



QUALIFICATION FILE

Operator-Plastic 3D printing

Short Term Training (STT) Long Term Training (LT) 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:

Rubber, Chemical & Petrochemical Skill Development Council (RCPSDC)
304, 3rd Floor, Rectangle One, Saket District Center,
New Delhi – 110017 (India)

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Section 1: Basic Details

1. Qualification Name	Operator-Plastic 3D printing																						
2. Sector/s	Rubber																						
3. Type of Qualification: <input type="checkbox"/> New <input checked="" type="checkbox"/> Revised <input type="checkbox"/> Has Electives/Options <input type="checkbox"/> OEM	NQR Code & version of existing/previous qualification: (change to previous, once approved)	Qualification Name of existing/previous version:																					
4. a. OEM Name b. Qualification Name (Wherever applicable)																							
5. National Qualification Register (NQR) Code & Version (Will be issued after NSQC approval)	2022/CP/RSDC/06962	6. NCrF/NSQF Level: 4																					
7. Award (Certificate/Diploma/Advance Diploma/ Any Other (Wherever applicable specify multiple entry/exists also & provide details in annexure)	Certificate																						
8. Brief Description of the Qualification	The individual at work is responsible for performing plastic 3D printing operations to produce good quality products.																						
9. Eligibility Criteria for Entry for Student/Trainee/Learner/Employee	<p>a. Entry Qualification & Relevant Experience:</p> <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>Completed 1st year of 3-year diploma after 10th and pursuing regular diploma</td> <td>NA</td> </tr> <tr> <td>2</td> <td>10th Class pass with 1-year NTC/NAC</td> <td>NA</td> </tr> <tr> <td>3</td> <td>10th Class pass</td> <td>2 years relevant</td> </tr> <tr> <td>4</td> <td>8th grade pass plus 2-year NTC plus 1 year NAC</td> <td>NA</td> </tr> <tr> <td>5</td> <td>8th grade pass plus 1-year NTC plus 1 year NAC plus NITC</td> <td>NA</td> </tr> <tr> <td>6</td> <td>Certificate NSQF Level 3 (Assistant Operator Plastic 3D printing) with minimum education as 5th grade pass</td> <td>2 years relevant</td> </tr> </tbody> </table> <p>b. Age: 18 years</p>		S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)	1	Completed 1 st year of 3-year diploma after 10 th and pursuing regular diploma	NA	2	10 th Class pass with 1-year NTC/NAC	NA	3	10 th Class pass	2 years relevant	4	8 th grade pass plus 2-year NTC plus 1 year NAC	NA	5	8 th grade pass plus 1-year NTC plus 1 year NAC plus NITC	NA	6	Certificate NSQF Level 3 (Assistant Operator Plastic 3D printing) with minimum education as 5 th grade pass	2 years relevant
S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)																					
1	Completed 1 st year of 3-year diploma after 10 th and pursuing regular diploma	NA																					
2	10 th Class pass with 1-year NTC/NAC	NA																					
3	10 th Class pass	2 years relevant																					
4	8 th grade pass plus 2-year NTC plus 1 year NAC	NA																					
5	8 th grade pass plus 1-year NTC plus 1 year NAC plus NITC	NA																					
6	Certificate NSQF Level 3 (Assistant Operator Plastic 3D printing) with minimum education as 5 th grade pass	2 years relevant																					

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)	<input checked="" type="checkbox"/> Offline <input type="checkbox"/> Online <input type="checkbox"/> Blended <table border="1" style="width: 100%; border-collapse: collapse;"> <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>162:00</td> <td>288:00</td> <td>60:00</td> <td>--</td> <td>510:00</td> </tr> <tr> <td>Online</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>(Refer Blended Learning Annexure for details)</p>						Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)	Classroom (offline)	162:00	288:00	60:00	--	510:00	Online					
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Classroom (offline)	162:00	288:00	60:00	--	510:00																				
Online																									
14.	Aligned to NCO/ISCO Code/s (if no code is available mention the same)	NCO-2015/8142.1100																							
15.	Progression path after attaining the qualification (Please show Professional and Academic progression)	Manager – Printing & Packaging																							
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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No URLs of similar Qualifications:																							
18.	Is the Job Role Amenable to Persons with Disability	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 1. RSC/N5604: Implement ethical and sustainable practices at the workplace																							
21.	Is Qualification Suitable to be Offered in Schools/Colleges	Schools <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Colleges <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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. Saif Mohammad Email: ceo@rcpsdc.in Website: https://www.rcpsdc.in <div style="text-align: right; margin-top: 10px;">Contact No.: 011 – 41009347-48</div>																							
23.	Final Approval Date by NSQC: 25/08/2022	24. Validity Duration: 3 Years			25. Next Review Date: 25/08/2025																				

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.	Identify 3D Printing requirements	RSC/N8013 & V1.0	Core	4	2	30	30	-	-	60	40	60	-	-	100	25	
2.	Perform plastic 3D printing operations	RSC/N8015 & V1.0	Core	4	8	80	160	-	-	240	40	60	-	-	100	25	
3.	Maintain effectively communicate at the workplace	RSC/N5611 & V1.0	Non-core	5	1	10	20	-	-	30	40	60	-	-	100	10	
4.	Manage housekeeping at workplace	RSC/N5605 & V1.0	Non-core	5	1	10	20	-	-	30	40	60	-	-	100	10	
5.	Manage health and safety practices	RSC/N5609 & V1.0	Non-core	5	1	10	20	-	-	30	40	60	-	-	100	10	
6.	Implement ethical and sustainable practices at the workplace	RSC/N5604 & V1.0	Non-core	5	1	10	20	-	-	30	40	60	-	-	100	10	
7.	Employability Skills (30 hours)	DGT/VSQ/N0101 & V1.0	Non-core	2	1	12	18	-	-	30	20	30	-	-	50	10	
8.	On Job Training	-	Core	4	2	-	-	60	-	60	-	-	-	-	-	-	
Duration (in Hours) / Total Marks				-	-	13	162	288	60	-	510	340	510	-	-	850	100

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
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
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: 70 % (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 any engineering stream with 3 years of relevant experience
2.	Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	ITI in any engineering stream with 5 years of relevant experience
3.	Tools and Equipment Required for Training	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (If "Yes", details to be provided in Annexure)

4.	In Case of Revised Qualification, Details of Any Upskilling Required for Trainer	
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Section 4: Assessment Related

1.	Assessor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Diploma in any engineering stream with 5 years of relevant experience
2.	Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	ITI/ Diploma in Science
3.	Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Diploma in any engineering stream with 7 years of relevant experience
4.	Assessment Mode (Specify the assessment mode)	Blended
5.	Tools and Equipment Required for Assessment	<input checked="" type="checkbox"/> Same as for training <input type="checkbox"/> Yes <input type="checkbox"/> 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: 30
5.	Estimated nos. of persons to be trained and employed:
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
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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")	Filled
6.	Annexure: Multiple Entry-Exit Details (Mandatory, in case qualification has multiple Entry-Exit)	Filled
7.	Annexure: Acronym and Glossary (Optional)	Attached
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:	NA

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	<p>Job that requires well developed skill, with clear choice of procedures in familiar context.</p> <ul style="list-style-type: none"> Identify 3D printing requirements Perform plastic 3D printing operations Manage effective communication at the workplace Manage housekeeping at workplace Manage health and safety practices Implement ethical and sustainable practices at workplace 	<ul style="list-style-type: none"> An Operator-Plastic 3D printing should be able to identify 3D printing requirements, perform plastic 3D printing operations as per the organizational standards. The person requires well developed skills, with clear choice of procedure in a familiar context. Hence Level 4 	4
Professional and Technical Skills/ Expertise/ Professional Knowledge	<p>Knowledge of facts, principles, processes and general concepts, in a field of work or study.</p> <ul style="list-style-type: none"> List the various types of 3D printers and 3D printing Discuss the principles of 3D printing, latest global technology trends and developments in 3D printing and relationship between 3D modelling and 3D image software 	<ul style="list-style-type: none"> An Operator-Plastic 3D printing should have knowledge of facts, principles, processes and general concepts of the sector and occupation like relationship between 3D modelling and 3D image software, principles of 3D printing, latest global technology trends and 	4

	<ul style="list-style-type: none"> • Explain the cartesian coordinate system and how it relates to 3D graphics file manipulation and common errors in 3D printer graphics • Discuss the effect of setting resolution and deposition thickness in 3D graphics on 3D print output quality and techniques for file conversion, compression, and decompression • Explain the operating procedure of 3D printing equipment and software and techniques for controlling quality in 3D printing • Discuss the merits and demerits of 3D Printing process and causes and treatment of common faults in 3D printing • Explain the features of the plastics derived from renewable materials such as Polylactic Acid (PLA) and types and characteristics of the material used for 3D printing including High Performance Polymers and Hybrid materials • Describe the procedure to maintain the quality of materials during storage and handling • Discuss standard policies on behavioural etiquette, professionalism and gender sensitive service practices at workplace and hierarchy and reporting structure • List key helpline number • Explain effective ways of team coordination • Discuss various factors to determine the type of cleaning, level of hygiene and methods and material used for cleaning • Discuss health, safety and environment guidelines, legislation and regulations, knowledge of do's and don'ts and importance of Personal Protective Equipment (PPE) • Outline the importance of optimal utilization of resources and providing feedback for improvement • Explain the procedures of escalation for soils or stains that could not be removed and reporting for any unidentified soiling • Describe the method to check the treated surface and equipment on completion of the cleaning process and the importance of completing the activities as per the schedule 	<p>developments, merits and demerits of 3D Printing process, etc.</p> <ul style="list-style-type: none"> • Hence level 4 	
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	<ul style="list-style-type: none"> Explain the procedures for disposing off waste and personal protective equipment Describe the correct method for cleaning equipment and/or machinery used for the cleaning activities Discuss the methods for minimizing environmental damage during work and risks of health and safety at workplace Explain the standard procedure to use machines, materials and equipment Describe the process of reporting accidents, incidents and problems to appropriate authorities Elaborate the process of contact of local emergency services, emergency evacuation process and first aid procedures to be followed Describe the methods to handle hazardous materials, tools and equipment Outline the importance of good housekeeping and maintaining safe and secure work area at workplace Discuss harmful effect of using fuel such as diesel etc. along with alternate energy sources and alternate fuels Explain water harvesting techniques and soil erosion Describe the different types of waste and the different colours of dustbin for proper waste management State the importance of following organizational standards and guidelines related to PwD 		
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	<p>A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information.</p> <ul style="list-style-type: none"> Note down the information communicated by the supervisor Fill up documentation pertaining to job requirement Modify work practices to improve them Work with seniors/team members to carry out work related tasks Complete tasks efficiently and accurately within stipulated time 	<ul style="list-style-type: none"> An Operator-Plastic 3D printing should have practical skills to perform tasks that require cognitive as well as practical knowledge. This person applies a range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information's. Hence Level 4 	4

	<ul style="list-style-type: none"> • Inform/report to concerned person in case of any problem • Make timely decisions for efficient utilization of resources • Write reports such as accident report, in at least English/regional language • Organize work schedule, work area, tools, equipment and material to minimize health and safety risk • Analyze untoward incidents from the past and follow correct procedures in handling machines, tools or hazardous chemicals • Make timely decisions for efficient utilization of resources • Write in English/regional language and complete written work with attention to detail • Identify cause and effect of greening of jobs • Record data on waste disposal at workplace • Be punctual, utilize time and manage workload efficiently • Evaluate strategies to maintain, enhance or reduce the intensity of heightened emotional response • Interact with all stakeholders in a polite and courteous manner • Provide support in dealing with stress and anxiety during pandemic • Help colleagues to work efficiently • Create awareness about maintaining hygiene at workplace 		
Broad Learning Outcomes/Core Skill	<p>Desired mathematical skill; understanding of social, political; and some skill of collecting and organising information, communication.</p> <ul style="list-style-type: none"> • Communicate effectively with supervisor and team members • Read job sheets, organization policy documents, information displayed at the workplace and • Read safety instructions/guidelines 	<ul style="list-style-type: none"> • An Operator-Plastic 3D printing should apply core skills like desired mathematical skill; understanding of social, political and some skill of collecting and organising information. This person should be able to communicate effectively with others. • Hence Level 4 	4

	<ul style="list-style-type: none"> • Communicate with colleagues on the significance of greening of jobs 		4
Responsibility	<p>An Operator-Plastic 3D printing should apply core skills like desired mathematical skill; understanding of social, political and some skill of collecting and organising information. This person should be able to communicate effectively with others.</p> <ul style="list-style-type: none"> • Determine 3D printing requirements • Prepare 3D printing equipment • Carry out 3D printing activities • Communicate effectively with subordinates, colleagues and seniors • Manage housekeeping preparatory activities • Supervise housekeeping activities • Supervise post-housekeeping activities • Maintain safe and secure working environment • Follow appropriate emergency procedures • Maintain health and hygiene • Implement resource conservation practices (Greening) Implement effective waste management practices • Display behavioural skills • Respect gender and ability differences 	<ul style="list-style-type: none"> • An Operator-Plastic 3D printing is responsible determining 3D printing requirements, preparing 3D printing equipment, carry out 3D printing activities, etc. This person takes responsibility for own work and learning and some responsibility for others' work and learning. • Hence Level 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	3D Printing Software (Slicing Software)	Cura, PrusaSlicer, or Simplify3D	6
2	3D Printing Machine	FDM/ SLA	6
3	Consumables for 3D Printing	PLA, ABS, PETG, TPU, SLA	As required
4	Build tray material	As per industry standards	10
5	Spray nozzles	Different diameters	10
6	Slicing software		
7	Laptops	As per minimum requirements of 3D printer and Slicing software	10
8	Deburring and Cleaning tools	Sand paper, scrapers	10
9	UV Curing lamps	As per industry standards	6
10	Support removal tools	Pliers, Cutters	10
11	Finishing materials	Primer, paints, brushes, etc.	10

12	Digital Caliper	As per industry standards	6
13	Dial Gauge and Feeler Gauge	As per industry standards	4-5
14	Weighing scale	As per industry standards	6
15	Micrometer	As per industry standards	6
16	PPE	Gloves, Glasses, Masks	30

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Whiteboard
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	Sidhi Thermoformers Village Bhanokheri	Ashish Sareen	Manager Operations	Ambal	9416195379	ashusareen1@yahoo.com	
2	Medicoplast	Paresh	Proprietor	Vadodara	9638371969	medicoplastindia@gmail.com	
3	Ahilya Enterprises	Abhishek Dubey	Proprietor	-	9148364916	avdubey.ahilya@gmail.com	
4	Kira Enterprises	Abhinav Jalan	Accounts And Sales	-	8853841030	kiranenterprises91@yahoo.com	
5	R J TACKLES PVT LTD.	Harishankar Das	Factory Incharbe	Howrah	7003754291	factoryrjt@gmail.com	
6	PRINCE PET	Raja Gosh	Proprietor	Kolkata	9681569912	princepet.kp@gmail.com	
7	Packaging and Recycling Consultant	Rajesh Kumar Gera	-	-	9967033107	rajeshkgera@gmail.com	

8	Grihzon Plastic Bottle Manufacturing Pvt Ltd	Sumit Kumar	Director	Jharkhand	6370578724	grihzone.info@gmail.com	
9	Mahabir Plastic Industries	Pooja Rehlan	Head- HR	Haryana	8287955040	marketing@mahabirplastic.com	
10	Manjushree Solutions	Smitha	HR	Assam	7811020465	smitha.b@manjushree.in	
11	Pranddeep Plasto Industries Pvt Ltd	Prangopal Saha	Proprietor	Tripura	9436451890	prangopal.saha@gmail.com	
12	RFL Plastics	Arindam Modak	Project Manager	Tripura	6009905225	info@rflapp1.com	
13	Royal fasteners	Kamlesh Jain	Director	Guwahati	6290734254	kamleshjain2006@gmail.com	
14	Tarashankar Platsoc Industries	Sajib Saha	Project Head	Tripura	0381-2381364	infor@tarashankar.com	
15	Vishnu Enterprise Pvt Ltd	Ramesh Kumar	Manager	Bihar	7484908397	vishnuenterprize520@gmail.com	
16	GAIL	Manish Khandelwal	GM	Uttar Pradesh	9958745666	m.khandelwal@gail.com	
17	Globus Enterprises	Asif Khan	HR Manager	Haryana	8950100576	asif.khan2396@gmail.com	
18	EPL	Yaram VV Sudhakar	Manager- Technical Recruitment	Maharashtra	9673333546	sudhakar.yaram@eplglobal.com	
19	Polyplex Coorporation Limited	Sunil Kumar Singh	Lead Manager	Uttarakhand	9568006870	ssingh@polyplex.com	
20	Cosmo Auto Tech pvt Ltd	Mr Prahalad	Senior Manager	Haryana	9911663852	accounts@cosmoautotech.com	
21	Suman Auto Parts Limited	Anand Sharma	Manager- HR	Haryana	9540777930	anand@sumanauto.net	

22	Reliance Industries Ltd.	Dr Ajit Mathur	Retired Vice President (R and D)		9998954004	drajitmathur@gmail.com	
23	Lisa Plastic	Sunil Sahoo	Manager	Odisha	9776645779	lisa_plastics@yahoo.co.in	
24	The Sirpur Paper Mills	M. Naga Raju	Sr. Manager	Telangana	9912345001	naga.raju@spm.jkmail.com	
25	Sekisui Dljm Moulding Pvt Ltd	R. Kumaresan	Assistant Manager	Tamil Nadu	7823930455	hrd5.ch@sekisuidljm.com	
26	Innovsource Services Private Limited	Mr Ashwin Kute	Vp and Head Sales	Maharashtra	9820854493	ashwinkute@innov.in	
27	Varroc Polymers	Mr Mahendra Pujari	Manager, HR	Maharashtra	9673001465	mahendra.pujari@varroc.com	
28	Arya Industry	Mr. Satyandra Sharma	Director	Rajasthan	98877-07318, 89497-22017	aryaindustryhanumangarh@gmail.com	
29	Tirupati Plastics	Mr Navneet Bansal	Director	Rajasthan	94133-82217, 94623-94224	tirupatiplastic.hmh@gmail.com	
30	Electronica Plastic Machineries Ltd	Mr Lalit Gundawar	Asst Managr, HR	Ambal	9823871789	lag@electronicapml.com	

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
2023-24	150	70%	30	70%		

2024-25	250	70%	50	70%		
2025-26	500	70%	100	70%		

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:

- PC1.
- PC2.

Content availability for previous versions of qualifications:

Participant Handbook Facilitator Guide Digital Content Qualification Handbook Any Other:

Languages in which Content is available: English and Hindi

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	<input checked="" type="checkbox"/> Theory/ Lectures - Imparting theoretical and conceptual knowledge	<ul style="list-style-type: none"> • Books/ e-books • Presentations • Reference Material • Audio / Video Modules 	50:50
2	<input checked="" type="checkbox"/> Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	<ul style="list-style-type: none"> • Self-Learning Videos • Broadcasts • Mobile Learning • Curated Digital content 	50:50

3	<input checked="" type="checkbox"/> Showing Practical Demonstrations to the learners	<ul style="list-style-type: none"> • Video Content • E-Resource library • AR/ VR/ XR 	50:50
4	<input checked="" type="checkbox"/> Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	<ul style="list-style-type: none"> • Training tools (tools list attached) • Video Play • Presentations 	50:50
5	<input checked="" type="checkbox"/> Tutorials/ Assignments/ Drill/ Practice	<ul style="list-style-type: none"> • Online Question Bank • Mobile Quick test app • MCQ based tests 	50:50
6	<input checked="" type="checkbox"/> Proctored Monitoring/ Assessment/ Evaluation/ Examinations	<ul style="list-style-type: none"> • Assessment engine for Essays • Up-loadable file examinations • Mock test sessions 	50:50
7	<input checked="" type="checkbox"/> On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	<ul style="list-style-type: none"> • Online tests • Offline assessments 	50:50

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
RSC/N8013 - Identify 3D printing requirements	<i>Determine 3D printing requirements</i>	40	60	-	-
	PC1. receive design files and identify document precision, quality, and materials requirements for 3D printing as per job specifications	4	5	-	-
	PC2. evaluate the designs to ensure compatibility with 3D printing and recommend technical solutions, if required	4	5	-	-
	PC3. create daily schedules for the printers to minimize downtime	3	6	-	-
	PC4. review and document faults, imperfections and errors of file and assess against specifications	4	5	-	-
	PC5. provide recommendations to the concerned personnel, and decide on alterations to be undertaken	3	6	-	-
	PC6. select software required to perform adjustments according to file requirements	4	5	-	-
	PC7. evaluate potential waste, build, and support materials	4	5	-	-
	PC8. manipulate the file to remove imperfections and errors	4	6	-	-
	PC9. prepare output file according to printer specifications	3	6	-	-
	PC10. review file quality and obtain sign off from the authorized personnel	4	5	-	-
	PC11. save the file in a format appropriate for 3D printing according to organizational policies and procedures	3	6	-	-

	Total Marks	40	60	-	-
RSC/N8015 - Perform plastic 3D printing operations	<i>Prepare 3D printing equipment</i>	20	30	-	-
	PC1. make sure the 3D printing equipment is in serviceable condition and ready for production	1	2	-	-
	PC2. ascertain any necessary calibration or other periodic checks are up to date	2	2	-	-
	PC3. ensure that files are in the correct format for the job	1	2	-	-
	PC4. ensure sufficient supplies of appropriate materials like resin or filament/powder as per the work order	2	1	-	-
	PC5. organize prototyping shop facilities, facility workflow, and queues to optimize resources and ensure prompt job delivery	1	2	-	-
	PC6. maintain an inventory of components, supplies, tools, and consumables for printing machines	1	2	-	-
	PC7. verify that scaling and measurements are in line with job requirements	1	2	-	-
	PC8. perform pre-start up checks to confirm the machine is working in line with the manufacturer's instructions	1	2	-	-
	PC9. check that completed objects fit onto build platforms	1	2	-	-
	PC10. ensure 3D printing parameters are set-up in line with job requirements	1	2	-	-
	PC11. make sure the printer software is set up so that components are correctly oriented	2	1	-	-
	PC12. check files are free of errors when loading and that there are no features below the required diameter	1	2	-	-
	PC13. position the objects on the build tray	1	2	-	-
	PC14. select material and model finish	1	2	-	-
	PC15. validate tray and print the sample model to check for appropriateness	2	2	-	-
	PC16. report any machine faults to the appropriate person for repair or replacement	1	2	-	-
	<i>Carry out 3D printing activities</i>	20	30	-	-
	PC17. confirm the 3D printing machine set up in the appropriate way as per job requirement	2	2	-	-
	PC18. run the 3D printing machine in a safe and efficient manner in line with the manufacturer's instructions	1	2	-	-
	PC19. select the required coarseness appropriate to the size of the model	1	2	-	-
	PC20. operate the machine at the required speed for the outputs required	1	2	-	-
	PC21. check at regular intervals that quality standards and job specifications are met	1	2	-	-
	PC22. watch for curing or delamination of the plastic from the build platform	2	2	-	-

RSC/N5611 - Maintain effectively communicate at the workplace	PC23. resolve any machine problems which affect quality or productivity without delay	1	2	-	-
	PC24. remove completed objects from the machine at the appropriate time	1	1	-	-
	PC25. sand, cut, snap off, or dissolve the structural supports	1	2	-	-
	PC26. check the final quality of objects and take appropriate action to deal with any faults or blemishes	2	2	-	-
	PC27. ensure the print output meets job specifications and required quality standards	1	2	-	-
	PC28. troubleshoot when the pieces don't print correctly	1	2	-	-
	PC29. clean and close down the machine in line with the manufacturer's instructions	1	2	-	-
	PC30. perform post-processing and finishing of 3D printed parts like sandblasting, polishing, spray paint, resin (Polylactic Acid (PLA)) dripping, etc.	1	2	-	-
	PC31. prepare production log as per the organizational procedures	1	2	-	-
	PC32. take necessary action to deal with any further post-processing required	2	1	-	-
	Total Marks	40	60	-	-
	<i>Communicate effectively with subordinates, colleagues and seniors</i>	40	60	-	-
	PC1. communicate information using different techniques such as face-to-face, telephonic and written means	3	4	-	-
	PC2. facilitate respectful communication amongst others, considering the needs of those from diverse backgrounds	3	4	-	-
	PC3. ensure all communication is consistent with legislative and organisational requirements	2	4	-	-
	PC4. assess and respond appropriately to body language of audience	3	4	-	-
	PC5. use active listening skills and questioning techniques to clarify issues or problem areas for resolution	3	4	-	-
	PC6. select communication strategies that are appropriate to the social and personal needs of the receiver	2	4	-	-
	PC7. apply communication techniques and skills to effectively communicate with individuals and teams, including those of different cultures, according to organizational code of ethics and policies and procedures	3	4	-	-
	PC8. make sure communication is clear, concise and accurate	3	4	-	-
	PC9. brief subordinates and team members effectively	2	4	-	-
	PC10. provide performance feedback and additional support to others when required	3	4	-	-

RSC/N5605 - Manage housekeeping at workplace	PC11. seek feedback and assistance from others to improve own communication techniques and work procedures	3	4	-	-
	PC12. ensure appropriate usage of agendas and minutes, in accordance with workplace procedures, to convey team decisions to appropriate personnel	2	4	-	-
	PC13. identify barriers to communication at workplace and resolve the same	3	4	-	-
	PC14. co-ordinate with team to integrate work as per requirements	2	4	-	-
	PC15. build effective yet impersonal relationship with subordinates, colleagues and seniors	3	4	-	-
	Total Marks	40	60	-	-
	<i>Manage housekeeping preparatory activities</i>	16	21	-	-
	PC1. ensure that all the material and equipment required for cleaning are available in stock all the time	2	3	-	-
	PC2. ensure that the cleaning equipment is in proper working condition	2	2	-	-
	PC3. support the team in identifying suitable alternatives for cleaning the areas in case the appropriate equipment and materials are not available and inform the concerned person	2	2	-	-
	PC4. prepare, plan and schedule for cleaning the area	3	4	-	-
	PC5. make arrangements to inform the affected people about the cleaning activity	2	2	-	-
	PC6. ensure that relevant safety boards/signs are placed on the shop floor for the safety of self and others	3	4	-	-
	PC7. ensure that adequate ventilation is available at workplace for carrying out cleaning work	2	4	-	-
	<i>Supervise housekeeping activities</i>	8	13	-	-
	PC8. ensure that team is wearing appropriate personal protective equipment for cleaning work	2	2	-	-
	PC9. monitor that team is following correct cleaning method for the work area, types of soiling and surface	2	2	-	-
	PC10. manage the accidental damage, if any, caused during the cleaning work	2	7	-	-
	PC11. report to the appropriate person in case of any difficulties during cleaning or any additional cleaning is required, which is outside the scope of one's responsibility or skill	2	2	-	-
	<i>Supervise post-housekeeping activities</i>	16	26	-	-
	PC12. check that there is no oily substance left on the floor to avoid slippage	2	5	-	-
	PC13. ensure that no scrap material is lying around	2	5	-	-

	PC14. observe that team is following workplace procedures to deal with any accidental damage caused during the cleaning process	2	3	-	-
	PC15. check that the area is clean, dry and meet the requirements after completion of work	2	4	-	-
	PC16. ensure that team is returning back the equipment, materials and personal protective equipment to store as per organisational procedures	2	2	-	-
	PC17. ensure that proper mechanism is followed while collecting and disposing off waste	2	2	-	-
	PC18. update and maintain schedules and records for housekeeping duty	2	2	-	-
	PC19. check that necessary supplies or consumables are filled every time for use	2	3	-	-
	Total Marks	40	60	-	-
RSC/N5609 - Manage health and safety practices	<i>Maintain safe and secure working environment</i>	11	21	-	-
	PC1. identify hazardous activities and the possible causes of risks or accidents in the workplace	2	5	-	-
	PC2. implement safe working practices for dealing with hazards to ensure safety of self and others	2	5	-	-
	PC3. ensure that regular checks of the machines are conducted to identify potential hazards	2	2	-	-
	PC4. ensure that team is using equipment and materials safely and correctly and returning the same to designated store when not in use	2	4	-	-
	PC5. ensure that team is handling heavy and hazardous materials with care and by using appropriate tools and handling equipment such as trolleys, ladders	2	3	-	-
	PC6. ensure that the team is following all safety guidelines while using the tools and equipments	1	2	-	-
	<i>Follow appropriate emergency procedures</i>	10	25	-	-
	PC7. report any accidents, incidents or problems and take immediate necessary action to reduce further danger	2	6	-	-
	PC8. respond promptly and appropriately to an accident or medical emergency	1	2	-	-
	PC9. use emergency equipment in accordance with manufacturers' specifications and workplace requirements	1	5	-	-
	PC10. provide appropriate first aid procedure to victims wherever required eg.in case of bleeding, burns, choking, electric shock etc.	2	6	-	-
	PC11. organise safety drills or training sessions to create awareness amongst others on the identified risks and safety practices	2	3	-	-

	PC12. encourage team and ensure that the team attends the safety drills	2	3	-	-
	<i>Maintain health and hygiene</i>	9	24	-	-
	PC13. inspect workplace for any leakages, water logging, pests, fire, pollution, etc. and take preventive actions and other steps	2	5	-	-
	PC14. ensure workplace, equipment, restrooms etc. are sanitized regularly	1	3	-	-
	PC15. ensure team is following hygiene and sanitation regulations and following them on the shop floor	2	3	-	-
	PC16. ensure team is following proper hygiene and sanitation practices while working	-	4	-	-
	PC17. ensure that workplace is organized, clean and hazard free	1	4	-	-
	PC18. report advanced hygiene and sanitation issues to appropriate authority	1	3	-	-
	PC19. use and dispose of Personal Protective Equipment (PPE) as required during a pandemic	2	2	-	-
	Total Marks	30	70	-	-
RSC/N5604 - Implement ethical and sustainable practices at workplace	<i>Implement resource conservation policies and practices (Greening)</i>	15	22	-	-
	PC1. ensure that team is following organizational policies for usage of alternate energy source, such as solar energy, for the site	3	5	-	-
	PC2. identify possibilities of using renewable energy and environment friendly fuels	3	4	-	-
	PC3. identify processes where material and energy/electricity utilization can be optimized	3	4	-	-
	PC4. ensure water conservation practices are followed at work place	2	3	-	-
	PC5. identify and implement processes to prevent soil erosion during plantation and other activities	4	6	-	-
	<i>Implement effective waste management practices</i>	12	18	-	-
	PC6. ensure that team identifies the different types of waste such as recyclable, non-recyclable, and hazardous waste generated	2	4	-	-
	PC7. ensure recyclable, non-recyclable and hazardous wastes are segregated as per SOP	3	4	-	-
	PC8. ensure proper mechanism is followed while collecting and disposing of non-recyclable, recyclable and reusable waste	3	4	-	-
	PC9. organise and arrange proper storage facilities for recyclable and reusable material at identified location	2	3	-	-
	PC10. ensure proper mechanism is followed while collecting and disposing of hazardous waste	2	3	-	-
	<i>Display behavioural Skills</i>	4	4	-	-

DGT/VSQ/N0101 - Employability Skills (30 Hours)	PC11. determine the importance of accountability for timely completion of tasks	2	2	-	-
	PC12. ensure that work requirements are clearly communicated to the team members through all means including face-to-face, telephonic and written	2	2	-	-
	<i>Respect gender and ability differences</i>	9	16	-	-
	PC13. ensure team shows sensitivity towards all genders and PwD	2	5	-	-
	PC14. adjust communication styles to reflect gender sensitivity and sensitivity towards person with disability	2	5	-	-
	PC15. help PwD team members to overcome the challenges, if asked	2	3	-	-
	PC16. ensure that team is following the rules and guidelines in case of contagious disease outbreak	3	3	-	-
	Total Marks	40	60	-	-
	<i>Introduction to Employability Skills</i>	1	1	-	-
	PC1. understand the significance of employability skills in meeting the job requirements	-	-	-	-
	<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, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-	-	-
	<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 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	-	-	-	-
	<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 use its features and applications 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		250	400		

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.
 - If 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 are 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

On the Job:

1. Each module (which covers the job profile of Operator – Plastic 3D Printing will be assessed separately.
2. The candidate must score 50% in each module to successfully complete the OJT.
3. Tools of Assessment that will be used for assessing whether the candidate is having desired skills and etiquette of dealing with customers, understanding needs & requirements, assessing the customer and perform Soft Skills effectively:
 - Videos of Trainees during OJT
 - Answer Sheets of Question Banks
 - Assessing the Logbook entries of Trainees at Employer location
 - Employer Performance Feedback.
4. Assessment of each Module will ensure that the candidate is able to:
 - Identification of 3D Printing requirements
 - Perform plastic 3D Printing operations

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