

Qualification Pack



Laser Sawing Machine Operator - Diamond

QP Code: G&J/Q4404

Version: 5.0

NSQF Level: 3

GJSCI || Gem Jewellery Skill Council of India, 4th Floor, Business Facilitation Centre, SEEPZ SEZ,
Andheri (E)

Mumbai 400096 || email:standards.qa.content@gjsci.org

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G&J/Q4404: Laser Sawing Machine Operator - Diamond

Brief Job Description

The individual at work needs to cut the rough diamond along the marking by fixing it on a dop or cassette or holder, then slicing it using the laser machine. A laser sawing operator is responsible for delivering perfect cut of roughs in the stipulated time, while minimizing weight loss and breakage. Also known as Laser Cutter or Laser Operator or Laser Sawyer, the laser machine operator uses the laser machine to cut the diamond

Personal Attributes

The job requires the individual to have good communication and interpersonal skills with outcome focused and customer centric approach and an eye for detail.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [G&J/N4401: Fix the rough diamond on dop or cassette or holder](#)
2. [G&J/N4402: Cut rough diamond using a laser sawing machine](#)
3. [G&J/N9902: Maintain health and safety at workplace](#)
4. [DGT/VSQ/N0101: Employability Skills \(30 Hours\)](#)
5. [G&J/N9952: Implement Circular Economy and Sustainable Practices in Gem and Jewellery Industry](#)

Qualification Pack (QP) Parameters

Sector	Gem & Jewellery
Sub-Sector	Diamond Processing
Occupation	Rough Cutting and Sawing
Country	India
NSQF Level	3
Credits	11
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8189.0401

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Minimum Educational Qualification & Experience	10th grade pass with NA of experience OR 9th grade pass with 1.5 years of experience OR 8th Class with 3 Years of experience OR Previous relevant Qualification of NSQF Level 2.5 with 1.5 years of experience OR Previous relevant Qualification of NSQF Level 2 with 3 Years of experience
Minimum Level of Education for Training in School	Not Applicable
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	07/10/2028
NSQC Approval Date	07/10/2025
Version	5.0
Reference code on NQR	QG-03-GJ-045172025-V2-GJSCI
NQR Version	2.0

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G&J/N4401: Fix the rough diamond on dop or cassette or holder

Description

This OS unit is about fixing rough diamond on dop / holder / cassette using adhesives, levelling and aligning them as per the markings as a preparation for cutting on laser machine or blade sawing

Scope

The scope covers the following :

- Precision Fixing with Advanced Technology
- Automated Workflow & Smart Processing
- Sustainable & Defect-Free Handling
- Productivity Enhancement & Timely Delivery
- Quality Control

Elements and Performance Criteria

Precision Fixing with Advanced Technology

To be competent, the user/individual on the job must be able to:

- PC1.** utilize AI-assisted positioning systems or computer vision mapping to ensure accurate fixing of the rough diamond on the dop.
- PC2.** integrate laser-guided alignment for precise levelling as per the planned cut and marking.
- PC3.** apply non-invasive vacuum-based holding mechanisms to reduce pressure on the diamond during fixing.

Automated Workflow & Smart Processing

To be competent, the user/individual on the job must be able to:

- PC4.** use automated robotic arms for uniform and efficient fixing of the rough diamond.
- PC5.** implement real-time sensors to detect alignment issues and adjust positioning accordingly.
- PC6.** optimize workflow automation for seamless transfer to the next processing stage.

Sustainable & Defect-Free Handling

To be competent, the user/individual on the job must be able to:

- PC7.** employ eco-friendly adhesives and materials to secure the rough diamond without contamination.
- PC8.** ensure damage-free handling using AI-powered pressure control systems or manual torque regulators with safety locks

Productivity Enhancement & Timely Delivery

To be competent, the user/individual on the job must be able to:

- PC9.** implement real-time tracking of workflow progress to meet productivity targets in carats/pieces.
- PC10.** integrate cloud-based scheduling systems to ensure timely processing and delivery.

Quality Control

To be competent, the user/individual on the job must be able to:

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- PC11.** use tracking systems can be blockchain-based (if available) to maintain accuracy in diamond setting records.
- PC12.** conduct AI-powered quality inspections or digital magnification checks before transferring the diamond for further processing.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** role of AI-assisted systems in enhancing fixing accuracy.
- KU2.** how laser-guided tools assist in precise alignment and levelling.
- KU3.** vacuum-based holding techniques to prevent damage.
- KU4.** robotic arm functionalities in automated diamond handling.
- KU5.** know how sensors detect and correct alignment deviations in real-time.
- KU6.** workflow automation processes for smooth stage transitions.
- KU7.** eco-friendly adhesives suitable for diamond fixing.
- KU8.** AI-based pressure control methods for safe diamond handling.
- KU9.** use of digital tools for tracking productivity and delivery.
- KU10.** blockchain and AR applications for quality and traceability.

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and write to follow work instructions and maintain records.
- GS2.** communicate effectively with team members and supervisors.
- GS3.** stay updated on gemstone processing techniques and industry trends.
- GS4.** manage time efficiently to meet production deadlines.
- GS5.** identify and solve problems related to gemstone defects and processing.
- GS6.** apply critical thinking to improve processing methods and quality.

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Precision Fixing with Advanced Technology</i>	8	14	-	-
PC1. utilize AI-assisted positioning systems or computer vision mapping to ensure accurate fixing of the rough diamond on the dop.	4	5	-	-
PC2. integrate laser-guided alignment for precise levelling as per the planned cut and marking.	2	5	-	-
PC3. apply non-invasive vacuum-based holding mechanisms to reduce pressure on the diamond during fixing.	2	4	-	-
<i>Automated Workflow & Smart Processing</i>	8	18	-	-
PC4. use automated robotic arms for uniform and efficient fixing of the rough diamond.	4	5	-	-
PC5. implement real-time sensors to detect alignment issues and adjust positioning accordingly.	2	5	-	-
PC6. optimize workflow automation for seamless transfer to the next processing stage.	2	8	-	-
<i>Sustainable & Defect-Free Handling</i>	4	15	-	-
PC7. employ eco-friendly adhesives and materials to secure the rough diamond without contamination.	2	8	-	-
PC8. ensure damage-free handling using AI-powered pressure control systems or manual torque regulators with safety locks	2	7	-	-
<i>Productivity Enhancement & Timely Delivery</i>	4	15	-	-
PC9. implement real-time tracking of workflow progress to meet productivity targets in carats/pieces.	2	8	-	-
PC10. integrate cloud-based scheduling systems to ensure timely processing and delivery.	2	7	-	-
<i>Quality Control</i>	6	8	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. use tracking systems can be blockchain-based (if available) to maintain accuracy in diamond setting records.	2	4	-	-
PC12. conduct AI-powered quality inspections or digital magnification checks before transferring the diamond for further processing.	4	4	-	-
NOS Total	30	70	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	G&J/N4401
NOS Name	Fix the rough diamond on dop or cassette or holder
Sector	Gem & Jewellery
Sub-Sector	Diamond Processing
Occupation	Rough Cutting and Sawing
NSQF Level	3
Credits	3
Version	4.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

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G&J/N4402: Cut rough diamond using a laser sawing machine

Description

This OS unit is about cutting the rough diamond into smaller pieces as per the markings so that inclusions are removed and maximum yield is achieved as per the planned cut

Scope

The scope covers the following :

- Precision Laser Cutting & Setup
- Smart Machine Operations & Automation
- Quality Control & Digital Traceability
- Productivity & Damage Prevention

Elements and Performance Criteria

Precision Laser Cutting & Setup

To be competent, the user/individual on the job must be able to:

- PC1.** utilize AI powered scanning systems or 3D optical scanners to verify shape size and marking alignment before cutting
- PC2.** implement automated or manual dop or stage locking mechanisms for secure placement in the machine
- PC3.** align laser cutting lines using computer vision for precise cutting with minimal errors.

Smart Machine Operations & Automation

To be competent, the user/individual on the job must be able to:

- PC4.** configure pre programmed laser parameters using real time data inputs for optimized cutting
- PC5.** integrate IoT based machine monitoring to detect temperature pressure and vibration anomalies

Quality Control & Digital Traceability

To be competent, the user/individual on the job must be able to:

- PC6.** use AI driven quality inspection systems or digital magnifiers with defect-detection software to ensure accurate cutting along the marked lines
- PC7.** implement automated labelling and digital tracking for rough diamonds post cutting
- PC8.** adopt blockchain based records if possible for traceability of each cut piece from rough to the final stage

Productivity & Damage Prevention

To be competent, the user/individual on the job must be able to:

- PC9.** utilize multi machine operation dashboards to optimize workload and cycle times
- PC10.** minimize weight loss and breakage using real time predictive analytics for defect detection

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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- KU1.** identify the function of AI powered scanning systems for shape and alignment verification
- KU2.** explain the use of automated dop or stage locking mechanisms for secure machine setup
- KU3.** describe how computer vision aids in precise alignment of laser cutting lines
- KU4.** configure laser machines using real time data for optimal cutting performance
- KU5.** monitor IoT enabled systems to detect anomalies in machine operation parameters
- KU6.** apply AI tools to inspect cutting accuracy and reduce deviations
- KU7.** maintain digital records using automated labelling and tracking systems
- KU8.** use blockchain technology for ensuring traceability of diamond cutting stages
- KU9.** operate dashboards for managing multiple laser machines efficiently
- KU10.** interpret predictive analytics to prevent breakage and optimize weight retention

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** document work done for status and performance appraisal
- GS2.** fill requisition slip for ordering tools materials and consumables
- GS3.** document broken and lost diamonds as per company policy
- GS4.** read descriptions on the diamond packets/ bags to match the specifications of the roughs such as shape, size and quantity, as per those mentioned on the packet issued
- GS5.** discuss task, schedules, and work-loads with co-workers and supervisors
- GS6.** understand instructions and report problems
- GS7.** share work load as required
- GS8.** assist others who require help
- GS9.** report problems to supervisor such as impractical marking, machine failures
- GS10.** to decide if a particular rough must be cut along the marking provided
- GS11.** to determine what should be the order of the cut and which marking should be cut first to avoid breakage
- GS12.** how to plan and organize the machinery maintenance schedule to achieve break down free operations
- GS13.** how to plan work for maximum productivity
- GS14.** rectify defects occurred in sawing
- GS15.** devise new means of working to improve productivity
- GS16.** suggest different or innovative plans, which may yield higher returns for the company
- GS17.** to spot process disruptions and delays

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Precision Laser Cutting & Setup</i>	7	22	-	-
PC1. utilize AI powered scanning systems or 3D optical scanners to verify shape size and marking alignment before cutting	3	8	-	-
PC2. implement automated or manual dop or stage locking mechanisms for secure placement in the machine	2	7	-	-
PC3. align laser cutting lines using computer vision for precise cutting with minimal errors.	2	7	-	-
<i>Smart Machine Operations & Automation</i>	6	15	-	-
PC4. configure pre programmed laser parameters using real time data inputs for optimized cutting	4	7	-	-
PC5. integrate IoT based machine monitoring to detect temperature pressure and vibration anomalies	2	8	-	-
<i>Quality Control & Digital Traceability</i>	8	23	-	-
PC6. use AI driven quality inspection systems or digital magnifiers with defect-detection software to ensure accurate cutting along the marked lines	2	8	-	-
PC7. implement automated labelling and digital tracking for rough diamonds post cutting	2	8	-	-
PC8. adopt blockchain based records if possible for traceability of each cut piece from rough to the final stage	4	7	-	-
<i>Productivity & Damage Prevention</i>	9	10	-	-
PC9. utilize multi machine operation dashboards to optimize workload and cycle times	4	8	-	-
PC10. minimize weight loss and breakage using real time predictive analytics for defect detection	5	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	30	70	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	G&J/N4402
NOS Name	Cut rough diamond using a laser sawing machine
Sector	Gem & Jewellery
Sub-Sector	Diamond Processing
Occupation	Rough Cutting and Sawing
NSQF Level	3
Credits	5
Version	4.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

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G&J/N9902: Maintain health and safety at workplace

Description

This OS unit is about being aware of, communicating and taking steps towards minimizing potential hazards and maintaining health and safety at workplace.

Scope

The scope covers the following :

- Health, hygiene and safety in work area
- Fire safety
- Emergencies, rescue and first aid procedures
- Waste management

Elements and Performance Criteria

Health, hygiene and safety in work area

To be competent, the user/individual on the job must be able to:

- PC1.** follow regular cleaning and disinfection practices at work place using appropriate techniques and materials
- PC2.** follow hand hygiene practices at work place using appropriate techniques and materials
- PC3.** follow alternative ways of conducting meeting and organizing event to ensure safety
- PC4.** follow contactless attendance system
- PC5.** report regarding the contagious illness of self or people in close contact
- PC6.** use appropriate protective clothing/ equipment for specific tasks
- PC7.** identify hazardous activities and the possible causes of risks or accidents in the workplace
- PC8.** follow safe working practices while dealing with hazards to ensure safety of self and others
- PC9.** maintain appropriate working postures to minimize occupational health related issues

Fire safety

To be competent, the user/individual on the job must be able to:

- PC10.** use appropriate type of fire extinguisher
- PC11.** apply appropriate rescue techniques during fire hazard
- PC12.** ensure good housekeeping in order to prevent fire hazards

Emergencies, rescue and first aid procedures

To be competent, the user/individual on the job must be able to:

- PC13.** provide appropriate first aid procedure to victims wherever required eg.in case of bleeding, burns, choking, electric shock etc.
- PC14.** respond promptly and appropriately to an accident or medical emergency.
- PC15.** follow emergency procedures such as raising alarm, safe evacuation etc.

Waste management

To be competent, the user/individual on the job must be able to:

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- PC16.** identify recyclable, non-recyclable and hazardous waste
- PC17.** collect the segregated waste - at designated space
- PC18.** dispose non-recyclable waste appropriately and deposit recyclable and reusable material at identified location

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** company's policies on safety, hazards and personnel management
- KU2.** signages that refer to health and safety in work place
- KU3.** the reporting structure
- KU4.** health and safety hazards commonly present in the work place and related precautions
- KU5.** preventative and remedial actions to be taken in case of exposure to toxic material
- KU6.** methods of accident prevention
- KU7.** how different chemicals react and the related hazards
- KU8.** how to use machines and tools without causing any accident
- KU9.** importance of using protective clothing/ equipment while working
- KU10.** precautionary activities to prevent the fire accident
- KU11.** various causes of fire
- KU12.** techniques of using different fire extinguishers
- KU13.** different materials used for extinguishing fire
- KU14.** rescue techniques applied during a fire hazard
- KU15.** various types of safety signs and their meaning
- KU16.** appropriate basic first aid treatment relevant to different condition e.g. bleeding, minor burns, eye injuries etc.,
- KU17.** casualty lifting in case of an accident
- KU18.** usage of different colors of dustbins.
- KU19.** categorization of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics.
- KU20.** waste management and methods of waste disposal.

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and comprehend labels, charts, signages
- GS2.** read and comprehend manuals of operations
- GS3.** communicate effectively, the risk of not following safety measures
- GS4.** respond to emergencies/accidents, by taking an appropriate and timely decision
- GS5.** organize work schedule, work area, tools, equipment and material to minimize health and safety risk

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- GS6.** ensure appropriate action in case of any emergencies, accidents or fire at the work location
- GS7.** analyze untoward incidents from the past and follow correct procedures in handling machines, tools or hazardous chemicals
- GS8.** critically analyze the processes carried out by self and colleagues in the department to spot potential hazards and safety issues
- GS9.** record data on waste disposal at workplace.
- GS10.** complete statutory documents relevant to safety and hygiene.

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Health, hygiene and safety in work area</i>	9	16	-	-
PC1. follow regular cleaning and disinfection practices at work place using appropriate techniques and materials	1	2	-	-
PC2. follow hand hygiene practices at work place using appropriate techniques and materials	1	2	-	-
PC3. follow alternative ways of conducting meeting and organizing event to ensure safety	1	2	-	-
PC4. follow contactless attendance system	1	1	-	-
PC5. report regarding the contagious illness of self or people in close contact	1	2	-	-
PC6. use appropriate protective clothing/ equipment for specific tasks	1	2	-	-
PC7. identify hazardous activities and the possible causes of risks or accidents in the workplace	1	2	-	-
PC8. follow safe working practices while dealing with hazards to ensure safety of self and others	1	1	-	-
PC9. maintain appropriate working postures to minimize occupational health related issues	1	2	-	-
<i>Fire safety</i>	3	6	-	-
PC10. use appropriate type of fire extinguisher	1	3	-	-
PC11. apply appropriate rescue techniques during fire hazard	1	2	-	-
PC12. ensure good housekeeping in order to prevent fire hazards	1	1	-	-
<i>Emergencies, rescue and first aid procedures</i>	3	4	-	-
PC13. provide appropriate first aid procedure to victims wherever required eg.in case of bleeding, burns, choking, electric shock etc.	1	1	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. respond promptly and appropriately to an accident or medical emergency.	1	2	-	-
PC15. follow emergency procedures such as raising alarm, safe evacuation etc.	1	1	-	-
<i>Waste management</i>	3	6	-	-
PC16. identify recyclable, non-recyclable and hazardous waste	1	2	-	-
PC17. collect the segregated waste - at designated space	1	2	-	-
PC18. dispose non-recyclable waste appropriately and deposit recyclable and reusable material at identified location	1	2	-	-
NOS Total	18	32	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	G&J/N9902
NOS Name	Maintain health and safety at workplace
Sector	Gem & Jewellery
Sub-Sector	Handmade Gold and Gems-set Jewellery, Gemstone Processing, Silver Smithing, Jewellery Retail, Cast and diamonds-set jewellery, Imitation Jewellery, Diamond Processing
Occupation	Generic
NSQF Level	3
Credits	1
Version	5.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

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DGT/VSQ/N0101: Employability Skills (30 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

To be competent, the user/individual on the job must be able to:

PC1. understand the significance of employability skills in meeting the job requirements

Constitutional values – Citizenship

To be competent, the user/individual on the job must be able to:

PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices

Becoming a Professional in the 21st Century

To be competent, the user/individual on the job must be able to:

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.

Basic English Skills

To be competent, the user/individual on the job must be able to:

PC4. speak with others using some basic English phrases or sentences

Communication Skills

To be competent, the user/individual on the job must be able to:

PC5. follow good manners while communicating with others

PC6. work with others in a team

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Diversity & Inclusion

To be competent, the user/individual on the job must be able to:

PC7. communicate and behave appropriately with all genders and PwD

PC8. report any issues related to sexual harassment

Financial and Legal Literacy

To be competent, the user/individual on the job must be able to:

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

Essential Digital Skills

To be competent, the user/individual on the job must be able to:

PC12. operate digital devices and use its features and applications securely and safely

PC13. use internet and social media platforms securely and safely

Entrepreneurship

To be competent, the user/individual on the job must be able to:

PC14. identify and assess opportunities for potential business

PC15. identify sources for arranging money and associated financial and legal challenges

Customer Service

To be competent, the user/individual on the job must be able to:

PC16. identify different types of customers

PC17. identify customer needs and address them appropriately

PC18. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

To be competent, the user/individual on the job must be able to:

PC19. create a basic biodata

PC20. search for suitable jobs and apply

PC21. identify and register apprenticeship opportunities as per requirement

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use basic spoken English language

KU6. Do and dont of effective communication

KU7. inclusivity and its importance

KU8. different types of disabilities and appropriate communication and behaviour towards PwD

KU9. different types of financial products and services

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- KU10.** how to compute income and expenses
- KU11.** importance of maintaining safety and security in financial transactions
- KU12.** different legal rights and laws
- KU13.** how to operate digital devices and applications safely and securely
- KU14.** ways to identify business opportunities
- KU15.** types of customers and their needs
- KU16.** how to apply for a job and prepare for an interview
- KU17.** apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** communicate effectively using appropriate language
- GS2.** behave politely and appropriately with all
- GS3.** perform basic calculations
- GS4.** solve problems effectively
- GS5.** be careful and attentive at work
- GS6.** use time effectively
- GS7.** maintain hygiene and sanitisation to avoid infection

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<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	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
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	-	-	-	-
NOS Total	20	30	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0101
NOS Name	Employability Skills (30 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	2
Credits	1
Version	1.0
Last Reviewed Date	12/03/2026
Next Review Date	12/09/2026
NSQC Clearance Date	12/03/2026

Qualification Pack

G&J/N9952: Implement Circular Economy and Sustainable Practices in Gem and Jewellery Industry

Description

This NOS is about implementing eco-friendly practices in jewellery production, including recycling, upcycling, and energy-efficient methods to optimize resource usage, maintain quality, and minimize environmental impact for sustainable and long-term economic benefits.

Scope

The scope covers the following :

- Integrate sustainable practices in jewellery production
- Perform recycling and upcycling of jewellery mate
- Implement material conservation practices in daily operations
- Implement energy and material conservation practices in daily operations

Elements and Performance Criteria

Integrate sustainable practices in jewellery production

To be competent, the user/individual on the job must be able to:

- PC1.** identify and select recyclable and reusable materials for jewellery production
- PC2.** incorporate modular designs that allow easy disassembly and reassembly
- PC3.** avoid using mixed materials that hinder recyclability
- PC4.** follow eco-friendly manufacturing guidelines while designing new jewellery
- PC5.** work closely with suppliers to source conflict-free and ethical materials
- PC6.** minimize wastage in the design process by optimizing raw material usage
- PC7.** measure the quantity of materials for designs before production to avoid wastage
- PC8.** recover lost gold and reintegrate into production
- PC9.** establish systems to reuse process-rejected gold and customer-returned jewellery
- PC10.** melt and reuse wax patterns in the lost wax casting process
- PC11.** treat and neutralize process chemicals before disposal
- PC12.** reuse waste water from the manufacturing process for non-production activities
- PC13.** adopt industry best practices for hazardous waste disposal
- PC14.** implement waste segregation practices for better disposal and recycling
- PC15.** conduct regular audits to ensure efficient resource utilization

Perform recycling and upcycling of jewellery materials

To be competent, the user/individual on the job must be able to:

- PC16.** establish take-back programs for old and unwanted jewellery
- PC17.** implement closed-loop recycling systems for metals and gemstones
- PC18.** ensure proper sorting of recyclable and non-recyclable materials
- PC19.** partner with certified recyclers for ethical material disposal

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PC20. reduce dependency on new materials by increasing the use of recycled materials

PC21. document and track all recycled and upcycled materials as per organisational procedure

Implement material conservation practices in daily operations

To be competent, the user/individual on the job must be able to:

PC22. implement water conservation measures by preventing leaks, optimizing water usage, and reusing water for secondary purposes

PC23. promote paper conservation in office work by reducing unnecessary printing, using digital alternatives, and reusing single-sided printed paper

PC24. use fuel-efficient methods in jewellery manufacturing by maintaining machines, and minimize energy consumption during metal casting and finishing processes

PC25. ensure proper handling and storage of chemicals used in jewellery making, such as acids and polishing agents, to prevent spills and excessive usage

Implement energy and material conservation practices in daily operations

To be competent, the user/individual on the job must be able to:

PC26. ensure optimal utilization of natural sunlight by keeping window curtains open

PC27. identify and adopt energy-efficient equipment for jewellery production

PC28. maintaining adequate indoor illumination levels of 200 to 250 lux for office work

PC29. use LED lighting and other energy-saving fixtures in manufacturing units

PC30. use solar energy wherever feasible to reduce dependency on non-renewable sources

PC31. implement automatic timers and sensors to reduce unnecessary energy consumption

PC32. optimize ventilation systems to reduce power usage

PC33. use five-star rated electrical appliances to conserve electricity and reduce carbon emissions

PC34. maintain appropriate thermostat settings for air conditioners to reduce energy consumption

PC35. ensure that the AC room is air-sealed and free from unnecessary heat-absorbing materials

PC36. assist in conducting energy audits to identify and address inefficiencies

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. properties, types, and classifications of gemstones, including their hardness, color variations, and inclusions.

KU2. principles and methods of digital tracking, RFID-based inventory management, and their role in gemstone verification.

KU3. The application of AI-assisted design tools for analysing pre-shaping requirements to optimize yield.

KU4. operational setup and maintenance of automated grinding mills and scaife with vibration sensors for precision cutting.

KU5. functionalities and benefits of CNC-based or robotic pre-shaping tools for minimizing material loss and ensuring consistency.

KU6. role of real-time AI monitoring in calibrating gemstone size, dimensions, and weight to maintain precision.

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- KU7.** selection criteria for laps and abrasive powders based on gemstone type, using machine-learning recommendations.
- KU8.** factors influencing cutting parameters to maximize QC-approved gemstones while reducing defects.
- KU9.** importance of eco-friendly cooling techniques to prevent overheating and preserve gemstone colour.
- KU10.** methodologies for tracking and measuring daily gemstone cutting output in carats and number of stones using automated systems.
- KU11.** impact of maintaining AI-predicted tolerance limits on reducing gemstone loss and enhancing efficiency.
- KU12.** significance of predictive maintenance and anomaly detection in proactively identifying and resolving production bottlenecks.
- KU13.** health and safety hazards associated with gemstone cutting, including dust control and ergonomic workstation design.
- KU14.** use of AR-based training modules for continuous learning and adapting to new gemstone cutting technologies
- KU15.** principles of precision cutting and polishing to achieve optimal faceting and brilliance in gemstones.
- KU16.** latest advancements in AI, robotics, and machine learning for process automation in the gemstone industry.
- KU17.** regulatory standards, sustainability guidelines, and environmental best practices in gemstone cutting and processing.
- KU18.** ethical considerations in gemstone sourcing, handling, and processing to align with industry compliance and responsible sourcing practices

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and write to follow work instructions and maintain records.
- GS2.** communicate effectively with team members and supervisors.
- GS3.** stay updated on gemstone processing techniques and industry trends.
- GS4.** manage time efficiently to meet production deadlines.
- GS5.** manage time efficiently to meet production deadlines.
- GS6.** apply critical thinking to improve processing methods and quality.

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Integrate sustainable practices in jewellery production</i>	10	20	-	3
PC1. identify and select recyclable and reusable materials for jewellery production	1	1	-	-
PC2. incorporate modular designs that allow easy disassembly and reassembly	1	2	-	-
PC3. avoid using mixed materials that hinder recyclability	1	1	-	-
PC4. follow eco-friendly manufacturing guidelines while designing new jewellery	1	2	-	-
PC5. work closely with suppliers to source conflict-free and ethical materials	-	1	-	-
PC6. minimize wastage in the design process by optimizing raw material usage	-	1	-	1
PC7. measure the quantity of materials for designs before production to avoid wastage	1	1	-	-
PC8. recover lost gold and reintegrate into production	1	2	-	1
PC9. establish systems to reuse process-rejected gold and customer-returned jewellery	-	1	-	1
PC10. melt and reuse wax patterns in the lost wax casting process	-	1	-	-
PC11. treat and neutralize process chemicals before disposal	1	2	-	-
PC12. reuse waste water from the manufacturing process for non-production activities	1	1	-	1
PC13. adopt industry best practices for hazardous waste disposal	1	2	-	-
PC14. implement waste segregation practices for better disposal and recycling	-	1	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. conduct regular audits to ensure efficient resource utilization	1	1	-	-
<i>Perform recycling and upcycling of jewellery materials</i>	10	10	-	3
PC16. establish take-back programs for old and unwanted jewellery	1	3	-	1
PC17. implement closed-loop recycling systems for metals and gemstones	2	3	-	-
PC18. ensure proper sorting of recyclable and non-recyclable materials	1	1	-	-
PC19. partner with certified recyclers for ethical material disposal	3	1	-	1
PC20. reduce dependency on new materials by increasing the use of recycled materials	1	1	-	-
PC21. document and track all recycled and upcycled materials as per organisational procedure	2	1	-	1
<i>Implement material conservation practices in daily operations</i>	10	10	-	1
PC22. implement water conservation measures by preventing leaks, optimizing water usage, and reusing water for secondary purposes	2	2	-	1
PC23. promote paper conservation in office work by reducing unnecessary printing, using digital alternatives, and reusing single-sided printed paper	3	3	-	-
PC24. use fuel-efficient methods in jewellery manufacturing by maintaining machines, and minimize energy consumption during metal casting and finishing processes	3	3	-	-
PC25. ensure proper handling and storage of chemicals used in jewellery making, such as acids and polishing agents, to prevent spills and excessive usage	2	2	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Implement energy and material conservation practices in daily operations</i>	10	10	-	2
PC26. ensure optimal utilization of natural sunlight by keeping window curtains open	1	2	-	-
PC27. identify and adopt energy-efficient equipment for jewellery production	1	1	-	1
PC28. maintaining adequate indoor illumination levels of 200 to 250 lux for office work	1	2	-	-
PC29. use LED lighting and other energy-saving fixtures in manufacturing units	1	1	-	-
PC30. use solar energy wherever feasible to reduce dependency on non-renewable sources	1	1	-	-
PC31. implement automatic timers and sensors to reduce unnecessary energy consumption	1	-	-	-
PC32. optimize ventilation systems to reduce power usage	1	-	-	-
PC33. use five-star rated electrical appliances to conserve electricity and reduce carbon emissions	1	1	-	-
PC34. maintain appropriate thermostat settings for air conditioners to reduce energy consumption	1	1	-	-
PC35. ensure that the AC room is air-sealed and free from unnecessary heat-absorbing materials	1	1	-	-
PC36. assist in conducting energy audits to identify and address inefficiencies	-	-	-	1
NOS Total	40	50	-	10

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	G&J/N9952
NOS Name	Implement Circular Economy and Sustainable Practices in Gem and Jewellery Industry
Sector	Gem & Jewellery
Sub-Sector	
Occupation	Generic, Generic
NSQF Level	3
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ 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 Element/ PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.

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7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 50

(**Please note:** Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
G&J/N4401.Fix the rough diamond on dop or cassette or holder	30	70	-	-	100	30
G&J/N4402.Cut rough diamond using a laser sawing machine	30	70	-	-	100	30
G&J/N9902.Maintain health and safety at workplace	18	32	-	-	50	20
DGT/VSQ/N0101.Employability Skills (30 Hours)	20	30	-	-	50	10
G&J/N9952.Implement Circular Economy and Sustainable Practices in Gem and Jewellery Industry	40	50	-	10	100	10
Total	138	252	-	10	400	100

Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Qualification Pack

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

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Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.