NSQF QUALIFICATION FILE

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

Name and address of submitting body:

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

Name and contact details of individual dealing with the submission

Name: Mr. Sushim Banerjee

Position in the organization: Chief Executive Officer

Address if different from above: Same as above

Tel. number(s): 033 23247559

E-mail address: ceo@iisssc.org, sushim_banerjee@yahoo.com

List of documents submitted in support of the Qualifications File

1. Qualification Pack:- ISC/Q0909
2. Documents related to QP Development (Refer to folder “Common Files”)
   (i) Labour Market Survey
   (ii) About the sector
   (iii) Occupational Map
   (iv) List of Companies participating in QP Development Process
   (v) Model Curriculum

NSQF QUALIFICATION FILE

SUMMARY

1	**Qualification Title:** – Assistant – Machinist – Iron and Steel
2	**Qualification Code, if any:** : ISC/Q0909
3	**NCO code and occupation:** NCO-2015/7233.0102 Mechanical Maintenance
4	**Nature and purpose of the qualification (Please specify whether qualification is short term or long term):** Identifying the sequence of machining operations required to fabricate product components by studying their designs/ sample parts and fabricating the components using the appropriate tools and dies.
5	**Body/bodies which will award the qualification:** Indian Iron and Steel Sector Skill Council - IISSSC
6	**Body which will accredit providers to offer courses leading to the qualification:** Indian Iron and Steel Sector Skill Council - IISSSC
7	**Whether accreditation/affiliation norms are already in place or not, if applicable (if yes, attach a copy):** Yes
8	**Occupation(s) to which the qualification gives access:** Mechanical Maintenance
9	**Job description of the occupation**: The job holder is identifying the sequence of machining operations required to fabricate product components by studying their designs/ sample parts and fabricating the components using the appropriate tools and dies.
10	**Licensing requirements:** N/A
11	**Statutory and Regulatory requirement of the relevant sector (documentary evidence to be provided):** N/A
12	**Level of the qualification in the NSQF:** Level 3
13	**Anticipated volume of training/learning required to complete the qualification:** 600 Hours
14	Indicative list of training tools required to deliver this qualification: Laptop, white board, marker, projector Sanitization kit, disinfectants, alcohol-based sanitizers, different types of face masks, shields etc. Different type of waste bins to collect and segregate waste for disposal PPTs for various types of drawings, Machine drawings, work instructions, Machine accessories, measuring instruments & precision measuring instruments, CNC Turing, CNC Milling, Conventional Lathe etc.
15	**Entry requirements and/or recommendations and minimum age:** 8th Class Pass with 1 years of relevant experience

	OR 10th Class Pass And 18 years		
16	**Progression from the qualification (Please show Professional and academic progression):** Mechanical Maintenance Technician – Level 4 Safety Supervisor – Level 5		
17	**Arrangements for the Recognition of Prior learning (RPL):** RPL will be based on the same approved Qualification Pack and Assessment Criteria mentioned in the Qualification Pack by Indian Iron and Steel Sector Skill Council		
18	**International comparability where known (research evidence to be provided):** No		
19	**Date of planned review of the qualification:** 1st July 2026		
21	**Formal structure of the qualification** **Mandatory components**		
(i)	**Title of component and identification code/NOSs/Learning outcomes**	**Estimated size (learning hours)**	**Level**
	1. ISC/N0008: Use basic health and safety practices at the work place 2. ISC/N0009: Work effectively with others 3. ISC/N0901: Understand design requirement and prepare equipment 4. ISC/N0902: Perform fabrication activities 5. ISC/N0903: Perform post - fabrication activities 6. ISC/N0904: Perform maintenance activities	600	3
	Sub Total (A)	**600**	

SECTION 1
ASSESSMENT

1 **Body/Bodies which will carry out assessment:**

Indian Iron and Steel Sector Skill Council.

Proposed Body/Bodies which will carry out assessment:

S.No	Name of the Assessment Agency
1	ACE Foundation
2	Brisk Mind Pvt. Ltd.
3	Demorgia Consulting Services
4	EduVantage Private Limited
5	GLOCAL THINKER'S PRIVATE LIMITED
6	IRIS Corporate Solutions Private Limited
7	MS Certification Services Pvt. Ltd.
8	Nitya Skill Development Organization Samiti
9	Palmary Project & Services Pvt. Ltd.
10	STAR PROJECTS SERVICES PVT. LTD.
11	Vedokt Skill & Consulting Pvt. Ltd.
12	Vistaskills Pvt Ltd
13	Vsquare Techsolutions Pvt. Ltd.

2 **How will RPL assessment be managed and who will carry it out?**

The RPL assessment will be managed by selected assessment partners from the applications received

3 **Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.**

The emphasis is on practical demonstration of skills and knowledge based on the performance criteria. The assessment papers are developed by Subject Matter Experts (SME) available with the Assessment Agency as per the performance and assessment criteria mentioned in the Qualification Pack. The assessment papers are also checked for the various outcome-based parameters such as quality, time taken, precision, tools & equipment requirement etc. The assessment results are backed by evidences collected by assessors.

1. The assessor needs to collect a copy of the attendance for the training done under the scheme. The attendance sheets are signed and stamped by the In-charge / Head of the Training Centre.

	2. The assessor needs to verify the authenticity of the candidates by checking the photo ID card issued by the institute as well as any one Photo ID card issued by the Central/Government. The same needs to be mentioned in the attendance sheet. In case of suspicion, the assessor should authenticate, and cross verify trainee's credentials in the enrolment form. 3. The assessor needs to punch the trainee's roll number on all the test pieces. 4. The assessor can take a photograph of all the students along with the assessor standing in the middle and with the centre name/banner at the back as evidence. 5. The assessor also needs to carry a photo ID card. The assessment agencies are instructed to hire assessors with integrity, reliability and fairness. Each assessor shall sign a document with its assessment agency by which they commit themselves to comply with the rules of confidentiality and conflict of interest, independence from commercial and other interests that would compromise impartiality of the assessments.

Please attach most relevant and recent documents giving further information about assessment and/or RPL.
Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

ASSESSMENT EVIDENCE

Complete a grid for each component as listed in "Formal structure of the qualification" in the Summary.

NOTE: this grid can be replaced by any part of the qualification documentation which shows the same information – i.e. Learning Outcomes to be assessed, assessment criteria and the means of assessment.

24. Assessment evidences

Title of Component: Assistant – Machinist – Iron and Steel

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Assistant – Machinist – Iron and Steel

Qualification Pack ISC/Q0909

Sector Skill Council Indian Iron and Steel Sector Skill Council

Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training centre based on these criteria.
5. In case of successfully passing only certain number of NOSs, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.
6. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

ISC/N0009 : Work effectively with others				
Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Communicate effectively with colleagues and others	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,	5	7	-	3

telephonic or written				
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
Interact with supervisor	**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
Follow appropriate behaviour at work place	**9**	**16**	**-**	**5**
PC10. extend help to people with Disability (PwD) at workplace, if required	2	4	-	2
PC11. empathize with people with disability	2	4	-	1
PC12. adopt a gender neutral behavior	2	4	-	1
PC13. adopt responsible and disciplined behaviours at the workplace	3	4	-	1
NOS Total	**30**	**50**	**-**	**20**

ISC/N0008 : Use basic health and safety practices at the work place

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Maintain safe and secure working environment	**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
Emergencies, rescue and first aid procedures	**6**	**9**	**-**	**5**
PC8. use appropriate type of fire extinguisher	1	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
Health and hygiene	**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	-	-
Housekeeping and waste management	**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
Material and energy conservation	**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	-	-
NOS Total	**30**	**50**	**-**	**20**

ISC/N0901: Prepare for fabrication activities

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Identify work requirements	**11**	**14**	**-**	**9**
PC1. identify the work to be done by interpreting the engineering drawings/blueprints/SOPs	1	2		1

PC2. compute dimensions, sizes, shapes and tolerances of sub-assemblies of the machine based on the specifications as mentioned in the drawings/blueprints	2	3		2
PC3. report and rectify cases of any inappropriate information in design documents as per organizational procedures	1	2		1
PC4. identify the tools, dies, measuring instruments, machines (lathes, milling machines, grinders etc.) and input material (metal) required for the job	5	3		3
PC5. select and arrange the right input material, dies, tools, measuring instruments and machines as per the SOP and job requirements	2	4		2
Prepare for fabrication work	**19**	**36**	**-**	**11**
PC6. use appropriate Personal Protective Equipment (PPE) for safe working in workshop	1	2		1
PC7. plan sequence of activities need to perform for fabrication work	1	2		
PC8. check the tools, dies, measuring instruments and machines are cleaned, free from any defects and functioning properly	3	6		2
PC9. check and calibrate the tools and equipment before use	2	5		1
PC10. check that input material is cleaned i.e. free from rust or any contaminants and as per the required quality standard	3	5		2
PC11. ensure availability of correct quantity metal work pieces and other materials required for fabrication in the workshop	1	2		
PC12. smoothen out the metal work piece prior to fabrication by using grinding machine	2	4		1
PC13. measure and mark reference points/cutting lines on the work pieces by using compass, callipers, rulers and other measuring tools	2	4		1
PC14. set the conventional or computer numerically controlled machines and its parameters as per the design requirements and SOP	4	6		3
NOS Total	**30**	**50**	**-**	**20**

ISC/N0902: Perform fabrication activities

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Setting up machine	**7**	**11**	**-**	**6**
PC1. enquire with the user/operator about any problems/unusual conditions noticed on the belt conveyor system	2	3		2
PC2. adjust the machine controls to ensure conformance with the specified tolerances	3	5		3
PC3. mount, install and align tools, attachments and fixtures on machine by using hand tools and precision measuring instruments	2	3		1
Perform machining on the component	23	39		14
PC4. lift the work piece/metal stock manually or by hoist, position the same securely on the machine bed by using work holding devices and verify their positions with measuring instruments if required	2	3		2
PC5. cut the metal blocks into required size by using power operated/manual/automatic cutting tools as per the requirement	1	2		
PC6. start the machine for machining operations	2	3		2
PC7. ensure that the right programme is selected in the CNC machine as defined in the SOP	6	10		4
PC8. perform various machining operations on the metal block to get the shape and dimension as per the drawing/work order	4	7		3
PC9. cut, shape and trim the metal block to specified lengths and shapes by using conventional/CNC machines	2	3		1
PC10. monitor the process parameters by reading the various gauges and correct them if not within standards	1	2		
PC11. monitor the machine operations for any malfunctions/defects in the component and inform the supervisor/maintenance team for correction	3	5		1
PC12. measure the machined pieces and compare with the dimensions as prescribed in the work order and engineering drawing	1	2		1
PC13. follow the do's and don'ts of the manufacturing process as defined in SOPs/Work Instructions or given by supervisors	1	2		
NOS Total	**30**	**50**	**-**	**20**

ISC/N0903: Perform post-fabrication activities

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Perform de- burring activity on the machined components	**12**	**20**	**-**	**8**
PC1. assemble back all the components of the vehicle as per the drawing and prepare it for conducting the trials	2	3		1
PC2. remove the workpieces from the machine as per company procedure	4	7		3
PC3. conduct de-burring operations with the help of correct tool to remove extra burrs, sharp edges, rust and chips from the metal surface	4	7		3
PC4. conduct shot blasting/vibro processes for completing de-burring operations	2	3		1
Quality check of the machined component	11	19		8
PC5. clean machine parts as per the defined process and quality control standards	4	8		3
PC6. check the component as per the control plan, WI for product quality	2	3		2
PC7. ensure use of calibrated equipment to check the workpiece for conformance to the required specifications and standards	2	3		1
PC8. note down the observations of the basic inspection process and identify pieces which are as per the specified standards	3	5		2
PC9. separate the completed pieces into Ok pieces and defective pieces which can be repaired/reworked and pieces which are beyond repair and maintain records of each category	4	8		3
Carry out housekeeping and documentation	**7**	**11**	**-**	**4**
PC10. clean and store all the tools, machine and equipment after completion of work	3	5		2
PC11. dispose scrap or waste material into the disposal area in accordance with the company's policies and environmental regulations	2	3		1

PC12. maintain and update all the records and reports related to fabrication work done as per the organisational guidelines	2	3		1
NOS Total	**30**	**50**	**-**	**20**

ISC/N0904: Perform maintenance activities

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Perform preventive maintenance of machines	**30**	**50**	**-**	**20**
PC1. identify and arrange necessary inspection and repairing tools required during maintenance work	4	4		2
PC2. observe the machines or equipment to diagnose machine malfunction and determine need for adjustment or repair	3	5		2
PC3. maintain the machine as per proper operational condition/daily maintenance check list	2	3		1
PC4. clean and oil the machine and its components as per checklist	2	5		2
PC5. clean the hydraulic tank/gauge/tools/fixtures as per the cleaning schedule provided in Work Instruction/SOP manual	3	5		2
PC6. check coolant and lubricant level in the machine as per standards	3	5		2
PC7. apply appropriate lubricant as per manufacturer specification	3	5		2
PC8. remove chips from different machine areas and dispose scrap or waste material into the disposal area in accordance with the company policies and environmental regulations	3	5		2
PC9. carry out minor repairs and adjustments of the machine and report any malfunctions/repairs in the machine beyond own scope to the concerned person	3	7		3
PC10. replace worn out tools timely and safely with new tools	2	3		1
PC11. maintain and update all the records and reports related to maintenance work done as	2	3		1

per the organisational guidelines				
NOS Total	**30**	**50**	**-**	**20**

Outcomes to be assessed/NOSs to be assessed	**Assessment criteria for the outcome**
Provided in the above section	

Means of assessment 1

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below.)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on these criteria.

Means of assessment 2

Add boxes as required.

Pass/Fail

1. To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS.
2. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

SECTION 2
EVIDENCE OF LEVEL

Title/Name of qualification/component: Assistant – Machinist – Iron and Steel			Level: 3
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomes relates to the NSQF level descriptors**	**NSQF Level**
Process	Identifying the sequence of machining operations required to fabricate product components by studying their designs/ sample parts and fabricating the components using the appropriate tools and dies	Person may carry out a job which may require limited range of activities routine and predictable. This level 3	3
Professional knowledge	Knowledge related to machines such as drilling, turning, milling, precision measurements, operational maintenance of machines	Basic facts, process and principle applied in trade of employment and hence is level 3.	3
Professional skill	Attaching utmost importance to safety of machines and tools and equipment handling, supporting with maintenance of equipment and proper operations of machines	demonstrate practical skill, routine and repetitive in narrow range of application and Hence this is level 3	3
Core skill	Reading and writing; addition, subtraction; hygiene and environment.	skill of basic arithmetic and algebraic principles, personal banking, basic understanding of social and natural environment. Hence this is level 3	3
Responsibility	Responsible for completing the assigned task, working under guidance of supervisor	Under close supervision. Some responsibility for own work within defined limit and hence level 3	3

SECTION 3
EVIDENCE OF NEED

1 **What evidence is there that the qualification is needed? What is the estimated uptake of this qualification and what is the basis of this estimate?**

Basis	In case of SSC	In case of other Awarding Bodies (Institutes under Central Ministries and states departments)
Need of the qualification The Indian and Steel Sector is second largest steel producing nation in the world after China poised to grow from 110MT to 300 MT by 2030. It will undergo a substantial transformation. The sector employs a total of 2 million direct and indirect workers, as of 2018.	The SSC would undertake market study and would enclosed demand forecast for the proposed job role both on short-term and long-term basis to substantiate the requirement of the Qualification proposed. The SSC can produce the data from primary or authorized secondary sources as well.	The Submitting Body would produce any reputable and reliable research reports, such as labour market information reports; occupational mapping or similar research carried out by Ministry/State/Any other authentic source forecasting the demand for the proposed qualification
Industry Relevance We are in the process of taking industry validation.	The SSC would undertake validation of the job roles with actual end-user industry where such employment is going to be generated and absorbed instead of generic validation of industry. The SSC would submit the	The Submitting Body would submit the list of industry participation while preparation of the curriculum/ course content of the qualifications. These could include minutes of the meeting/ reports of these consultations

	endorsements from users/intended users of the qualification clearly supporting or otherwise the need for trained people against specific job role.(*The industry validation format to be used*)	
Usage of the qualification: This Qualification Pack will be used across iron and steel industry which is organised as well as unorganised	The SSC would submit details of the employment generated (wherever applicable) and realised by virtue of training in the Qualifications of the sector earlier submitted for NSQF alignment. In case of unorganized sector, case studies or evidences may be given	The submitting body would submit the details of trained and placed data in the proposed qualification (if an existing qualification is being proposed for NSQF alignment) Information about the success of the qualification should be given (e.g. uptake figures, examples of use in recruitment and placement rates (if known) should be given. However, many of the bodies that do not have placement tracking mechanism established in place would provide necessary endorsements by the state/ ministry stating that a tracking mechanism would be institutionalized and placement records shall be provided annually or later, depending on length of qualification.
Estimated uptake The Iron and Steel sector will require a series of non-	The SSC would submit the estimated uptake of the qualification and What steps were carried	The Submitting Body should submit the estimated uptake by reflecting the number of

	routine tasks like social intelligence, complex critical thinking, and creative problem solving to remain relevant in the steel industry.	out to test the likely uptake of the qualification? The basis of this estimate should include data about the number of jobs or places in courses of learning which will be available to people who are awarded the qualification.	the takers for this qualification for at least two years from submission of the qualification
2	**Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary evidences** N/A		
3	**What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF? Give justification for presenting a duplicate qualification** NSDC list of Approved and Under-Development QPs was checked prior to commencement the work.		
4	**What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated? Specify the review process here** • Agencies have been appointed by the SSC to interact with training providers to gather feedback in implementation • Monitoring of results of assessments • Employer feedback will be sought post-placement • A formal review is scheduled by 2026		

Please attach most relevant and recent documents giving further information about any of the topics above.
Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

SECTION 4
EVIDENCE OF PROGRESSION

1	**What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?** 1. Endorsed and accepted by the Industry players 2. Formal recognition from the Industry players 3. Horizontal and vertical mobility options are available