEGY

The Criteria for assessment is based on Modules, and. will be assigned marks proportional to its importance.

The assessment for the semester-based qualification is carried out by conducting Formative and Summative Assessments.

Regarding Theory – Sessional is based on Intermediate Tests, File / Assignments & Viva –voce: Semester end examination wherein for each Individual batch, A&E dept. at Corporate office, Bangalore creates unique question papers for theory part as well as practical – Theory comprises MCQ and descriptive questions drawn randomly from Question Bank.

Regarding the practical part, the experiments/ exercises are performed by the trainees during the LAB Hours and the trainees are allowed to record the learning of it which will be carried as their Record Marks & one Lab Test and semester end examination. Semester end examination is outcome-based experiments/ exercises of the course will be given to trainees to perform and based on the performance the mark will be awarded. The passing criteria is based on practical's performance, viva or oral exam, Test and final semester end examination.

Theory and practical Examinations are carried out by Examiners under the overall supervision of the Assessment and Evaluation Dept.

Evaluation of Theory and Practical examination is carried out by the Trained Assessors (NTTF faculty members) under the supervision of Shopfloor Manager / senior faculty in a fair manner as per the assessment criteria set by A&E dept. of NTTF.

The Tabulation and processing of results shall be carried out under EDUSQUARE campus Software.

Assessment comprises the following components:

- Job carried out in Labs / workshops
- Record book
- ONLINE Examination
- Answer sheet of assessment
- Viva-voce
- Semester end examination
- ON-THE-JOB training
- Tech Talk / Shop Talk
- Extracurricular and Co-curricular Activities
- Projects
- Attendance and punctuality

2. ASSESSORS

Evaluation of Theory & Practical examination is carried out by the Trained Assessors (NTTF faculty members) in a fair manner as per the assessment criteria set by A&E dept. of NTTF.

Assessors / Faculties are trained from time to time to upgrade their skills on various aspects such as conduct of assessments, teaching methodology etc.

3. ELIGIBILITY TO APPEAR FOR THE EXAM

- The candidates should have an attendance of a minimum 90% in a semester.
- The candidates should have secured minimum Sessional Marks in Theory & Practical

4. PASS CRITERIA

To pass the Qualification, every trainee should score a minimum of 40% in each Theory and 50% in each Practical and 60% in OJT / Projects.

5. RESULTS AND CERTIFICATION

The assessment results are backed by evidence collected by assessors. Successful trainees are awarded the Diploma certificate by NTTF Corporate Office.

6. ON THE JOB

1. The candidate must score 60% to successfully complete the OJT.
2. Tools of Assessment that will be used for assessing whether the candidate is having desired skills and etiquette of dealing with customer needs and requirements and perform Soft Skills effectively:
 - Videos/photos of Trainees during OJT
 - Suggestions / Kaizens from trainees
 - Rewards and appreciation to trainees as applicable
3. Assessment will ensure the following:
 - Effective engagement with the customers
 - Understand the working of various tools and equipment.

7. SYSTEM OF GRADING

An alphabetical letter grade will be assigned for each subject based on the total marks scored in the sessional and end semester examination.

Equivalent Grade Points are used: A = 9.5, B = 8.5, C = 7.5, D = 6.5, E = 5.5, F = 0 (FAIL), I = Incomplete (MP/AB/SP) Supplementary cleared = E

The student will be issued Semester Grade Report calculating SGPA / CGPA as follows:

$$\text{Semester Grade Point Average (SGPA)} = \frac{\sum (\text{No. of Credits} \times \text{Grade Point})}{\sum (\text{No. of Credits for the Program})}$$

$$\text{Cumulative Grade Point Average (CGPA)} = \frac{\sum (\text{SGPA} \times \text{total Credits of each semester})}{\text{Total credits Acquired}}$$

Awarding of class:

a) Awarding of class for semester:

SGPA	Classification
8.5 and above	First class with distinction
7.5 to 8.4	First class
6.0 to 7.4	Second class
5.5 to 5.9	Pass class

b) Awarding of class for Programme:

First class with Distinction	Should have scored CGPA 8.5 and above and should have cleared all Semesters in the first attempt.
First class	Should have scored CGPA 7.5 to 8.4
Second class	Should have scored CGPA 6.0 to 7.4
Pass class	5.5 to 5.9

8. ASSESSMENT TOOLS

All assessment and evaluation activities are carried out under EDUSQUARE campus software which includes Formative assessment and Summative assessment.

- EDUSQUARE : NTTF ERP/CRM used for academic purpose EDUSQUARE erp.nttftrg.com used as SaaS (software as a service) mode
- Digital Valuation System: Digital Valuation system is an innovative software solution which automates manual evaluation and help institutions to minimize the time, effort and human errors in the entire valuation process.
- Remote proctoring which includes AI based Auto Proctoring, Student authentication and Multi secure Exam browser as and when the need arises.

List of ICT Tools:

Desktop and laptops

Interactive While Board

CCTV Camera

Pen Drive

Video Conferencing

Biometric

Edusquare: NTTF ERP/CRM used for academic purpose Edusquare erp.nttftrg.com used as SaaS (Software as a Service) mode

Networking: Includes Wireless access Points, Switches, Routers, Controllers across all NTTF

AWS Cloud: AWS Cloud computing platform to host NTTF website www.nttftrg.com and used as backup storage.

Firewall: Network security device protecting our network by filtering traffic and blocking outsiders.

Microsoft (O365/M-365) – Email/office (Word, Excel, PPT, One Drive for all staff/students are provided using Microsoft O365 MDM (BYOD) policies implemented through M365 used as SaaS

Annexure 8: Model Curriculum

Semester 1		Module Name: Communication English	Module Code: CP08101T
Sl. No.	Module Details		Theory Hours 60
1	Parts of Speech		20h
2	Verb Tenses		8h
3	Language and Skill Development Exercises		15h
4	Writing Skills		4h
5	Sentences		4h
6	Language Skill Development		9h
Semester 1		Module Name: Applied Mathematics-1	Module Code: CP08102T
Sl. No.	Module Details		Theory Hours 60
1	Fundamentals of Mathematics		6h
2	Matrices and Determinants		11h
3	Complex Numbers		9h
4	Trigonometry		14h
5	Differential Calculus		12h
6	Statistics		8h
Semester 1		Module Name: Applied Science	Module Code: CP08103T
Sl. No.	Module Details		Theory Hours 40
1	Physical World		2h
2	Force, Motion and Energy		6h
3	Composition and Resolution of Forces		3h
4	Frictional Force		3h
5	Equilibrium of Forces		5h
6	Centre of Gravity and Moment of Inertia		5h
7	Properties of Solids and Fluids		4h
8	Heat		4h
9	Industrial Chemistry		4h
10	Renewable Energy		4h
Semester 1		Module Name: Algorithm, Problem Solving Technique and Flow Charts	Module Code: CP08104T
Sl. No.	Module Details		Theory Hours 80
1	Introduction to Algorithm		10h
2	Method for Developing an Algorithm		30h
3	Pseudo code (or Program Design Language)		10h
4	Problem solving		30h

Semester 1		Module Name: Basics of Electrical and Electronics	Module Code: CP08105T
Sl. No.	Module Details		Theory Hours 40
1	Atomic Structure and Introduction to electron current		5h
2	Resistors and Kirchhoff's law		4h
3	Capacitors		3h
4	Fundamentals of AC		2h
5	Basic Semiconductor and P.N. junction Theory		5h
6	Semiconductor Diodes, Zener Diodes and LED		6h
7	Number Systems		6h
8	Digital Fundamentals		9h
Semester 1		Module Name: Basic Electrical and Electronics Lab	Module Code: CP08106P
Sl. No.	Module Details		Practical Hours 70
1	Familiarization of Toolkit		3.5h
2	Soldering Practice		3.5h
3	Familiarization of CRO		3.5h
4	Familiarization of Function Generator, Digital Multi meter		3.5h
5	Color coding of resistor		3.5h
6	Verification of Ohm 's law, KVL and KCL		3.5h
7	Study of diode data sheet and V-I Characteristics of diode		3.5h
8	Study of Zener data sheet and V-I Characteristics of Zener diode.		3.5h
9	Rectifiers - Half Wave rectifier and center-tapped Full Wave rectifier		3.5h
10	Bridge Rectifier with Capacitor filter		3.5h
11	Familiarization of Logic Inverter, OR gate (TTL)		3.5h
12	Familiarization of AND, NAND Gate (TTL)		3.5h
13	Familiarization of NOR, EXOR Gates (TTL)		3.5h
14	Universal Property of NAND, NOR Gates (TTL)		3.5h
15	Verification of Half adder circuit		3.5h
16	Verification of Full adder circuit		3.5h
17	Simplification of given Boolean equation using Karnaugh Map (2 Variables)		7h
18	Simplification of given Boolean equation using Karnaugh Map (3 Variables)		7h
Semester 1		Module Name: Basics of Computer and Applications installation Lab	Module Code: CP08107P
Sl. No.	Module Details		Practical Hours 60
1	Components of Computer		4h
2	DOS Commands		4h
3	Typing Tutorial		10h
4	Creating Document		4h
5	Applications		4h

6	MS-Office	30h
7	Internet	4h
Semester 1 Module Name: PC Hardware Assembly, Diagnosis and OS installation Lab Module Code: CP08108P Module		
Sl. No.	Module Details	Practical Hours 80
1	Basic Electrical and Health Safety Practices	4
2	Discussion about basic concepts & terminologies used in PC's	4
3	Identification of Inside Desktop Accessories: Microprocessors, Motherboards.	4
4	Identification of Inside Desktop Accessories: Bus and Memory technologies, Add-on cards and I/O connectors, Hard drives, CD-Rom, Keyboard and Mouse.	4
5	Identification of Inside Desktop Accessories: SMPS Testing and troubleshooting.	4
6	Dis-assembly and Assembly of an ATX system.	8
7	Configuring BIOS setting, OS installation (Windows 10, Linux).	8
8	Installation of device drivers and application software.	8
9	Study of Printers and Monitors.	4
10	Tools requirements-Troubleshooting and Preventive maintenance of PCs.	4
11	Laptop Technologies- Dis-assembly.	8
12	Laptop Up gradation, LCD Screen replace, OS installation, Troubleshooting.	8
13	Discussion of Emerging trends in IT and the system configuration for best to buy	4
14	Study of Networking Basics- Introduction-Transmission basics- Standards and OSI model-TCP/IP protocols-cabling-wireless network	8
Semester 1 Module Name: HTML and CSS Lab Module Code: CP08109P		
Sl. No.	Module Details	Practical Hours 80
1	Create a HTML document using the following tags <html>, <head>, <title>, <body>	4
2	Create a HTML document which contains the following properties: Headings, paragraphs and breaks, centering quotations, preformatted text, inserted and deleted text, comments, block quote tag, text -level elements	4
3	Create a HTML document for creating lists-ordered, unordered and definition list.	4
4	Create a HTML document to implement nested list	4
5	Create 6 HTML pages, make one as main and make other 5 as subpages. Create links in main page to link to all subpages and create link in subpages for moving throughout the pages and to come back to main page	4
6	Create a HTML document containing images by using tag.	4
7	Create an HTML document to implement Image map.	4
8	Create a HTML document give different colours for text, set background colour, image.	2
9	Create an HTML document to create the following tables (Table with caption, Headings, Rowspan, Colspan, Cell padding, Cell spacing, Add background colour, back ground image in a table, Border properties)	4

10	Create an HTML document and divide the page into frames use vertical frame and horizontal frame, include pages in all the frames, give links in the page and open the link in the frame, use target	4
11	Create an HTML document to implement inline frame	2
12	Create an HTML document and attach audio, video, animation, PDF format<embed>	4
13	Create an HTML document add a form in that and add form elements such as, field set, legend, labels, text box, text area, radio button, check box, drop down list, select menu, file uploads, submit button, reset button	8
14	Create a HTML document to adding style to a document (use different selectors)	4
15	Create a HTML document for adding style to a document a) Inline style sheet b) Embedded style sheet c)External style sheet d)Import e)link	4
16	Create a HTML document to include CSS background properties.	2
17	Create a HTML document to include CSS Text properties	2
18	Create a HTML document to include CSS list properties	2
19	Create a HTML document to include CSS fancy Table	2
20	Create a HTML document to include CSS Box Model	2
21	Create a HTML document to include CSS Border properties	2
22	Create a HTML document to include CSS Outline	2
23	Create a HTML document to include CSS Positioning properties	2
24	Create a HTML document to implement CSS pseudo-class. Add different colours to a hyperlink, add other style to hyperlinks	2
25	Create a HTML document to implement CSS pseudo-element. Make the first letter and first line special.	2

Semester 1		Module Name: Employability Skills	Module code: CP08110T
Sl. No.	Module Details	Theory Hours 30	
1	Introduction to Employability skills	8h	
2	Behaviour skills	7h	
3	Constitutional Values and Citizenship	15h	

Semester 2		Module Name: Setting and Configuring Computer Networks- 1	Module Code: CP08201T
Sl. No.	Module Details	Theory Hours 60	
1	Basic Network Connectivity and Communications	4h	
2	Physical Layer	2h	
3	Number Systems	2h	
4	Data Link Layer	2h	
5	Communicating Between Networks	5h	
6	IP Addressing	12h	
7	Network Application Communications	3h	
8	Building and Securing a Small Network	3h	
9	Switching Concepts	3h	

10	VLANs & Inter-VLAN Routing	9h
11	Redundant Networks	6h
12	DHCPv4, SLAAC and DHCPv6	9h
Semester 2 Module Name: Applied Mathematics- II Module Code: CP08203T		
Sl. No.	Module Details	Theory Hours 40
1	Percentage, Ratios and Proportions	4h
2	Analytical Geometry	7h
3	Integral Calculus	7h
4	Correlation and Regression	8h
5	Probability and Distribution	14h
Semester 2 Module Name: C Programming Module Code: CP08204T		
Sl. No.	Module Details	Theory Hours 60
1	Overview of C	2h
2	Constants, Variables and Data Types	4h
3	Operators and Expressions	4h
4	Managing Input and Output Operations	2h
5	Decision Making, Branching and Looping	10h
6	Arrays	4h
7	Handling of Character-Strings	6h
8	User-Defined Functions	10h
9	Storage Class	2h
10	Structures and Unions	8h
11	Pointers	4h
12	File Management in C	4h
Semester 2 Module Name: Database Management System, Data base design for data center and ticketing management system Module Code: CP08205T		
Sl. No.	Module Details	Theory Hours 40
1	Introduction to Database System	2.5h
2	Data Models	2h
3	Normalization	2h
4	SQL	12.5h
5	Advance SQL	9h
6	Transact-SQL	5h
7	Security Management in SQL Server	2.5h
8	Database Administration (Backup and Recovery)	4.5h
Semester 2 Module Name: Applications of Analog and Digital Circuits Module Code: CP08206T		
Sl. No.	Module Details	Theory Hours 40

1	Transistors	4h
2	Applications specific to different regions of operation of transistor	4h
3	Introduction to MOSFET	3h
4	Significance of output configurations using transistor	3h
5	Data selection and Distribution circuits	5h
6	Sequential Circuits	8h
7	Memories	5h
8	Logic family	4h
9	Data Converters	4h
Semester 2 Module Name: Unix Module Code: CP08207T		
Sl. No.	Module Details	Theory Hours 40
1	Introduction to UNIX	3h
2	File System	5h
3	File Attributes	4h
4	UNIX Editors	5h
5	The Shell	4h
6	Simple Filters	7h
7	The Process	5h
8	Shell Programming	7h
Semester 2 Module Name: Database Lab Module Code: CP08209P		
Sl. No.	Module Details	Practical Hours 60
1	Demo on Creating Databases	1h
2	Demo on Modify Databases	
3	Demo on database and files Viewing a Database	1h
4	Demo on Renaming a Database	
5	Demo on Deleting Database	1h
6	Demo on database and files	
7	Demo on database and files groups	1h
8	Creating tables with different Data types	
9	Demo on altering the table	1h
10	Creating tables with User Defined Data Types	
11	Dropping User Defined Data Types	1h
12	Demo on Data Manipulation Language with different types Inserting values	
13	Demo on Data Manipulation Language with different types updating values	1h
14	Demo on Data Manipulation Language with different types Deleting Rows	
15	Demo on Truncating a Table	1h
16	Demo on Deleting a Table	

17	Writing a Basic select statement	1h
18	Writing a Basic select statement using where clause	
19	Write a query to perform Arithmetic Operations	3h
20	Write a query to perform Relational operators	
21	Write a query to perform Logical operators	3h
22	Write a query to perform Special operators	
23	Generate query using TOP and DISTINCT keywords	1h
24	Generate query to perform ORDER BY clause	
25	Generate query to perform GROUP BY and HAVING clauses	1h
26	Generate query using String functions	3h
27	Generate query using Date functions	
28	Generate query using Mathematical Functions	3h
29	Generate query using Aggregate functions	
30	Creating tables with different types of Constraints	3h
31	Perform demo on Nested sub queries	3h
32	Perform demo on Correlated Sub queries	1h
33	Perform demo on sub queries with Operators	1h
34	Generate a query to create an identity column	1h
35	Perform demo on Cross Join	1h
36	Perform demo Natural Join	1h
37	Perform demo Equi Join	1h
38	Perform demo on inner Join	1h
39	Perform demo on outer Join	1h
40	Write a query to creating Views	1h
41	Write a query to retrieve Results from Views	1h
42	How to Altering Views	1h
43	Write a query to Dropping Views	1h
44	Write a query to Renaming Views	1h
45	Write a query to Manipulating Data through Views	1h
46	Write a query to Implementing Indexes with different types of indexes	1h
47	Creating Triggers	2h
48	Write programs to declare different types of variables with different data types	1h
49	Write program to Printing Messages	1h
50	Write program to Implementing Stored Procedures	1h
51	Write program on Types of Stored Procedures	1h
52	Write program on Types of Parameters	1h
53	Demo on Altering a Stored Procedure	1h

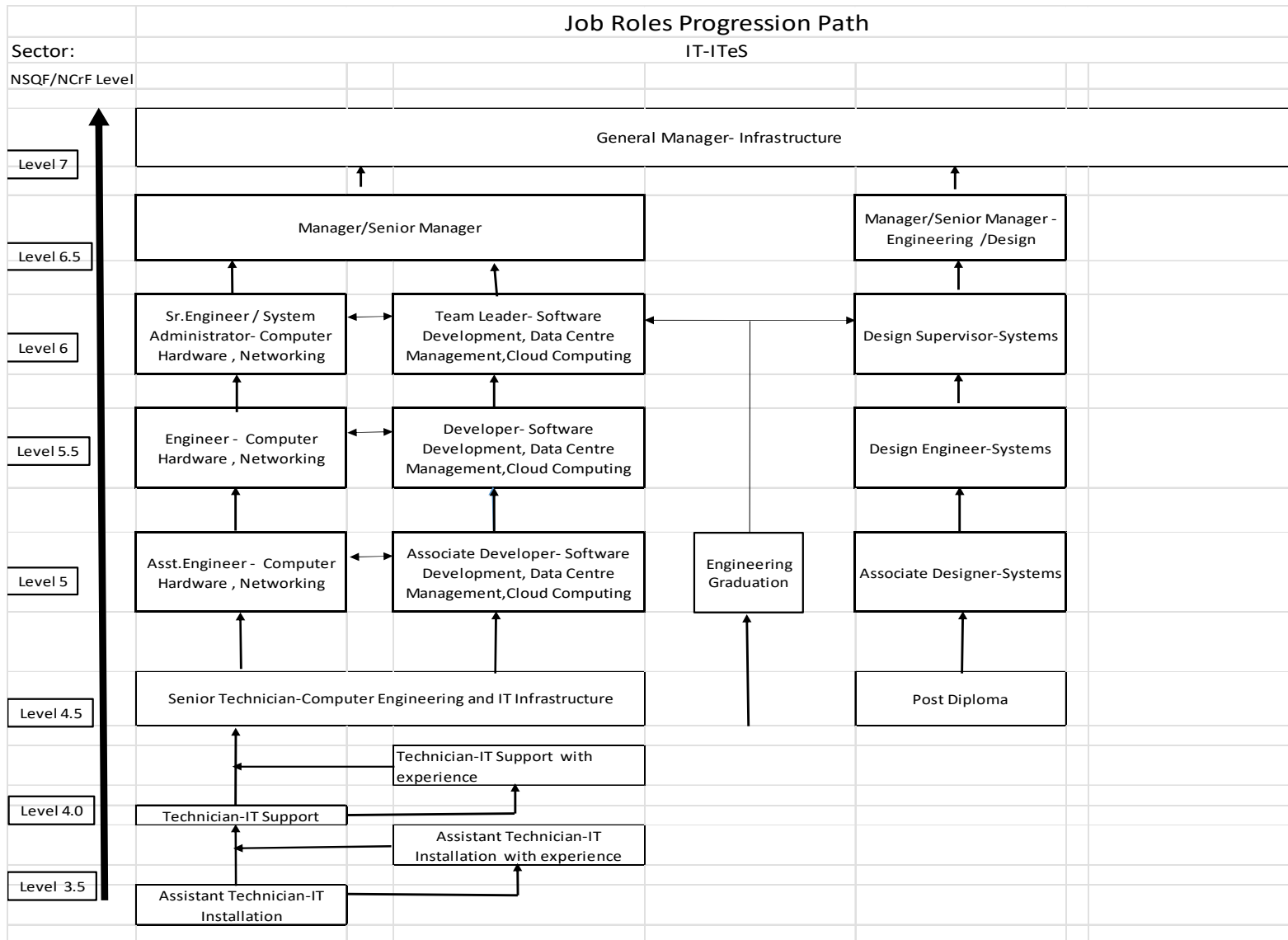
54	Demo on how to Viewing a Stored Procedure	1h
55	Demo on Deleting a Stored Procedure	1h
56	Write a program to Create a function	1h
57	Demo on IF statement	1h
58	Demo on WHILE loop	1h
59	Demo on exception handling	1h
60	Demo on Explicit Transaction	1h
61	Demo on Implicit Transactions	1h
Semester 2 Module Name: C Programming Lab Module Code: CP08210P		
Sl. No.	Module Details	Practical Hours 60
1	Introduction and Data Types	8h
2	Decision Making and Looping	12h
3	Array	14h
4	String	10h
5	Function	6h
6	Structure	6h
7	Pointer and File	4h
Semester 2 Module Name: Unix Lab Module Code: CP08211P		
Sl. No.	Module Details	Practical Hours 40
1	Begin exploring the use of UNIX commands by logging in with different virtual consoles, Confirming your login, The finger command, pwd command	2.5
2	Perform different operations by creating, viewing and different types of listing the files using the UNIX command cat, vi, vim, nano, touch and ls.	2.5
3	Perform different operations by Copying, moving and deleting the files between newly created directories	2.5
4	Display the current date, time, calendar in the given FORMAT 1. Abbreviated weekday name (e.g., Sun) 2. Full month name (e.g., January) 3. Full date; same as %Y-%m-%d 4. 12-hour clock time (e.g., 11:11:04 PM) 5. Locale's date representation (e.g., 12/31/99) 6. Display prev/current/next month output. (Using Cal command) 7. Display Monday as the first day of the week. (Using Cal command)	3
5	Run the different help commands in UNIX (man, info, help, what is)	1.5
6	Create a file called "UNIX.txt" and perform the following 1. Assign only read permission to all the users using absolute and relative method and verify it. 2. Add write permission to owner and group. 3. Remove read permission to another user	2.5

	4. Make the file executable 5. Change the user and group ownership to the f3ile	
7	Execute a privileged command by local user using su command	1.5
8	Perform the following 1. Redirect standard output of command to file 2. Append standard output of command to file 3. Send file as input to command 4. Redirect error messages from command to file 5. Append error messages from commands to file	2.5
9	1. Exploring the use of vi and ed editor by creating files, appending, saving, quitting, repeating, undoing, moving cursors, deleting data, text insertion and line numbering. 2. Write a sed command that deletes the first character in each line in a file 3. Write a sed command that deletes the character before the last character in each line in a file. 4. Write a sed command that swaps the files and second words in each line in a file	2.5
10	Write down the solution to each of the following 1. Display number of lines in /etc/passwd 2. Display a list of usernames (and no other data) from /etc/passwd 3. Display the /etc/passwd line for any account that is using the bash shell 4. Display the /etc/passwd line for any account that is not using the bash shell 5. Display number of files in /etc directory 6. Display first 15 lines from /etc/passwd 7. Display last 15 lines from /etc/passwd 8. Display information of /etc/passwd file into capital letter	2.5
11	1. Create a file with some contents 2. Sort the file in ascending order 3. Perform numeric sort 4. Perform compare and difference between two files 5. Remove duplicate lines from input 6. Remove duplicate adjacent lines from input	2.5
12	Perform the following 1. Display the current Processes running on the terminal 2. Begin some jobs in the background 3. Bring back the background job into foreground 4. Kill the process by referencing its job id	2.5
13	Shell script Programs 1. Write a shell program to print even numbers [range 1 - 100] using while loop 2. Write a menu driven program to print the entered character is vowel, consonant or a digit using case	2.5

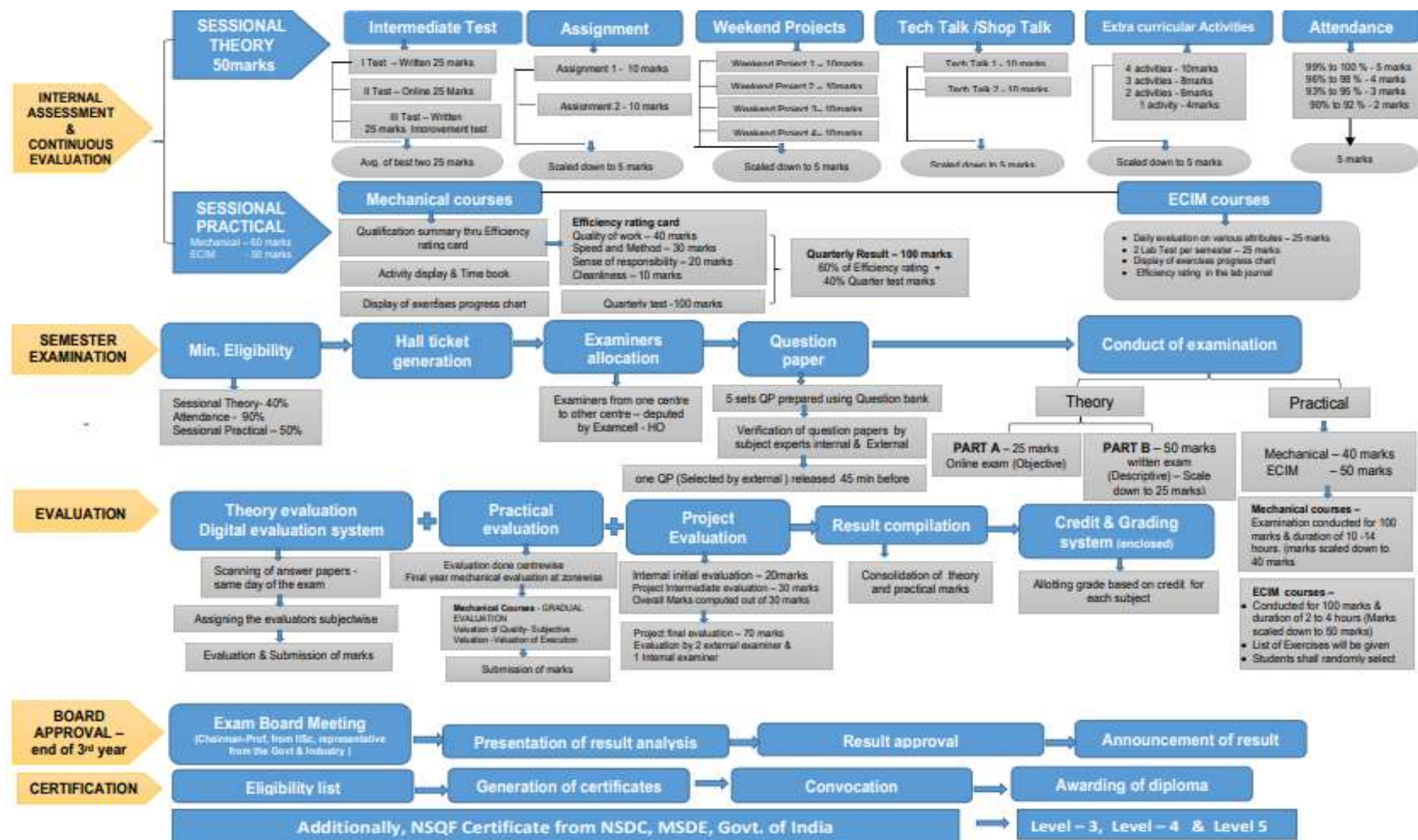
	3. Write a shell script that accepts a file name starting and ending line numbers as arguments and displays all the lines between the given line numbers	
14	Advanced Shell Script Programs 1. Write a menu driven script for the following operations. copy, remove, rename and linking files (hard and soft link). 2. Write a shell script which receives two files' names as arguments. It should check whether the two file contents are same or not. If they are same, then second file should be deleted. 3. Write a shell script to display a welcome message to every Friday using at, crontab, batch 4. Write a shell script to archive the /home directory and verbosely extract into newly created directory. 5. Write a shell script to find the permission of a given file 6. Write a shell script to check whether the given file name is directory or ordinary file, file name should get it through command line 7. Write a shell script to wish the user according to the system time (like good morning, good afternoon)	4.5
15	C programs 1. Write a menu driven C program to implement the following by given number a) Factorial b) Fibonacci series c) Prime or not 2. Write a C program to list out the files in your home directory. 3. Write a C program that takes one or more file or directory names as command line input and reports the following information on the file. a) file type b) number of links c) read, write and execute permissions d) time of last access 4. Write a C program that simulate the following UNIX commands a) mv b) cp	4.5
Semester 2 Module Name: Setting and Configuring Computer Networks - I Lab Module Code: CP08212P		
Sl. No.	Module Details	Practical Hours 40
1	Navigate the IOS -Explore EXEC Modes -Set the Clock	2h
2	Configure Initial Switch Settings -Host Name -Banner MOTD -Save Configuration Files to NVRAM	2h

3	Configure Initial Switch Settings -Verify the Default Switch Configuration -Enable Password -Enable Secret -Configure Line Passwords -Encrypt all plain text passwords -Save Configuration Files to NVRAM	2h
4	Implement Basic Connectivity -Perform a Basic Configuration on Switch -Configure the PCs -Configure the Switch Management Interface	2h
5	Connect a Wired and Wireless LAN5	2h
6	Configure Initial Router Settings -Verify the Default Router Configuration -Configure and Verify the Initial Router Configuration -Save the Running Configuration File	2h
7	Connect a Router to a LAN -Display Router Information -Configure Router Interfaces -Verify the Configuration	2h
8	Configure IPv6 Addressing -Configure IPv6 Addressing on the Router -Configure IPv6 Addressing on Clients -Test and Verify Network Connectivity	2h
9	Configure Secure Passwords and SSH	2h
10	Verify Directly Connected Networks -Verify IPv4 Directly Connected Networks -Verify IPv6 Directly Connected Networks	2h
11	VLAN Configuration -Verify the Default VLAN Configuration -Configure VLANs -Assign VLANs to Ports	2h
12	Configure Trunks -Configure & Verify VLANs -Configure Trunks	2h
13	Configure DTP -Configure static trunking	2h

	-Configure and Verify DTP	
14	Configure Router-on-a-Stick Inter-VLAN -Add VLANs to a Switch -Configure Subinterfaces -Test Connectivity with Inter-VLAN Routing	2h
15	Configure Layer 3 Switching and Inter-VLAN Routing -Configure Layer 3 Switching -Configure Inter-VLAN Routing -Configure IPv6 Inter-VLAN Routing	2h
16	Configure EtherChannel Configure Basic Switch Settings Configure an EtherChannel with Cisco PAgP	2h
17	Configure EtherChannel Configure Basic Switch Settings Configure an 802.3ad LACP EtherChannel	2h
18	Configure DHCPv4 -Configure a Router as a DHCP Server -Configure DHCP Relay -Configure a Router as a DHCP Client -Verify DHCP and Connectivity	2h
19	Configure DHCPv6 -Configure and verify a Stateless DHCPv6 Server -Configure and verify a Stateful DHCPv6 Server -Configure and verify a DHCPv6 Relay	2h
20	HSRP Configuration -Configure an HSRP active router. -Configure an HSRP standby router. -Verify HSRP operation.	2h
Semester 2		
Module Name: Employability Skills		Module Code: CP08213T
Sl. No.	Module Details	Theory Hours 30
1	Effective learning skills	8h
2	English skills-Writing Skills	7h
3	Communication skills-Effective Oral and Written Communication	15h
Semester 2		
Module Name: OJT		Module Code: CP08214P
Sl. No.	Module Details	Practice Hours 90
1	On the Job Training in the relevant sector	90h

Annexure 9: Career Progression

Annexure 10: Assessment SOP



Annexure 11: Occupational Map
Sector Name: Computer and Information Technology

As per NCrf		As per NCO-2015	Sub-Sector 1/Computers/Data centre management/Cloud computing/Hardware and Networking	
NCrf Level (1-8)	Level Descriptors	NCO-15 -- Family (First 4 digits code/s for the given level cross cutting the OM Sub-Sectors / Occupations)	Occupation 1 /Electronics System design and Manufacturing	Occupation 2 /VLSI & Embedded System Design and Development
Level 8.0	1. Professional Theoretical Knowledge: Mastery of knowledge / Innovation driven/ Comprehensive knowledge 2. Professional and Technical Skills/ Expertise: Most advanced Technical and Managerial skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Significant authority, transformational leadership, Social intelligence 4. Broad Learning Outcomes: Lead large transformational projects 5. Responsibility: Business Vision Chairperson/ Board Member / CMD	1120	Managing Director	Managing Director
Level 7.0	1. Professional Theoretical Knowledge: Advanced knowledge with critical understanding of emerging developments 2. Professional and Technical Skills/ Expertise: Highly specialized skills, trans disciplinary skills, leadership skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Cross cultural competency, transformational leadership 4. Broad Learning Outcomes: Apply acquired advanced technical skills, technical appraisal and reviews 5. Responsibility: Business Management (like GM/ CEO / CXO, etc.)	1321 1330.	GM -Infrastructure	GM Information Technology
Level 6.5	1. Professional Theoretical Knowledge: Advanced multidisciplinary and specialized knowledge 2. Professional and Technical Skills/ Expertise: Advanced Technical and Managerial Skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Leadership, effective resource management 4. Broad Learning Outcomes: Judgement in complex problems	2511 2512 2519 2521 2522	Manager/Senior Manager-Computer Hardware, Networking, Software development, Data center Management, Cloud computing.	Manager/Senior Manager-Data center Management, Cloud computing.

	5. Responsibility: Vertical/ Business unit management –Manager or Senior Manager		System Analysis	System Analysis
Level 6.0	1. Professional Theoretical Knowledge: Multidisciplinary and specialized knowledge 2. Professional and Technical Skills/ Expertise: Range of skills along with specialized domain skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Entrepreneurial mindset, self management 4. Broad Learning Outcomes: Judgement / decision making – specialized 5. Responsibility: Team leader – Junior technical supervisor, Technical supervisor or junior/ deputy manager	2511 2512 2519 2521 2522	Project Engineer - Computer Hardware, Networking, Software development, Data center Management, Cloud computing. System Analysis	Project. Engineer - Data center Management, Cloud computing. System Analysis
Level 5.5	1. Professional Theoretical Knowledge: Specialized knowledge 2. Professional and Technical Skills/ Expertise: Specialized skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Team readiness, self-entrepreneurship readiness 4. Broad Learning Outcomes: Specialized/ complex jobs/tasks 5. Responsibility: Self and team responsibility – Sr. Technician or Master Technician	2512 2519 2522 2523 2529 3512	Sr. Engineer - Computer Hardware, Networking, Software development, Data center Management, Cloud computing. System Analysis	Sr. Engineer - Data center Management, Cloud computing. System Analysis
Level 5.0		2512 2519 2523 2529 3512 3513	Engineer - Computer Hardware, Networking, Software development, Data center Management, Cloud computing. System Analysis	Engineer - Data center Management, Cloud computing. System Analysis
Level 4.5	1. Professional Theoretical Knowledge: Range of knowledge 2. Professional and Technical Skills/ Expertise: Range of technical skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Team readiness & Entrepreneurial readiness 4. Broad Learning Outcomes: Carry out Range of tasks and may provide range of solutions 5. Responsibility: Accountable/ responsible - Jr. Technician & Technician	2519 2523 2529 3512 3513	Senior Technician-Computer Engineering and IT Infrastructure, Computer-aided engineering analyst Programmer Machine Learner System Admin	Study Post Diploma Analyst AI based solutions Senior Technical support Engineer Computer network Analyst
Level 4.0		7422	Technician-IT Support	Technical support Engineer

	1. Professional Theoretical Knowledge: Range of knowledge 2. Professional and Technical Skills/ Expertise: Range of technical skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Team member/follows instructions. 4. Broad Learning Outcomes: Carry out Range of tasks with minimum supervision 5. Responsibility: Accountable/ responsible - Jr. Technician & Technician	3512 3513	Hardware driver developer Web designer Software developer	Linux system engineer Technical support computer network
Level 3.5	1. Professional Theoretical Knowledge: Range of knowledge 2. Professional and Technical Skills/ Expertise: Range of technical skills 3. Employment Readiness & Entrepreneurship Skills & Mind-set: Team member/follows instructions. 4. Broad Learning Outcomes: Carry out Range of tasks with minimum supervision 5. Responsibility: Accountable/ responsible - Jr. Technician & Technician	7422 3512 3513	Assistant Technician-IT Installation Computer maintenance OS loader - Windows and Linux. Assistant web designer. Assistant software developer.	Assistant Technical support Engineer Computer system integrator

Annexure 12: Key Learning Outcome

SL. NO.	MODULE NAME	KNOWLEDGE AND UNDERSTANDING	TECHNICAL & PROFESSIONAL SKILLS	APPLICATION OF KNOWLEDGE AND SKILLS
1	Communication - English (CP08101T) Ability to communicate effectively.	Understand, comprehend grammar. Formation of simple sentences.	Communicate with peers. Writing skills - Internal and Organizational correspondence, technical writing. Public Speaking.	Write Business Letters Reports as necessary in Profession. Interact, communicate during Interviews, debates, and Group Discussion for Career Development. Develop Presentation Skills.
2	Applied Mathematics -I (CP08102T) Applied Mathematics -II (CP08203T) Ability to solve various mathematical problems.	Basic Algebra. Linear and quadratic equations. Understanding Analytical geometry, Correlation and regressions, sequences and series. Probability and Distribution.	Use of Trigonometry, Matrices and determinants, differential, and Integral calculus for solving Technical and Engineering problems.	Apply Statistics in Interpreting Data. Graphical representation of Data. Use appropriate units and measurements during interactions and discussions in the work area. Determine Percentage, Proportions and Ratios in day-to-day life.
3	Applied Science (CP08103T) Understanding various physical quantities, Conservation, and transfer of different forms of energy.	Interpret Different systems of Units and convert from one unit to another. Describe the basic concepts related to force, motion, momentum and conservation of Energy. Compare the Properties of Solids and Fluids. Predict how to calculate the Centre of gravity of different plane figures. Summarize the concepts of Heat and temperature.	Describe Physical Law governing Translatory and Rotational Motions. Evaluating Work, Power, and Energy.	Application of Physical laws, Fluid Dynamics, concepts of Heat, and measurement, in the work area. Various energy sources, conversion, and conservation of energy. Renewable energy sources.

		Appreciate the Importance of storage devices and use of Renewable Energy in various applications.		
4	Algorithm, Problem solving Technique and Flow Charts (CP08104T) Ability to develop Flow chart and Algorithms.	Explain Algorithm and its methods. Understand Pseudo code. Concepts of Problem-solving technique.	Develop Flowcharts. Develop and Design Algorithms. Write Pseudo Code.	Task Implementation in real time projects and problem statements. Algorithms development in Storage, Sorting, processing and machine learning. Code optimization.
5	Basics of Electrical & Electronics (CP08105T) Basics of Electrical & Electronics LAB (CP08106P) Understanding Electronics, Electrical and Digital circuits.	Knowledge on the basic electrical and diode application circuits. Illustrate the different number system representation and conversion from one to another. Explain basic logic gates and application of Boolean laws in simplification of combinational circuits.	Analyze the basic electrical Circuits to understand the Electricals laws like Ohms law, Kirchhoff's law and its behaviour in circuits. Study of Simple IC and working to demonstrate the Digital circuits. Building combinational circuits using basics ICs.	Familiarize with the Basics Electric and Electronic Components and Equipments. Usage of Simple Digital IC and understanding the same how it can be used for Various Digital Applications. Electrical applications.
6	Basics of Computer and Applications installation Lab (CP08107P) Ability to identify parts of computer, Dos commands and Microsoft products.	Understand Components of Computer. Understand Dos commands and Microsoft products.	Identify Input and Output Devices. Perform DOS commands. Practice Typing Skills.	Work with command-based operating system. Use Microsoft office - Word and Excel. Word Processing, Spread Sheet, Database Management, Presentation Creation.

7	PC Hardware Assembly, Diagnosis and OS installation Lab (CP08108P) Ability to Install and Troubleshoot PC Hardware and OS.	Classify the different Motherboard Components and Hardware Peripherals. Identify the various requirements for Hardware to build the PC. Understand various utilities and packages to install in the PC	Examine PC issues and troubleshoot the issues. Installation of different operating system-Windows and Linux	Comprehend the System specification and peripherals. Manage and install different operating system-Windows and Linux. Computer repair, Assembly, Upgrading and modifying hardware.
8	HTML AND CSS LAB (CP08109P) Ability to create and design various webpages.	Understand various HTML elements and CSS. Understand relationship between HTML and CSS.	Create HTML documents with various tags. Create List, Links, images and Tables in HTML documents. Various form elements. Add different style sheets and various CSS properties.	Design and Develop webpages. Apply cascading stylesheets in real time websites.
9	Setting and Configuring Computer Networks - I (CP08201T) Setting and Configuring Computer Networks -I Lab (CP08212P) Ability to create, design networks and configure network devices with IP addressing	Knowledge on network technologies. Examine router hardware and How switching operates in a small to medium-sized business network. Prepare an IP addressing scheme to provide network connectivity for a small to medium sized business network. Initial settings on a network device. Familiarize monitoring tools and network management protocols to troubleshoot data networks. Explain Ethernet switch ports concept, configure and evaluate VLANs.	Simulate network, IOS, Switching, IP addressing. Demonstrate initial settings on a network device and implement basic network connectivity between devices. Monitoring tools and network management protocols to troubleshoot data networks. Demonstrate Ethernet switch ports concept and Evaluate VLANs.	Identify different Networks and how devices access local and remote network resources. Implement basic network connectivity between devices. Operate and trouble shoot routed and switched network using different diagnostic procedures and tools.

10	C Programming (CP08204T) C Programming Lab (CP08210P) Ability to Create C programs for simple Engineering applications.	Knowledge on data types, operators and expressions, Decision making and looping in writing 'C' Program. Understand Array, function, external variables, and multiple source files. Pointers in the 'C' Program.	Implement data types using C program. Perform Decision making Looping statements. Create Array, String and functions. Demonstrate Structure and pointer. Implement file concepts. Store data in file.	Develop software applications using C Program. Apply the standard library in developing C Program. Manage memory effectively by using pointers. Development of operating System and new programming languages. Embedded Systems drivers and applications.
11	Database Management System, Data base design for data center and ticketing management system (CP08205T) Database Lab (CP08209P) Understanding and Designing Database systems and applying Normalization Techniques.	Discuss database concepts, structures and query language. Understand the E R Model and Relational Model. Distinguish Functional Dependency and Functional Decomposition. Apply various Normalization techniques.	Create, Modify, Rename, Delete Databases. Demonstrate Data Manipulation Language. Perform various operators in Database. Create Procedures, Triggers, Views.	Design and build a simple database system and demonstrate competency with the fundamental tasks involved with modelling, designing and implementing DBMS. Develop different software applications and use backend as database.

12	Applications of Analog and Digital Circuits (CP08206T) Understanding different Electronic Components, Logic ICs and their Characteristics and applying them to analyse and design simple Analog and Digital circuits.	Describe transistor circuits using different transistor configurations, transistor output configurations and their applications. Explain the types of data selection and distribution circuits with output equation. Analyze the operation of sequential circuits counter, registers and their application in memory circuits. Identify the need of logic IC parameters in design of signal conditioning and driver circuits. Analyze the operation of data converters and their application. Design simple application circuits and test using online tools.	Simple Circuit Design as per specifications, Basic System Integration, Component selection. Project management, Collaboration and communication.	Identify various Analog and digital circuits. Able to troubleshoot simple analog and logic circuits. Implement electronics circuits involving simple logic to control operations. Microprocessor based applications.
13	Unix (CP08207T) Unix Lab (CP08211P) Understanding and Programming with UNIX Operating System.	Basic concepts of UNIX operating system. Knowledge of the use of different commands. The file system and file attributes of UNIX. Various Unix editors and simple filters. Concepts of shell programming.	Extract the UNIX system information. Perform File permissions. Capable of working with command mode. Write shell programming with UNIX operating system. Practice UNIX utilities.	Configure Unix/Linux Systems. Linux and Unix administration. Manage web servers.

14	Employability Skills (CP08110T) Employability Skills (CP08213T) Ability to behave appropriately. Understand Constitutional Values/ role of citizen. Ability to communicate appropriately. Understand Diversity and Inclusion.	Knowledge and understanding of all Human relation Principles. Knowledge and understanding of the constitution of Indian state and the preamble of the constitution. Fundamental Duties of the citizen of India. Knowledge and understanding of types of communication. Good understanding about Diversity and Inclusion in the workplace.	Able to practice HRP with peer groups to maintain healthy relationships. Practice the constitutional values in society. Being ethical and moral in society following all the fundamental duties in the society. Practice effective communication with peers, superiors and subordinates with empathy and care. Practice a sense of belonging in the society leaving behind all differences due to race, ethnicity, gender, age, identity etc.	Follow all the skills in the workplace and society to have peace and harmony with superiors and subordinates.
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Annexure: Acronym and Glossary**Acronym**

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework
OJT	On the Job Training

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service or technology.
Long Term Training	Long-term skilling means any vocational training program undertaken for a year and above. https://ncvet.gov.in/sites/default/files/NCVET.pdf