



QUALIFICATION FILE

Hydraulic & Pneumatic System Mechanic

- ☒ 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: 4

Submitted By:

Indian Iron and Steel Sector Skill Council (IISSSC)

Karigari Bhawan, 5th Floor,

Room No-509, Plot No-B/7,

Action Area-III, New Town,

Rajarhat, Kolkata-700160

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Section 1: Basic Details

1.	Qualification Name	Hydraulic & Pneumatic System Mechanic																						
2.	Sector/s	Iron and Steel																						
3.	Type of Qualification: ☐ New ☒ Revised ☐ Has Electives/Options ☐ OEM	NQR Code & version of existing/previous qualification: 2022/IS/IISSSC/06815 / v4.0	Qualification Name of existing/previous version: Hydraulic & Pneumatic System Mechanic / v5.0																					
4.	a. OEM Name b. Qualification Name (Wherever applicable)	NA																						
5.	National Qualification Register (NQR) Code & Version (Will be issued after NSQC approval)	QG-04-IS-03889-2025-V2-IISSSC	6. NCrF/NSQF Level: 4																					
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	The individual in this role performs installation, assembling and maintenance of the hydraulic and pneumatic equipment available in the plant.																						
9.	Eligibility Criteria for Entry for Student/Trainee/Learner/Employee	a. Entry Qualification & Relevant Experience: <table border="1"> <thead> <tr> <th>S. No.</th> <th>Academic/Skill Qualification (with Specialization - if applicable)</th> <th>Required Experience (with Specialization - if applicable)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12th Class</td> <td></td> </tr> <tr> <td>2</td> <td>11th Class</td> <td>1.5 years of experience in relevant field</td> </tr> <tr> <td>3</td> <td>10th class with 2-year NTC/NAC in relevant field</td> <td></td> </tr> <tr> <td>4</td> <td>10th Class</td> <td>3 year of experience in relevant field</td> </tr> <tr> <td>5</td> <td>9th Class</td> <td>4.5 year of experience in relevant field</td> </tr> <tr> <td>6</td> <td>8th pass plus 2-year NTC plus 1-Year NAC plus 1-Year CITS</td> <td></td> </tr> </tbody> </table> b. Age: 18 years		S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)	1	12 th Class		2	11 th Class	1.5 years of experience in relevant field	3	10th class with 2-year NTC/NAC in relevant field		4	10 th Class	3 year of experience in relevant field	5	9 th Class	4.5 year of experience in relevant field	6	8th pass plus 2-year NTC plus 1-Year NAC plus 1-Year CITS	
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10.	Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))	17	11. Common Cost Norm Category (I/II/III) (wherever applicable): I																					
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"> <thead> <tr> <th>Training Delivery Modes</th> <th>Theory (Hours)</th> <th>Practical (Hours)</th> <th>OJT Mandatory (Hours)</th> <th>OJT Recommended (Hours)</th> <th>Total (Hours)</th> </tr> </thead> <tbody> <tr> <td>Classroom (offline)</td> <td>192:00</td> <td>258:00</td> <td>60:00</td> <td></td> <td>510</td> </tr> <tr> <td>Online</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> (Refer Blended Learning Annexure for details)					Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)	Classroom (offline)	192:00	258:00	60:00		510	Online					
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Online																								
14.	Aligned to NCO/ISCO Code/s (if no code is available mention the same)	NCO-2015/7233.2901																						
15.	Progression path after attaining the qualification (Please show Professional and Academic progression)	Supervisor - Mechanic - Belt Conveyor (Level-5)																						
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:																						
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	No gender sensitization																						
20.	Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)	☐ 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 (In case of CS or MS, provide details of both Lead AB & Supporting ABs)	Name: Mr. Sushim Banerjee Email: ceo@iissc.org/ sushim_banerjee@yahoo.com Contact No.: 033-23247559 Website: https://www.iissc.org																						
23.	Final Approval Date by NSQC: 01/04/2025	24. Validity Duration: 3 Years		25. Next Review Date: 31/03/2028																				

Section 2: Module Summary

NOS/s of Qualifications

(In exceptional cases these could be described as components)

Mandatory 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

S. 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.	Use basic health and safety practices at the work place	ISC/N0008, v2.0	Non-Core	3	2	25	35	00		60	30	50	00	20	100	10
2.	Work effectively with others	ISC/N0009, v2.0	Non-Core	3	1	10	20	00		30	30	50	00	20	100	10
3.	Prepare for fitting and assembly operations	ISC/N0918, v5.0	Core	4	2	25	35	00		60	30	50	00	20	100	15
4.	Perform fitting and assembly of hydraulic and pneumatic equipment	ISC/N0919, v5.0	Core	4	4	45	75	00		120	30	50	00	20	100	30
5.	Perform post-assembly activities	ISC/N0920, v5.0	Core	4	3	35	55	00		90	30	50	00	20	100	10
6.	Perform maintenance of hydraulic and pneumatic equipment	ISC/N0921, v5.0	Core	4	2	40	20	00		60	30	50	00	20	100	15
7.	Employability Skills (30 Hours)	DGT/VSQ/N0101	Non-core	2	1	12	18	00		30	20	30	00	00	50	10
8.	OJT		Core	4	2			60		60						
Duration (in Hours) / Total Marks					17	192	258	60		510	200	330	00	120	650	100

Elective NOS/s:

S. 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 NOS/s:

S. 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 – Aggregate at qualification level: 70 % (Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)

Minimum Pass Percentage – NOS/Module-wise: ____% (Every Trainee should score specified minimum passing percentage in each mandatory and selected elective NOS/Module to successfully clear the assessment.)

Section 3: Training Related

1.	Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	ITI (In stream related to Fitter) with 5 years experience in industry and 1 year of training experience in Mechanic Hydraulic Pneumatic Or Diploma (Mechanical engineering) with 3 years experience in industry and Maintenance and 1 year of training experience in Mechanic Hydraulic Pneumatic
2.	Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	B.Tech (Mechanical) with 3 years experience in industry and 1 year of training experience in Mechanic Hydraulic Pneumatic

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	

Section 4: Assessment Related

1.	Assessor’s Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	ITI (In stream related to Fitter) with 5 years experience in industry and 1 year of assessment experience in Mechanic Hydraulic Pneumatic Or Diploma (Mechanical engineering) with 3 years experience in industry and 1 year of assessment experience in Mechanic Hydraulic Pneumatic
2.	Proctor’s Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	B.Tech (Mechanical) with 5 years experience in industry and 2 year of training experience in Mechanic Hydraulic Pneumatic
3.	Lead Assessor’s/Proctor’s Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	B.Tech (Mechanical) with 5 years experience in industry and 2 year of training experience in Mechanic Hydraulic Pneumatic
4.	Assessment Mode (Specify the assessment mode)	Offline
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.	Latest Skill Gap Study (not older than 2 years) (Yes/No): Yes
2.	Latest Market Research Reports or any other source (not older than 2 years) (Yes/No): Yes
3.	Government /Industry initiatives/ requirement (Yes/No): Yes
4.	Number of Industry validation provided: 20
5.	Estimated nos. of persons to be trained and employed: 500
6.	Evidence of Concurrence/Consultation with Line Ministry/State Departments: In progress If “No”, why:

Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	Annexure: NCrf/NSQF level justification based on NCrf level/NSQF descriptors (Mandatory)	Attached
2.	Annexure: List of tools and equipment relevant for qualification (Mandatory, except in case of online course)	Attached
3.	Annexure: Detailed Assessment Criteria (Mandatory)	Attached
4.	Annexure: Assessment Strategy (Mandatory)	Attached
5.	Annexure: Blended Learning (Mandatory, in case selected Mode of delivery is "Blended Learning")	NA
6.	Annexure: Multiple Entry-Exit Details (Mandatory, in case qualification has multiple Entry-Exit)	Filled
7.	Annexure: Acronym and Glossary (Optional)	
8.	Supporting Document: Model Curriculum (Mandatory – Public view)	Attached
9.	Supporting Document: Career Progression (Mandatory - Public view)	Attached
10.	Supporting Document: Occupational Map (Mandatory)	Attached
11.	Supporting Document: Assessment SOP (Mandatory)	Attached
12.	Any other document you wish to submit:	

Annexure: 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	Knowledge related to physical properties of metals and lab equipment used for testing and basic metallurgy	The job involves a range of theoretical understanding and practical skills as can be seen from the job requirements given in the adjacent cell. The skills include setting, adjusting and operating the mechanic hydraulic pneumatic system in the given parameters	4
Professional and Technical Skills/ Expertise/ Professional Knowledge	Knowledge related to plant equipment and plant operations, basic measurements, basic hydraulic and pneumatic components and machines processes and methods	As indicated by the knowledge and understanding requirements mentioned in the adjacent cell, the job holder needs to have a wide range of information for mechanic hydraulic pneumatic system.	4

Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	- Plan the mechanic hydraulic pneumatic system and prepare the appropriate schedules - Perform the operational/function checks - Carry out relevant documentation manually and/or electronically - Operate mechanic hydraulic pneumatic system	As indicated by the performance criteria in the adjacent cell, the job holder needs to have wide-ranging practical skills for mechanic hydraulic pneumatic system.	4
Broad Learning Outcomes/Core Skill	Logical and mathematical skills - Follow the technical specification and appropriate procedures. - Perform work-related calculations - Use the standard templates and tools for documenting work	The job holder requires logical and relevant skills for conducting mechanic hydraulic pneumatic system. As indicated by the performance criteria in the adjacent cell, the job involves mechanic hydraulic pneumatic system	4
Responsibility	- Responsible for determining the work requirements. - Responsible for planning the mechanic hydraulic pneumatic system - Responsible for process parameters. - Responsible for preparing and updating the relevant documents.	The incumbent on the job roles carrying out mechanic hydraulic pneumatic system, sample collections, collecting the reports from the lab and documenting the same	4

Annexure: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 30

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Hydraulic & Electro-Hydraulic Training System The hydraulic training system should comprise of a mobile doubled-sided workstation with two inclined anodized aluminum profile boards mounted back to back for the assembly of various components into different hydraulic and electro-hydraulic circuits.	As per requirement	6
2	Mobile Double-Sided Workstation - Sturdy aluminium profile board for 2 mounting panel and 2 table top 2 plastic oil-drip tray for table top 2 sets of 1 shutoff valve and 4 way fluid distributor block attached on the table top 1 hydraulic power pack (to be mounted beside the	As per requirement	6

	drawer unit) o 2hp or above hydraulic pump o Up to 20bar fluid pressure o Flow rate of 5 litre/min o Distributor for 2 mounting panel at power pack o Attached MCB o Oil reservoir shall have a capacity of 56 litres		
3	Hydraulic Components All connecting points of the hydraulic components shall be fitting by compatible quick release coupling The electrical connection shall have compatible banana connector socket. All components have magnets or spring-latch mechanism to hold onto the training board	As per requirement	
4	Pressure relief/sequence valve	As per requirement	4
5	2/2-way hand lever valve	As per requirement	2
6	3/2-way hand lever valve	As per requirement	2
7	4/2-way hand lever valve	As per requirement	2
8	4/3-way hand lever valve with relieving mid-position	As per requirement	2
9	Double acting Cylinder, D20x200 stroke c/w metal cap at end rod	As per requirement	4
10	Non-return valve, piloted	As per requirement	2
11	Non-return valve	As per requirement	4
12	One-way flow control valve	As per requirement	4
13	Flow control valve	As per requirement	4
14	Shut-off valve	As per requirement	3
15	Distributor block, 3 way	As per requirement	4
16	Hydraulic motor (rotary) c/w rotary disc	As per requirement	2
17	Pressure gauge	As per requirement	4
18	T-connector	As per requirement	8
19	Pressure relief unit	As per requirement	2
20	Vertical actuator mounted on rotatable mechanism (180deg) with lock • 9kg weight 1 set Y/N • D20x150 hydraulic cylinder • Vertical guideway (150mm stroke) • Acrylic cover	As per requirement	1
21	Measuring container (transparent acrylic, 25 litre) with shut off valve	As per requirement	1
22	600mm hose line 3/8" with quick release couplings	As per requirement	20
23	1000mm hose line 3/8" with quick release couplings	As per requirement	12
24	1500mm hose line 3/8" with quick release couplings	As per requirement	8

25	Electro-Hydraulic Components	As per requirement	
26	Power supply unit, 24VDC, 300W	As per requirement	1
27	Indicator and distributor unit	As per requirement	2
28	Pressure switch, measure up to 20 bar	As per requirement	2
29	2/2-way single solenoid valve	As per requirement	4
30	3/2-way single solenoid valve	As per requirement	4
31	4/2-way single solenoid valve	As per requirement	4
32	4/3-way double solenoid valve with relieving mid- position	As per requirement	2
33	Cylindrical inductive sensor, unshielded (detecting distance 10mm or more)	As per requirement	4
34	Capacitive sensor (detecting distance 10mm or more)	As per requirement	4
35	2 Pushbutton momentary, 4 N/O and 4 N/C contacts 1 Latch switch, 2 NO and 2 NC contacts	As per requirement	1
36	Relay unit, 4 NO and 4 NC contact	As per requirement	1
37	4 Led and 1 buzzer unit	As per requirement	2
38	Time relay unit, 1 NO and 1 NC contact	As per requirement	2
39	TOOLS	As per requirement	
40	Common Hand tools	As per requirement	2
41	Digital Multimeter • Handheld • 5 functions : DC and AC current and voltage, ohm • Digital readout	As per requirement	2
42	Description of training UNIT with specifications	As per requirement	
43	Pneumatic Training System Each SET consists of items in: 2.1 – Experimental Board & experimental station steel trolley 2.2 – Pneumatic components and 2.3 – Electro-pneumatic components	As per requirement	6
44	Experimental board • Easy assembly / dismantling base for setting-up / testing of pneumatic circuits and electro-pneumatic circuits • The Aluminum mobile training system shall comprise of laminated wooden worktable with two incline Aluminum profile boards of 25mm grid sections for Pneumatics components mounting.	As per requirement	1

	• 2 no. wooden cabinet with 4 drawers each, 1 no. Electrical modules mounting attachment, 2nos Aluminum profile boards with grids of 25mm sections, cable holder for 50 measuring cables, heavy duty castor wheels.		
45	Pneumatic components Complete set of flexible-plastic tubing Dia: 4mm as per accessories with push-pull fittings The electrical connection shall have compatible banana connector socket. All components have magnets or spring-latch mechanism to hold onto the training board	As per requirement	
46	Air Service unit (FRL) complete with handslide Pneumatic valve and 8 distribution outlets	As per requirement	2
47	Single Acting Cylinder, $\phi 20 \times 50$ with Cushion	As per requirement	2
48	Double Acting Cylinder, $\phi 20 \times 100$ with Cushion	As per requirement	4
49	One Way Flow Control Valve	As per requirement	12
50	6 Way Distributor Manifold	As per requirement	10
51	3/2 Way Valve, Push Button/Spring Return, NC	As per requirement	6
52	3/2 Way Valve, Push Button/Spring Return, NO	As per requirement	4
53	3/2 Way Valve, Pressure Operated/Spring Return, NC	As per requirement	4
54	5/2 Way Valve, Selector Switch	As per requirement	2
55	5/2 Way Valve, Pressure Operated, Uni-stable/Spring Return	As per requirement	2
56	5/2 Way Valve, Pressure Operated, Bi-stable	As per requirement	16
57	3/2 Way Valve, Roller Lever/Spring return, NC	As per requirement	16
58	Shuttle Valve	As per requirement	12
59	2 Pressure Valve	As per requirement	12
60	Quick Exhaust Valve	As per requirement	2
61	3/2 Time Delay Valve, Pressure Operated, NC (0.15-10secs)	As per requirement	2
62	Sequence Valve (0.5-10 bar)	As per requirement	4
63	T-connectors	As per requirement	10
64	Electro-Pneumatic Components CONSISTING OF :-	As per requirement	
65	24V DC Power Supply Unit with distribution unit (10 + / 10-sockets)	As per requirement	2
66	5/2 Way Solenoid Valve with LED, Uni-stable, 24V DC	As per requirement	6
67	5/2 Way Solenoid Valve with LED, Bi-stable, 24V DC	As per requirement	8

68	Electrical Limit Switch, Roller Operated	As per requirement	16
69	Electrical Cylinder Reed switch with attachment	As per requirement	8
70	Relay Unit (1 replay/4 changeover contacts)	As per requirement	10
71	Signal Input Unit (1 switch & 2 Push Button)	As per requirement	4
72	Optical/acoustic Unit (4 x LED, 1 x buzzer)	As per requirement	2
73	Time Relay Unit with Pick-up & Dropout delayed relay (Delay time 0.5-15sec)	As per requirement	2
74	Emergency Stop Push Button	As per requirement	2
75	Predetermining counter	As per requirement	2
76	Inductive Sensor (Dia 8mm)	As per requirement	4
77	Capacitive Sensor (min 2mm detecting distance)	As per requirement	4
78	Optical Sensor	As per requirement	4
79	Electrical wiring • 250mm, 0.75mm ² cable with banana connections at both ends (42 pcs red, 26 pcs blue) • 500mm, 0.75mm ² cable with banana connections at both ends (10 pcs red, 4 pcs blue) • 1000mm, 0.75mm ² cable with banana connections at both ends (6 pcs red, 4 pcs blue) Banana connectors shall be stackable	As per requirement	1
80	Simulation software (5 licenses)	As per requirement	1
81	TOOLS	As per requirement	
82	Common hand tools - Adjustable spanner (300mm) - Open-end spanner - Screwdriver, slotted 5.5 x 150 mm 6.5 x 200 mm 8 x 250 mm - Screwdriver, Philips 2 x 250 mm 3 x 200 mm 3 x 250 mm - Allen Key Set (Metrix) - Combination plier (170mm)	As per requirement	2

	- Long nose plier (160mm) - Tubing cutter		
83	Screw driver, Torx,T10	As per requirement	4
84	Black/White board	As per requirement	1
85	Trade specific charts and other teaching aids	As per requirement	5
86	Helmet	As per requirement	30
87	Safety shoes	As per requirement	30
88	Safety belt	As per requirement	6
89	Cotton hand gloves	As per requirement	30
90	Goggles	As per requirement	30
91	Reflective Jackets	As per requirement	30
92	Safety message boards	As per requirement	5
93	Black/White board	As per requirement	1

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Whiteboard and Marker
2. Projector
3. Computer/Laptop
4. Chairs
5. Tables
6. Whiteboard marker

Annexure: Industry Validations Summary

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

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile (if available)
1	Tata Steel Ltd.	Mr. Amit Khanna	Head IEM, Mills & Utilities (Electrical Maintenance)	P.O. - Bistupur, Jamshedpur, Pin – 831001, Jharkhand			

2	SAIL BSL	Mr. Malay Nandi	Deputy General Manager	Bokaro Steel Plant Bokaro – 827001, Jharkhand			
3	SAIL DGP	Mr. Soumitra Ghosh	Deputy General Manager - Electrical	Durgapur Steel Plant Durgapur – 713203 West Bengal			
4	JSW Bellary	Mr. Ajay Bihari	Head HR	Vijayanagar Works: P.O. Vidyanagar, Toranagallu Village, Sandur Taluk Bellary District - 583275 Karnataka			
5	JSPL	Mr. Sanjay Gupta	Head HR	Kharsia Road, Raigarh, Pin - 496001, Chhattisgarh			
6	Essar Steel	Mr. Sarosh Gandhi	Sr. Manager -HR	27th KM, SuratHazira Road District – Surat, Hazira, Pin - 394 270, Gujarat			
7	RohitFerrotech Ltd.	Mr. Jayanta Chatterjee	Director	Bhunja Raichak, Joynagar, P.S. DurgaChak, Dist. East Medinipur, Haldia, West Bengal			
8	Ankit Metal and Power Ltd	Mr. Avik Mukherjee	Chief HR	35, Chittranjan Avenue, Kolkata – 700012			
9	Godawari Power &Ispat (GPIL)	Mr. Shailendra Mishra	Dy CEO	428/2, Phase-I, Industrial Area, Siltara – 493111 Dist. Raipur, Chhattisgarh,			
10	ArcvacForgeCast Ltd	Mr. BinodChhaje r	MD	2B, Shyamkunj, 2nd floor 12 C, Lord Sinha Road Post Box: 9210 Kolklata - 700071			
11	Tayo Rolls Limited	Mr. Abhijit Mitra	VP - Marketing	Annex – 2, General Office, Tata Steel Limited, P.O. & P.S. – Bistupur, Jamshedpur831001, Dist: East Singbhum, Jharkhand			
12	Kejriwal Castings	Mr. Subhasis Chatterjee	General Manager (Projects)	33A, Chowringhee Road Chatterjee International Centre 11th Floor, Suite No. 11 Kolkata 700071			
13	Vizag Steel Plant (RINL)	Mr. D N Rao	Director Operations	Engineering Shops And Foundry, Visakhapatnam Steel Plant, Visakhapatnam - 530032			
14	Tata Metaliks Ltd.	Ms. Ratna Sinha	Chief HRM	Tata Centre, 10th Floor 43 Jawaharlal Nehru Road Kolkata - 700071 West Bengal			
15	Sesa Goa Ltd	Mr. Vijay Khanzode	GM & Head PIDII	Queeny Elite, 1st Floor, Swatantrapath, Vasco, Panaji - 403802			
16	Tata Steel Processing & Distribution Ltd.	Mr. Ashok Kumar Balyan	Chief of Operations	Tata Centre 43, Jawaharlal Nehru Road Kolkata 700071			

17	Monnet Ispat Ltd.	Mr. Amitabh S. Mudgal	President (Marketing and Corp affair)	MandirHausad, Chandkhuri Marg, Chandkhuri Marg, Raipur, Chhattisgarh 492101			
18	Tata Sponge Iron Ltd	Mr. Partha Chattopadhy ay	Chief Operating Officer (SB)	PO: Joda, Dist: Keonjhar Orissa - 758034			
19	Facor Alloys Ltd.	Mr. M S S Sharma	Chief Executive	46 A and B, MIDC Industrial Estate, Nagpur - 440028			
20	Sarda Metals & Alloys Ltd	Mr. Prabhat Mohan	Head HR	Floor II & III, D.No.50-96-4/1, Sri GowriNilayam, Seethammadhara NE Visakhapatnam - 530013			

Annexure: Training & Employment Details

Training and Employment Projections:

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
2022-23	500	350	200	140	50	35
2023-24	1000	700	400	280	100	70
2024-25	1500	1050	600	420	150	105

Data to be provided year-wise for next 3 years

Training, Assessment, Certification, and Placement Data for previous versions of qualifications:

Qualification Version	Year	Total Candidates				Women				People with Disability			
		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed

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:

- 1.
- 2.

Content availability for previous versions of qualifications:

☐ Participant Handbook ☐ Facilitator Guide ☐ Digital Content ☐ Qualification Handbook ☐ Any Other:

Languages in which Content is available:

Annexure: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

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>

S. 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	• Books/ e-books • Presentations • Reference Material • Audio / Video Modules	
2	☒ Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	• Self-Learning Videos • Broadcasts • Mobile Learning • Curated Digital content	
3	☒ Showing Practical Demonstrations to the learners	• Video Content • E-Resource library • AR/ VR/ XR	
4	☒ Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	• Training tools (tools list attached) • Video Play • Presentations	
5	☒ Tutorials/ Assignments/ Drill/ Practice	• Online Question Bank • Mobile Quick test app • MCQ based tests	
6	☒ Proctored Monitoring/ Assessment/ Evaluation/ Examinations	• Assessment engine for Essays • Up-loadable file examinations • Mock test sessions	
7	☒ On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	• Online tests • Offline assessments	

Annexure: 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
ISC/N0009: Work effectively with others	<i>Communicate effectively with colleagues and others</i>	13	20	-	9
	PC1. coordinate with colleagues to share work, as per the workload in order to achieve team goals	3	5	-	2
	PC2. maintain clear communication with colleagues and others, wherever needed, through all means i.e. face-to-face, telephonic or written	5	7	-	3
	PC3. adjust communication styles to reflect gender and persons with disability (PwD) sensitivity	3	4	-	2
	PC4. respect all colleagues and co-workers	1	2	-	1
	PC5. resolve conflicts by communicating with colleagues and other departments	1	2	-	1
	<i>Interact with supervisor</i>	8	14	-	6
	PC6. identify work requirements by receiving instructions from reporting supervisor	2	3	-	1
	PC7. escalate problems to supervisors that cannot be handled	2	3	-	2
	PC8. report the completed work	2	3	-	1
	PC9. interact with the reporting supervisor about any possible hazards and safety concerns	2	5	-	2
	<i>Follow appropriate behaviour at work place</i>	9	16	-	5
	PC10. extend help to people with Disability (PwD) at workplace, if required	2	4	-	2
	PC11. empathizes with people with disability	2	4	-	1
	PC12. adopt a gender neutral behavior	2	4	-	1
	PC13. avoid contact with ill people and self-isolate in a similar situation	3	4	-	1
	Total Marks	30	50	-	20
ISC/N0008: Use basic health and safety practices at the work place	<i>Maintain safe and secure working environment</i>	10	14	-	6
	PC1. identify hazardous activities and the possible causes of risks or accidents in the workplace	2	2	-	1
	PC2. follow safe working practices while dealing with hazards to ensure safety of self and others.	2	3	-	1
	PC3. Use appropriate protective clothing / equipment for specific tasks and work	1	2	-	1

PC4.	Follow appropriate safety practices while working in and around trenches, elevated places and confined areas	2	1	-	-
PC5.	lift heavy objects safely using correct procedures	1	2	-	1
PC6.	carry out routine check of the machine for identifying potential hazards	1	2	-	1
PC7.	Report any identified breaches in health, safety and security policies and procedures to the designated person.	1	2	-	1
	<i>Emergencies, rescue and first aid procedures</i>	6	9	-	5
PC8.	use appropriate type of fire extinguisher	1	1	-	-
PC9.	apply appropriate rescue techniques during fire hazard	1	2	-	1
PC10.	Provide appropriate first aid procedure to victims wherever required eg. In case of bleeding, burns, choking, electric shock etc.	2	2	-	1
PC11.	follow emergency procedures such as raising alarm, safe evacuation etc.	1	2	-	1
PC12.	attend safety training and fire drills to respond promptly during an emergency	1	2	-	1
	<i>Health and hygiene</i>	2	6	-	2
PC13.	Follow regular cleaning and disinfection practices at work place using appropriate techniques and materials.	1	2	-	1
PC14.	follow hand hygiene practices at work place using appropriate techniques and materials	1	2	-	1
PC15.	report regarding the contagious illness of self or people in close contact	-	1	-	-
PC16.	avoid contact with ill people and self-isolate in a similar situation		1	-	
	<i>Housekeeping and waste management</i>	7	12	-	5
PC17.	follow the fundamentals of 5S for housekeeping	2	3	-	2
PC18.	ensure good housekeeping in order to prevent hazards and accidents	1	2	-	-
PC19.	store the material, tools and equipment in the correct location and in good condition	1	2	-	-
PC20.	segregate waste into different categories	1	2	-	1
PC21.	identify recyclable, non-recyclable and hazardous waste	1	1	-	1
PC22.	dispose non-recyclable, recyclable and reusable waste appropriately at identified location	1	2	-	1
	<i>Material and energy conservation</i>	5	9	-	2

	PC23. identify ways to optimize usage of material in various tasks/activities/processes	1	2	-	-
	PC24. check for spills/leakages in various tasks/ activities/processes	1	2	-	1
	PC25. plug spills/leakages and escalate to appropriate authority if unable to rectify	1	2	-	1
	PC26. check if the equipment/machine is functioning normally before commencing work and rectify wherever required	1	2	-	-
	PC27. ensure electrical equipment and appliances are properly connected and turned off when not in use	1	1	-	-
	Total Marks	30	50	-	20
ISC/N0918: Prepare for fitting and assembly operations	<i>Identify work requirements</i>	15	20	-	9
	PC1. identify the work to be done by interpreting the engineering drawings/blueprints/SOPs	2	3	-	1
	PC2. identify correct limits, tolerance and fits of rotating machine by interpreting the drawings properly	2	3	-	2
	PC3. identify the tools, measuring instruments, equipment and spares required for the job	5	4	-	3
	PC4. select and arrange the right tools, measuring instruments, equipment and spares as per the SOP and job requirements	4	7	-	2
	PC5. report to stores / supervisor in case of non-availability of tools, tackles and spares	2	3	-	1
	<i>Prepare for fitting and assembling activities</i>	15	30	-	11
	PC6. use appropriate Personal Protective Equipment (PPE) for safe working in workshop	2	3	-	1
	PC7. plan sequence of activities need to perform fitting and assembling of the equipment	1	3	-	1
	PC8. check the tools, measuring instruments and equipment for any defects and that they are as per the required quality standards	4	9	-	3
	PC9. ensure that tools match the desired specifications for working in hydraulic and pneumatic systems	2	3	-	2
	PC10. prepare tools, tackles, spares, lifting equipment etc. as per SOP/WI	4	9	-	3
	PC11. report damaged / defective components of equipment and tools as per the escalation matrix	2	3	-	1

	Total Marks	30	50	-	20
ISC/N0919: Perform fitting and assembly of hydraulic and pneumatic equipment	<i>Perform installation of equipment</i>	10	17	-	6
	PC1. lift the equipment parts manually or by hoist and place the same securely on the designated place as indicated in the drawing/work instructions	2	3	-	1
	PC2. mount, align, adjust and level the components to be assembled as per the design/ manufacturers' specifications	3	5	-	2
	PC3. perform fitting operations as per equipment needs and prepare the components/parts and sub-assemblies of the equipment for assembly operations	5	9	-	3
	<i>Perform assembling activities</i>	20	33	-	14
	PC4. perform assembly operations and assemble all the parts of equipment as mentioned in drawing/blueprint	5	9	-	3
	PC5. fasten the mechanical components/ subassemblies together by using specified screws, bolts, and collars	3	5	-	2
	PC6. set and adjust the linkages, tensions and clearances of assembled components to specified specifications by using fixed gauges and hand tools	3	5	-	2
	PC7. seal the required areas thoroughly to prevent penetration of water/air etc. during the usage of equipment	2	3	-	2
	PC8. set and adjust flow, pressure, speed, level of hydraulic medium / air	2	3	-	1
	PC9. follow the do's and don'ts of the manufacturing process as defined in SOPs/Work Instructions or given by supervisors	1	2	-	1
	PC10. check the joints, connections, etc. to ensure they are adequately tightened and joint	2	3	-	2
	PC11. escalate the problems faced during installation and assembly activities to the supervisor	2	3	-	1
	Total Marks	30	50	-	20
ISC/N0920: Perform post-assembly activities	<i>Conduct tests to ensure fitness of equipment</i>	25	41	-	19
	PC1. check the equipment as per the control plan, WI for proper working	2	4	-	2
	PC2. set the test apparatus as per the selected testing process and SOPs/WI	2	3	-	2
	PC3. connect the equipment and its components, various data capturing meters and gauges with the testing apparatus as per SOP/WI	1	2	-	1

	PC4.	conduct functional tests of assembled equipment to ensure it performs as per desired performance criteria	4	7	-	3
	PC5.	check abnormalities to ensure they are within desired limits (temperature, leakage, pressure, level, vibration, sound and RPM)	2	3	-	1
	PC6.	identify non-conformities and their causes to quality assurance standards	2	3	-	1
	PC7.	record observations/ readings as per the parameters mentioned in the testing manual/Work Instructions	2	3	-	1
	PC8.	observe any deviation, noise or vibrations during the testing process and change or repair the equipment components as per the requirement	2	3	-	2
	PC9.	conduct trials of the equipment to ensure that specified parameters are attained with no abnormalities	2	4	-	2
	PC10.	record the test and trial results as per the organisation guidelines	2	3	-	1
	PC11.	suggest and implement the corrective actions to address problems in machine/electric panels	2	3	-	2
	PC12.	record adjustments not covered by established procedures for future reference	2	3	-	1
	<i>Perform post-testing activities</i>		5	9	-	1
	PC13.	clean and store all the tools, machine and equipment after completion of work	2	3	-	1
	PC14.	dispose scrap or waste material into the disposal area in accordance with the company's policies and environmental regulations	1	2	-	-
	PC15.	report to the supervisor about any problems faced or anticipated during the complete process	1	2	-	-
	PC16.	maintain and update all the records and reports related to assembling activities done as per the organisational guidelines	1	2	-	-
	Total Marks		30	50	-	20
ISC/N0921: Perform maintenance of hydraulic and pneumatic equipment	<i>Prepare for maintenance work</i>		6	8	-	4
	PC1.	determine the work requirements such as type of tasks to be performed (repair, maintenance, etc.), equipment to be maintained	1	2	-	1

	from drawings, maintenance schedule, work instructions, process manuals, etc.				
PC2.	identify tools, consumables, spare parts, etc. required for performing repair and maintenance	3	2	-	2
PC3.	communicate with the user/operator about any variances observed during functioning of the equipment and other performance issues	1	2	-	2
PC4.	clear the work area thoroughly to ensure no unwanted materials are present before starting the work	1	2	-	-
	<i>Repair and maintain the hydraulic and pneumatic equipment</i>	24	42	-	16
PC5.	follow safety practices during maintenance activities as per organisational SOP	1	1	-	-
PC6.	perform basic health check-up of equipment as specified in the maintenance checklist	3	5	-	2
PC7.	dismantle the equipment components and replace/change the spare parts and consumables of the vehicle as per the schedule	2	3	-	1
PC8.	change/refill the hydraulic oil/compressor lube oil, lubricants and fluids	2	3	-	1
PC9.	check the internal conditions of equipment parts to test its working status and expected conditions	2	5	-	3
PC10.	check the systems of the equipment to find out root cause of the problems like any leakage, short circuit in parts, breakage of wires etc. and discuss the same with senior if required	3	5	-	2
PC11.	carry out minor repairs and adjustments of the equipment and report any malfunctions/ repairs in the machine beyond own scope to the concerned person	3	5	-	2
PC12.	clean the various components of equipment such as reservoir, suction strainer, return line filter, breather filter, suction air filter of air compressor, suction/delivery valves of air compressor etc.	2	4	-	1
PC13.	assemble back the covers, guards, clamps, insulation etc. of the equipment after repair and maintenance	2	3	-	1
PC14.	change the maintenance due/status sticker on the equipment	1	2	-	1

	PC15. record all repairs carried out, parts disposed and replaced, time taken and other significant findings observed during the work process	1	2	-	1
	PC16. ensure that all maintenance activities are adequately addressed	1	2	-	-
	PC17. report information such as repair and maintenance work done, faults observed, action taken, parts replaced, next scheduled maintenance, etc. to the supervisors accurately	1	2	-	1
	Total Marks	30	50	-	20
DGT/VSQ/N0101 - Employability Skills (30 hours) DGT/VSQ/N0101 - Employability Skills (30 hours)	<i>Introduction to Employability Skills</i>	1	1	-	-
	PC1. understand the significance of employability skills in meeting the current job market requirement and future of work	-	-	-	-
	<i>Constitutional values – Citizenship</i>	1	1	-	-
	PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
	<i>Becoming a Professional in the 21st Century</i>	1	3	-	-
	PC3. explain 21st Century Skills such as Self- Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
	<i>Basic English Skills</i>	2	3	-	-
	PC4. speak with others using some basic English phrases or sentences	-	-	-	-
	<i>Communication Skills</i>	1	1	-	-
	PC5. follow good manners while communicating with others	-	-	-	-
	PC6. work collaboratively with others in a team			-	
	<i>Diversity & Inclusion</i>	1	1	-	-
	PC7. communicate and behave appropriately with all genders and PwD	-	-	-	-
	PC8. report any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
	<i>Financial and Legal Literacy</i>	3	4	-	-
	PC9. use various financial products and services safely and securely	-	-	-	-
	PC10. calculate income, expenses, savings etc.	-	-	-	-
	PC11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
	<i>Essential Digital Skills</i>	4	6	-	-
	PC12. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
	PC13. use internet and social media platforms securely and safely	-	-	-	-
	<i>Entrepreneurship</i>	3	5	-	-
	PC14. identify and assess opportunities for potential business	-	-	-	-

	PC15. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
	<i>Customer Service</i>	2	2	-	-
	PC16. identify different types of customers	-	-	-	-
	PC17. identify customer needs and address them appropriately	-	-	-	-
	PC18. follow appropriate hygiene and grooming standards	-	-	-	-
	<i>Getting ready for apprenticeship & Jobs</i>	1	3	-	-
	PC19. create a basic biodata	-	-	-	-
	PC20. search for suitable jobs and apply	-	-	-	-
	PC21. identify and register apprenticeship opportunities as per requirement	-	-	-	-
	Total Marks	20	30	-	-
Grand Total		200	330		120

Annexure: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

Mention the detailed assessment strategy in the provided template.

1. Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on SDMS/SIP or email
- Assessment agencies send the assessment confirmation to VTP/TC looping SSC
- Assessment agency deploys the ToA certified Assessor for executing the assessment
- SSC monitors the assessment process & records

2. Testing Environment:

- Confirm that the centre is available at the same address as mentioned on SDMS or SIP
- Check the duration of the training.
- Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
- EAF the batch size is more than 30, then there should be 2 Assessors.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
- Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
- Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.

- Check the availability of the Lab Equipment for the particular Job Role.
3. Assessment Quality Assurance levels / Framework:
 - Question papers created by the Subject Matter Experts (SME)
 - Question papers created by the SME verified by the other subject Matter Experts
 - Questions are mapped with NOS and PC
 - Question papers are prepared considering that level 1 to 3 is for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
 - Assessor must be ToA certified & trainer must be ToT Certified
 - Assessment agency must follow the assessment guidelines to conduct the assessment
 4. Types of evidence or evidence-gathering protocol:
 - Time-stamped & geotagged reporting of the assessor from assessment location
 - Centre photographs with signboards and scheme specific branding
 - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
 - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos
 5. Method of verification or validation:
 - Surprise visit to the assessment location
 - Random audit of the batch
 - Random audit of any candidate
 6. Method for assessment documentation, archiving, and access
 - Hard copies of the documents are stored
 - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
 - Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

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