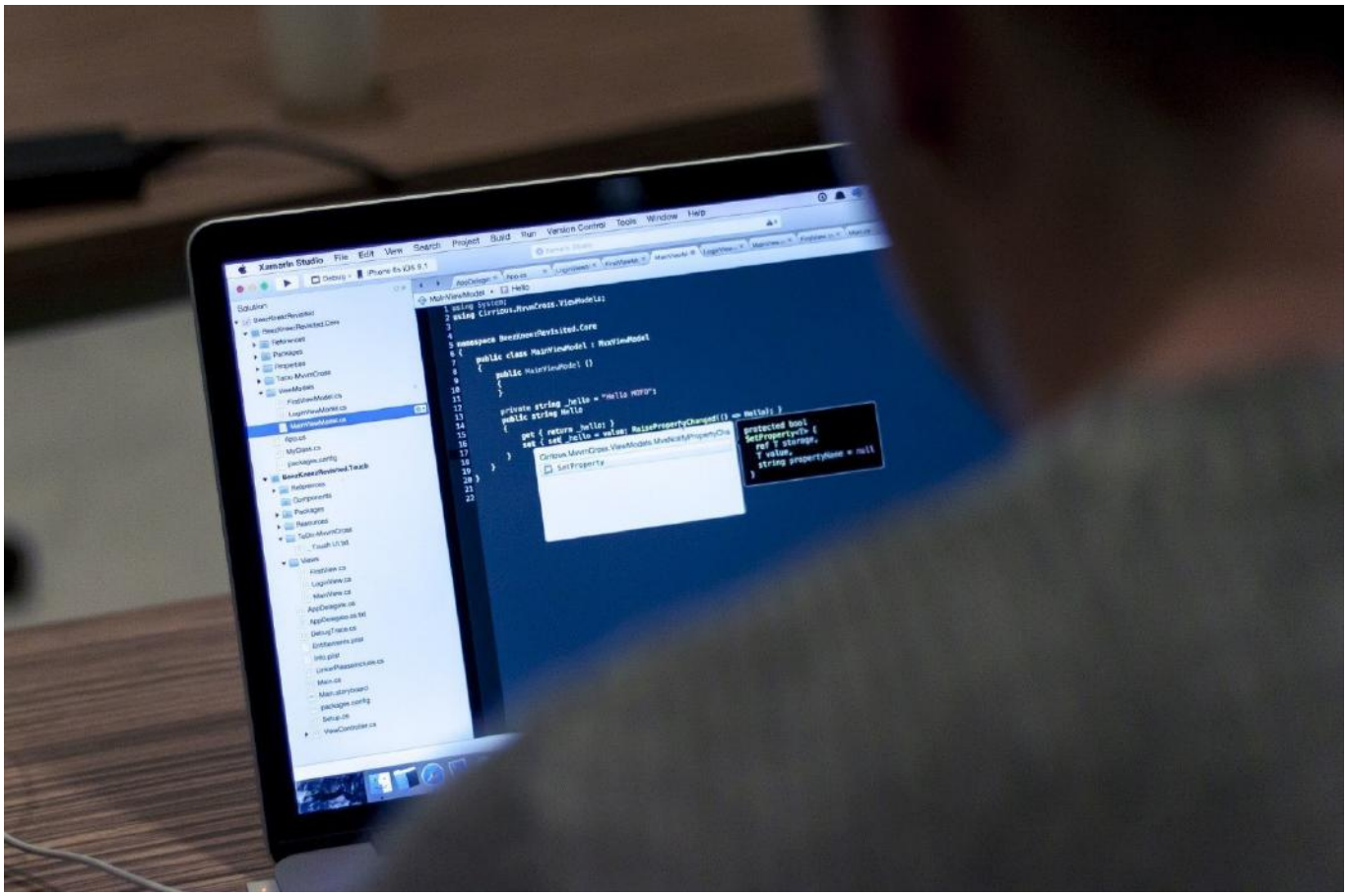
IASC
SECTOR SKILL COUNCIL
एक कदम आत्मनिर्भरता की ओर

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

Qualification Pack

N·S·D·C
National
Skill Development
Corporation
Transforming the skill landscape



DCS Programmer & Troubleshooter

QP Code: IAS/Q5605

Version: 3.0

NSQF Level: 4

Instrumentation, Automation, Surveillance & Communication Sector Skill Council || IASC SSC, 201-202, STBP NSIC Complex, Okhla Industrial Estate, New Delhi 110020 || email:ceo@iascsectorskillcouncil.in

Contents

Qualification Pack

IAS/Q5605: DCS Programmer & Troubleshooter

Brief Job Description

The individual is responsible for programming logic of DCS for controlling various processes of industries and troubleshooting any errors that may occur during the operation of the process plant.

Personal Attributes

This job requires discipline and attention to details, interdisciplinary aptitude and ability to learn. The person should be willing to work for long hours to meet deadlines and should be able to cope with pressure.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. IAS/N5614: Develop DCS program
2. IAS/N5615: Test, commission and troubleshoot DCS project on-site
3. IAS/N9001: Work effectively with teams
4. IAS/N9002: Health and safety in workplace
5. DGT/VSQ/N0102: Employability Skills (60 Hours)

Qualification Pack (QP) Parameters

Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Installation and Commissioning(Instrumentation and Automation)
Country	India
NSQF Level	4
Credits	14
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8212.2002

Minimum Educational Qualification & Experience	10th grade pass plus 1-year NTC/ NAC (in relevant field) OR 10th Class with 1 Year of experience relevant field OR Completed 1st year of 3-year diploma (after 10th) and pursuing regular diploma (in relevant field) OR Previous relevant Qualification of NSQF Level (NSQF Level 3) with 1 Year of experience in relevant field
Minimum Level of Education for Training in School	Not Applicable
Pre-Requisite License or Training	NA
Minimum Job Entry Age	20 Years
Last Reviewed On	NA
Next Review Date	20/11/2025
NSQC Approval Date	20/11/2020
Version	3.0
Reference code on NQR	2022/EHW/IASC/06508
NQR Version	3

IAS/N5614: Develop DCS program

Description

This unit is about understanding the Distributed Control System (DCS) control panel, along with DCS modules/equipment, and developing DCS program using DCS software.

Scope

The scope covers the following :

- Identify prerequisites for DCS programming
- Develop the program/logic/code for the DCS controller

Elements and Performance Criteria

identify prerequisites for DCS programming

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

PC1. identify customer requirements for the DCS control panel, including the number and type of field equipment such as switches, push buttons, lamps, relays, contactors, etc.

PC2. illustrate the wiring diagrams between the DCS modules and the equipment used in the panel to the client

PC3. commission the DCS module as per the illustrated wiring diagrams

PC4. power the DCS and remote panel using main power supply unit

PC5. check the signal modules and wiring between signal modules, other components, and special modules to ensure the proper functioning of DCS control panel

PC6. perform Factory Acceptance Test (FAT) on the panel

PC7. analyse the different types of programming language available within the customer approved software in order to check the configuration capability with the installed DCS panel

PC8. check the availability of communication port on PC/laptop, communication protocol cable and protocol converter to be used for communication between programming software, DCS and operator station (HMI)

PC9. collect information on basic programming blocks special programming blocks, communication programming blocks, and the process for their timely execution in the controller

develop the program/logic/code for the DCS controller

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

PC10. use appropriate programming language as per standards

PC11. create an input-output (IO) list with comments based on the inputs given by the customer

PC12. set parameters in signal modules and other remote devices for ensuring better performance in the plant

PC13. develop the program as per customer inputs and functional process description

PC14. develop pictures and graphic objects and provide animations as per customer's requirement and according to Piping & Instrumentation Diagram (P&ID)

PC15. develop archive system and security levels in the DCS project

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. company's code of conduct, culture, reporting structure, documentation policy, line of business and production policy
KU2. departments involved with installation and commissioning
KU3. quality assurance mechanism and standards followed in the company
KU4. basics of electrical, electronics and instrumentation wiring, electronic indicators, switchgear and panel accessories, computer and operating systems
KU5. standard operating procedure (SOP) of the organisation for layout development
KU6. quality, standards and guidelines to be followed during project development
KU7. DCS programming software, control panel, wiring, module, equipment, control system module and technologies used in the automation process
KU8. electrical load calculations, general arrangement drawing, piping and instrumentation diagram (P&ID)
KU9. application software, installation and debugging
KU10. basics of industrial process involved (examples: oil and gas, refinery) and stages involved in the process as well as the infrastructure process (examples: water treatment plant, chilling units)
KU11. instrumentation used in the factory and its wiring concept
KU12. testing process and parameters involved in the panel testing
KU13. sources and methods for obtaining required technical information for the DCS program to be developed
KU14. IEC standards in DCS programming language
KU15. relevant regulations, standards and codes of practice, and their implications on the panel
KU16. relevant documents to be referred for optimised DCS programming

Generic Skills (GS)

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

GS1. write and read emails, letters, technical documentation, user requirements, test reports, schedules, timelines and other official documents such standards and regulatory compliance documents and drawings
GS2. discuss task lists, schedules and work-loads with customers in a simple and clear language
GS3. report issues and problems to manager/s clearly
GS4. make decisions pertaining to scope of work, readiness of the panel for supply, readiness of customer site for panel installation and changes in panel on-site
GS5. plan and organise project related to requirements, design and integration, testing, installation and commissioning, customer acceptance test and customer feedback

GS6. anticipate issues and have alternate strategy

GS7. manage relationships and maintain good rapport with customers to get detailed inputs on logic

GS8. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) to resolve delays

GS9. solve issues of co-workers who are lacking the technical know how

GS10. use the existing information for improving / optimising the project and arrive at actionable decision points

GS11. apply, analyse and evaluate the information gathered from observation, experience, reasoning or communication, as a guide to think and act accordingly

GS12. anticipate problems, risks and opportunities and utilise these for mitigation and business optimisation

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
identify prerequisites for DCS programming	**24**	**24**	**-**	**5**
PC1. identify customer requirements for the DCS control panel, including the number and type of field equipment such as switches, push buttons, lamps, relays, contactors, etc.	2	-	-	-
PC2. illustrate the wiring diagrams between the DCS modules and the equipment used in the panel to the client	4	-	-	-
PC3. commission the DCS module as per the illustrated wiring diagrams	4	-	-	-
PC4. power the DCS and remote panel using main power supply unit	3	4	-	1
PC5. check the signal modules and wiring between signal modules, other components, and special modules to ensure the proper functioning of DCS control panel	2	5	-	1
PC6. perform Factory Acceptance Test (FAT) on the panel	2	5	-	1
PC7. analyse the different types of programming language available within the customer approved software in order to check the configuration capability with the installed DCS panel	2	5	-	-
PC8. check the availability of communication port on PC/laptop, communication protocol cable and protocol converter to be used for communication between programming software, DCS and operator station (HMI)	2	5	-	1
PC9. collect information on basic programming blocks special programming blocks, communication programming blocks, and the process for their timely execution in the controller	3	-	-	1
develop the program/logic/code for the DCS controller	**16**	**26**	**-**	**5**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. use appropriate programming language as per standards	4	4	-	-
PC11. create an input-output (IO) list with comments based on the inputs given by the customer	2	4	-	1
PC12. set parameters in signal modules and other remote devices for ensuring better performance in the plant	2	4	-	1
PC13. develop the program as per customer inputs and functional process description	3	5	-	1
PC14. develop pictures and graphic objects and provide animations as per customer's requirement and according to Piping & Instrumentation Diagram (P&ID)	3	5	-	1
PC15. develop archive system and security levels in the DCS project	2	4	-	1
NOS Total	**40**	**50**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N5614
NOS Name	Develop DCS program
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Installation and Commissioning(Instrumentation and Automation)
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	NA
Next Review Date	20/11/2025
NSQC Clearance Date	20/11/2020

IAS/N5615: Test, commission and troubleshoot DCS project on-site

Description

This OS unit is about testing, commissioning and troubleshooting DCS project on-site

Scope

The scope covers the following :

- Test the functionality of physical input and output
- Transfer logic to the DCS project
- Commission the program using trial runs for the process/ application
- Develop the error handling program
- Troubleshoot DCS project on-site

Elements and Performance Criteria

test the functionality of physical input and output

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

PC1. test the program using software checks like compilation

PC2. download the compilation error-free program and transfer it to the computer based internal software simulator for further checks

PC3. perform the steps to activate the respective inputs in software simulator to check the automation logic and thereby identify any error

PC4. modify the logical error, data address overlap and wrong IO address access to maximise program stability

PC5. apply further checks to eliminate the logical issues and address errors

PC6. perform the steps to activate the DCS project in runtime and carry out the input output checks on DCS systems

PC7. test the animations on the runtime screens

transfer logic to the DCS project

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

PC8. collect information about the architecture of the DCS system in the plant

PC9. connect actual sensors and actuators to signal modules to check the hardware components

PC10. prepare PC stations by configuring and installing the required software/ licenses for DCS project

PC11. perform the steps to transfer the DCS projects to respective PC stations, for example, to server PC and client PC

PC12. perform the steps to establish the connections between server PC and controller as well as server PC and client PC

commission the program using trial runs for the process/application

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

PC13. manage permissions for execution of process through program and preliminary check of IO's

PC14. identify the availability of resources for trial runs

PC15. organise training regarding the sequence of operation in case of emergency

PC16. prepare a standard operating procedure (SOP) for the logic and DCS operation developed

PC17. create backup of the final DCS project to be submitted to the plant head

develop the error handling program

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

PC18. identify hardware and software related errors in the plant

PC19. use appropriate programming logics to avoid non functionality of controller due to hardware errors

PC20. generate outputs from error handling program for error monitoring on DCS systems

PC21. examine the error handling programs by creating faults like supply failure, communication break, IO channel error, module failure, etc.

PC22. implement site acceptance test (SAT) and send the report to customer

troubleshoot DCS project on-site

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

PC23. identify the problem in the plant by checking with the supervisor/engineer

PC24. check the availability of additional modules, equipment, electrical components as well as software and program backup on-site

PC25. check the connection of different modules as per control panel drawing, settings of instruments as per installation guidelines, and functioning of the PC stations used for operating the plant

PC26. test the panel, signal modules, earthing, power supply and communication cables used in the plant

PC27. verify whether the controller and its module are in operating state and modify the running project program, if it is required, to rectify the faults

PC28. match the product with the drawing according to the catalogue number and replace module/equipment, if it is found faulty

PC29. start the plant on-site, verify/monitor the parameter reading according to set parameters and take the program backup before and after troubleshooting

PC30. prepare a site report after troubleshooting and mention the remedy

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. company's reporting structure, documentation policy, line of business, product offerings, departments involved with engineering, quality and standards followed in the company

KU2. basics of electricity, electronics and instrumentation, computer and operating systems

KU3. electrical panel, wiring, electronics indicators, switchgear and panel accessories

KU4. instrumentation used in the factory and its wiring concept

KU5. standard operating procedure (SOP) of the organisation for process automation DCS testing and troubleshooting the process plant

KU6. control system module, DCS system and technologies used in the automation process

KU7. application software, installation, commissioning, testing and debugging a DCS system

KU8. general arrangement drawing, piping and instrumentation diagram (P&ID)

KU9. basics of industrial process involved (examples: oil and gas, refinery) and stages involved in the process as well as the infrastructure process involved in the industry (examples: water treatment plant, chilling units)

KU10. safety aspects to be inbuilt in the DCS program and testing as per the process requirement

KU11. testing process and parameters involved in the testing

KU12. sources and methods for obtaining required technical information for the DCS program to be tested

KU13. relevant regulations, IEC standards and codes of practice, and their implications on troubleshooting

KU14. relevant documents to be referred for testing DCS program

KU15. how to communicate with shop floor technicians in order to resolve any error during debugging

KU16. basic power systems, motor fundamentals and drive systems fundamentals

Generic Skills (GS)

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

GS1. write and read emails, letters, technical documentation, user requirements, test reports, schedules, timelines and other official documents such standards and regulatory compliance documents and drawings

GS2. escalate issues and problems to managers in clear terms

GS3. make decisions pertaining to the scope of work, appropriate solution to faults in programming, readiness of the system after solving the issues and starting of the process plant

GS4. plan and organise project related requirements, design and integration, testing, installation and commissioning, customer acceptance test and customer feedback

GS5. anticipate issues and have an alternate strategy

GS6. identify needs of the customer, ask questions for clarity, and maintain good rapport with customers to get inputs on program testing and speed up commissioning

GS7. think through the problem, evaluate the possible solution(s) and suggest an optimum/best possible solution(s)

GS8. help colleagues in solving issues especially related to technical problems

GS9. identify immediate or temporary solutions to resolve faults/delays and implement the proper solution when possible

GS10. use the existing information to optimise DCS program, arrive at actionable decision points and bring machine/plant to running state

GS11. apply, analyse and evaluate the information gathered from observation, experience, reasoning or communication, as a guide to think and act accordingly

GS12. anticipate problems, risks and opportunities and utilise these for optimising DCS Program

GS13. keep customers informed about progress of project development, achieve customer satisfaction and offer support whenever needed

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
test the functionality of physical input and output	**10**	**13**	**-**	**5**
PC1. test the program using software checks like compilation	2	2	-	1
PC2. download the compilation error-free program and transfer it to the computer based internal software simulator for further checks	1	1	-	-
PC3. perform the steps to activate the respective inputs in software simulator to check the automation logic and thereby identify any error	2	3	-	1
PC4. modify the logical error, data address overlap and wrong IO address access to maximise program stability	1	1	-	-
PC5. apply further checks to eliminate the logical issues and address errors	1	2	-	1
PC6. perform the steps to activate the DCS project in runtime and carry out the input output checks on DCS systems	2	2	-	1
PC7. test the animations on the runtime screens	1	2	-	1
transfer logic to the DCS project	**7**	**9**	**-**	**2**
PC8. collect information about the architecture of the DCS system in the plant	1	1	-	-
PC9. connect actual sensors and actuators to signal modules to check the hardware components	2	1	-	-
PC10. prepare PC stations by configuring and installing the required software/ licenses for DCS project	1	1	-	-
PC11. perform the steps to transfer the DCS projects to respective PC stations, for example, to server PC and client PC	2	3	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. perform the steps to establish the connections between server PC and controller as well as server PC and client PC	1	3	-	1
commission the program using trial runs for the process/application	**6**	**6**	**-**	**-**
PC13. manage permissions for execution of process through program and preliminary check of IO's	1	1	-	-
PC14. identify the availability of resources for trial runs	1	1	-	-
PC15. organise training regarding the sequence of operation in case of emergency	1	1	-	-
PC16. prepare a standard operating procedure (SOP) for the logic and DCS operation developed	1	1	-	-
PC17. create backup of the final DCS project to be submitted to the plant head	2	2	-	-
develop the error handling program	**7**	**9**	**-**	**2**
PC18. identify hardware and software related errors in the plant	1	1	-	-
PC19. use appropriate programming logics to avoid non functionality of controller due to hardware errors	1	2	-	-
PC20. generate outputs from error handling program for error monitoring on DCS systems	2	2	-	1
PC21. examine the error handling programs by creating faults like supply failure, communication break, IO channel error, module failure, etc.	1	2	-	1
PC22. implement site acceptance test (SAT) and send the report to customer	2	2	-	-
troubleshoot DCS project on-site	**10**	**13**	**-**	**1**
PC23. identify the problem in the plant by checking with the supervisor/engineer	1	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. check the availability of additional modules, equipment, electrical components as well as software and program backup on-site	1	2	-	-
PC25. check the connection of different modules as per control panel drawing, settings of instruments as per installation guidelines, and functioning of the PC stations used for operating the plant	1	2	-	-
PC26. test the panel, signal modules, earthing, power supply and communication cables used in the plant	2	2	-	1
PC27. verify whether the controller and its module are in operating state and modify the running project program, if it is required, to rectify the faults	1	2	-	-
PC28. match the product with the drawing according to the catalogue number and replace module/equipment, if it is found faulty	1	1	-	-
PC29. start the plant on-site, verify/monitor the parameter reading according to set parameters and take the program backup before and after troubleshooting	2	2	-	-
PC30. prepare a site report after troubleshooting and mention the remedy	1	1	-	-
NOS Total	**40**	**50**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N5615
NOS Name	Test, commission and troubleshoot DCS project on-site
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Installation and Commissioning(Instrumentation and Automation)
NSQF Level	4
Credits	5
Version	2.0
Last Reviewed Date	NA
Next Review Date	20/11/2025
NSQC Clearance Date	20/11/2020

IAS/N9001: Work effectively with teams

Description

This NOS unit is about building relationships and working with people and groups inside and outside the organization, using skills and habits, to achieve the team goals and objectives.

Scope

The scope covers the following :

- Work as per organisational team environment
- Communicate effectively
- Co-operate with team members and superiors
- Respect customes / preferences and gender / ability differences "

Elements and Performance Criteria

Work as per the organisational team environment

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

PC1. identify team objectives and goals, team members by name, their role and responsibilities, greet them appropriately and respond to their greetings

PC2. comply with organisation’s policies and procedures for working with team members within and outside the organisation—especially related to privacy, confidentiality and security

PC3. work as per the environment to build trust and mutual respect

PC4. participate in decision making by providing facts and figures, give / accept constructive suggestions, take initiatives to help team members arrive at workable decisions and meet the goals

PC5. accept decisions professionally and support even if they do not match suggestions and personal views

Communicate effectively

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

PC6. communicate professionally as per organisation's protocols, using appropriate mode of communication—verbal, written, mail, phone or text—and clearly articulate the message to ensure that the receiver understands the message

PC7. listen to team members attentively, respond promptly, seek / provide clarifications if required

PC8. share important information with the team timely and refrain from overloading them with unnecessary and unsolicited information

Co-operate with team members and superiors

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

PC9. perform own role, receive inputs from others and make adjustments within permissible rules as per requirement, to produce output in time for other team members to follow

PC10. help team members to perform their role effectively and provide any clarifications/support they need, including tools /equipment / common resources as well as resolve any contentious issues amicably, involving the team lead or the supervisor if needed

PC11. let team members know in good time if commitments cannot be carried out, explaining the reasons, and provide alternate solutions, if any; let the team lead know about this

PC12. act in the interest of the team and the organisation, take initiative to correct the wrong, seek help or escalate if needed to ensure that things do not 'fall through the gap' and team goals are achieved

Respect customs / preferences and gender / ability differences

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

PC13. follow organisation's policies and statutory guidelines w.r.t seeking information about others' customs / preferences, making references or comments on social customs / preferences, and refrain from hurting sentiments

PC14. accommodate team members' preferences to the extent feasible, and in case they come in the way of fulfilling team goals, discuss with the supervisor/ team leader

PC15. ensure personal behaviour, conduct and communication styles, taking gender and disability of the person into consideration

PC16. list the different types of disabilities with their respective issues and ways to help them overcome challenges

PC17. use inclusive language, verbal as well as non-verbal, irrespective of the disability and the gender of the person

PC18. ensure equal treatment for all clients, colleagues and co-workers while respecting their personal space

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Organisation's policies on dress code , workplace behaviour , performance management,incentives,delivery standards,information security,etc.

KU2. Organisation's hierarchy and escalation matrix

KU3. importance of the individual's role in the workflow

KU4. work area inspection procedures and practices

KU5. different types of information that colleagues might need and the importance of providing this information when it is required

KU6. deeper understanding of actions and consequences of gender based behaviour

KU7. knowledge of gender based concepts, issues and legislation

KU8. organisation standards and guidelines to be followed for PwD and knowledge about laws, acts and provisions defined for PwD by the statutory bodies and the right way to use them including various medical conditions associated with PwD

KU9. health and safety requirements at workplace for PwD and information about various institutes working for PwD to enable in providing livelihood opportunities for PwD

KU10. rights and duties at workplace with respect to PwD and various government / private schemes and benefits available for PwD

KU11. process of recruiting people for a particular job profile w.r.t PwD and gender including rights and duties at workplace with respect to gender sensitivity

Generic Skills (GS)

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

GS1. complete forms such as work orders, invoices and maintenance records

GS2. fill up appropriate forms,activity logs and attendance sheets as per the organisation's format in English and/or local language

GS3. write basic accident or incident report as witnessed in an appropriate format to the relevant authority

GS4. read warnings, instructions and other text material on product labels, components, etc.

GS5. read relevant signage, warnings, labels or descriptions on equipment, etc. while carrying out work activities

GS6. listen effectively and orally communicate information

GS7. ask for clarification and advice from the concerned person

GS8. make decisions on a suitable course of action or response keeping in view resource utilisation while meeting

GS9. plan and organise work to achieve targets and deadlines

GS10. understand needs of the customer, suggest most appropriate solution and support them whenever needed

GS11. match symptoms of the fault noticed to the cause of the problem

GS12. anticipate and avoid hazards that may occur during repairs because of tools, materials used or repair processes

GS13. spot process disruptions and delays

GS14. practice and acceptance of gender and its concepts

GS15. develop empathy across genders and towards PwD

GS16. reflect on own gender identity, gender roles and PwD issues

GS17. engage and participate in discussions to end gender and disability discrimination

GS18. improve and modify work practices

GS19. maintain positive and effective relationships with colleagues and customers

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Work as per the organisational team environment	**15**	**8**	**-**	**5**
PC1. identify team objectives and goals, team members by name, their role and responsibilities, greet them appropriately and respond to their greetings	4	4	-	-
PC2. comply with organisation's policies and procedures for working with team members within and outside the organisation—especially related to privacy, confidentiality and security	4	-	-	2
PC3. work as per the environment to build trust and mutual respect	2	-	-	1
PC4. participate in decision making by providing facts and figures, give / accept constructive suggestions, take initiatives to help team members arrive at workable decisions and meet the goals	4	4	-	1
PC5. accept decisions professionally and support even if they do not match suggestions and personal views	1	-	-	1
Communicate effectively	**6**	**10**	**-**	**1**
PC6. communicate professionally as per organisation's protocols, using appropriate mode of communication—verbal, written, mail, phone or text—and clearly articulate the message to ensure that the receiver understands the message	2	6	-	1
PC7. listen to team members attentively, respond promptly, seek / provide clarifications if required	2	-	-	-
PC8. share important information with the team timely and refrain from overloading them with unnecessary and unsolicited information	2	4	-	-
Co-operate with team members and superiors	**8**	**18**	**-**	**1**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC9. perform own role, receive inputs from others and make adjustments within permissible rules as per requirement, to produce output in time for other team members to follow	2	6	-	-
PC10. help team members to perform their role effectively and provide any clarifications/support they need, including tools /equipment / common resources as well as resolve any contentious issues amicably, involving the team lead or the supervisor if needed	-	6	-	1
PC11. let team members know in good time if commitments cannot be carried out, explaining the reasons, and provide alternate solutions, if any; let the team lead know about this	2	-	-	-
PC12. act in the interest of the team and the organisation, take initiative to correct the wrong, seek help or escalate if needed to ensure that things do not 'fall through the gap' and team goals are achieved	4	6	-	-
Respect customs / preferences and gender / ability differences	**11**	**14**	**-**	**3**
PC13. follow organisation's policies and statutory guidelines w.r.t seeking information about others' customs / preferences, making references or comments on social customs / preferences, and refrain from hurting sentiments	2	4	-	-
PC14. accommodate team members' preferences to the extent feasible, and in case they come in the way of fulfilling team goals, discuss with the supervisor/ team leader	2	-	-	1
PC15. ensure personal behaviour, conduct and communication styles, taking gender and disability of the person into consideration	2	6	-	1
PC16. list the different types of disabilities with their respective issues and ways to help them overcome challenges	1	-	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC17. use inclusive language, verbal as well as non-verbal, irrespective of the disability and the gender of the person	2	4	-	-
PC18. ensure equal treatment for all clients, colleagues and co-workers while respecting their personal space	2	-	-	-
NOS Total	**40**	**50**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N9001
NOS Name	Work effectively with teams
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Generic
NSQF Level	4
Credits	1
Version	4.0
Last Reviewed Date	NA
Next Review Date	26/05/2025
NSQC Clearance Date	26/05/2022

IAS/N9002: Health and safety in workplace

Description

This OS unit is about following adequate safety procedures to make work environment safe

Scope

The scope covers the following :

- Adhere to standard safety procedures of the company
- Maintain good health and posture
- Effective waste management/recycling practices
- Adopt learning and self-direction
- Develop system thinking in problem solving
- Material/Resources conservation practices

Elements and Performance Criteria

Adhere to standard safety procedures of the company

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

PC1. comply with general safety procedures and those for handling an equipment, hazardous material or tool, followed in the company

PC2. remove finger rings or any other metal objects likely to interfere with the work before working on the unit

PC3. use of safety materials such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, etc.

PC4. escalate the issue about hazardous materials or things found in the premises or any breach of safety procedure in the company

PC5. ensure zero accidents at work

PC6. avoid damage of components due to negligence in ESD procedures or any other loss due to safety negligence

PC7. participate regularly in fire drills or other safety related workshops organised by the company

Maintain good health and posture

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

PC8. maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials

PC9. participate in company organised health sessions such as yoga, physiotherapy or games

PC10. handle heavy and hazardous materials with care, while maintaining appropriate posture, using suitable tools and handling equipment such as trolleys, jacks and ladders

Effective waste management/recycling practices

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

PC11. identify recyclable and non-recyclable, and hazardous waste generated to be segregated accordingly

PC12. dispose non-recyclable waste and hazardous waste as per recommended processes

PC13. deposit recyclable and reusable material at identified location

Adopt learning and self-direction

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

PC14. understand importance of skill advancement and develop mastery

PC15. adapt product / service to meet success criteria

PC16. understand accountability for timely completion of tasks

PC17. manage to express emotions in appropriate ways at workplace and understand the cause for the emotions

Develop system thinking in problem solving

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

PC18. analyse the problem accurately and communicate different possible solutions to the problem

PC19. manage to estimate the cause of the problem and validate

Material/Resources conservation practices

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

PC20. identify ways to optimize usage of material including water and electricity / energy in various tasks/activities/processes

PC21. check for spills/leakages in various tasks/activities/processes and plug them or escalate to appropriate authority

PC22. carry out routine cleaning of tools, machines and equipment

PC23. check if the equipment/machine is functioning normally before commencing work and rectify wherever required and report malfunctioning (fumes/sparks/emission/vibration/noise) or any lapse in maintenance of equipment

PC24. ensure electrical equipment and appliances are properly connected and turned off when not in use

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. company's policies on incentives,delivery standards, and personnel management

KU2. company occupational safety and health policy

KU3. company emergency evacuation procedure

KU4. Company's medical policy

KU5. how to maintain the work area safe and secure

KU6. how to handle hazardous materials, tools and equipment

KU7. procedures to be followed during emergencies such as fire accidents, electrocution, etc.

KU8. long term value of good posture and use of appropriate handling equipment

KU9. electrical grounding practices

KU10. safety regulations and standards and how to apply these

KU11. common sources of pollution and ways to minimize it

KU12. categorisation of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics

KU13. usage of different colours of dustbins

KU14. waste management and methods of waste disposal

KU15. organisation's procedures for minimizing mistakes

KU16. strategies pertinent to their field (such as internet searches, asking peers and managers, enrolling for courses and certifications, etc.) that can be used to pursue an advancement in their skills

KU17. one should be able to identify the key performance indicators for the new tasks

KU18. seek feedback from supervisor and deal in constructive manner

KU19. understand that emotions are accompained by a physical state, thought and feeling

KU20. one should be able to interpret timelines and goals set by the manager and break them into sub-goals and tasks

KU21. importance of quality and timely delivery of the product/service

KU22. potential hazards, risks and threats based on the nature of work

KU23. ways of efficiently managing material and water in the process

KU24. layout of the workstation and electrical and thermal equipment used

KU25. efficient and inefficient utilization of material and water

KU26. basics of electricity and prevalent energy efficient devices

KU27. ways to recognize common electrical problems

KU28. common practices of conserving electricity

Generic Skills (GS)

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

GS1. fill up appropriate forms, activity logs and attendance sheets as per organisation's format in English and/or local language

GS2. write basic accident or incident report as witnessed in appropriate format to relevant authority

GS3. read/listen and interpret information correctly from relevant instruction documents, manuals, health and safety instructions, memos, etc. applicable to the job, in English and/or local language

GS4. read relevant signage, warnings, labels or descriptions on equipment, etc. while carrying out work activities

GS5. question co-workers in order to understand the safety and health issues

GS6. inform co-workers about safety and health issues

GS7. report issues and problems relating to safety and health to managers in clear terms

GS8. make decisions pertaining to safety and health issues at workplace

GS9. plan and organise work conforming to the safety and health norms of the company

GS10. make decisions about escalating safety and health issues at workplace to managers

GS11. discuss problems related to safety and health, evaluate the possible solution(s) and arrive at optimum /best possible solution(s) in consultation with concerned people

GS12. use the existing information to arrive at actionable decision points

GS13. use the existing information for improving customer satisfaction

GS14. use the existing information to optimise solution and company business

GS15. analyse problems and identify causes and possible solutions

GS16. apply, analyse and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

GS17. anticipate problems, risks and opportunities and utilise these for mitigation and business optimisation

GS18. communicate with colleagues on the significance of greening of jobs

GS19. identify cause and effect of greening of jobs

GS20. record data on waste disposal at workplace

GS21. demonstrate commitment towards self, and initiative to advance skills levels by exploring various pathways to expand one's own learning

GS22. incorporate feedback into one's mental model of task, and bring it into practice

GS23. be punctual, utilize time and manage workload efficiently

GS24. evaluate strategies to maintain, enhance or reduce the intensity of heightened emotional response

GS25. test a hypothesis about the cause of the problem

GS26. identify and ask significant questions to clarify the various points of view on the problem to better understand the problem

GS27. record data on waste disposal at workplace

GS28. make timely decisions for efficient utilization of resources

GS29. complete statutory documents relevant to safety and hygiene

GS30. read Standard Operating Practices (SOP) documents

GS31. communicate with colleagues on the significance of greening of jobs

GS32. complete tasks efficiently and accurately within stipulated time

GS33. work with supervisors/team members to carry out work related tasks

GS34. identify cause and effect of greening of jobs

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Adhere to standard safety procedures of the company	**13**	**12**	**-**	**5**
PC1. comply with general safety procedures and those for handling an equipment, hazardous material or tool, followed in the company	2	2	-	1
PC2. remove finger rings or any other metal objects likely to interfere with the work before working on the unit	2	4	-	-
PC3. use of safety materials such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, etc.	4	2	-	1
PC4. escalate the issue about hazardous materials or things found in the premises or any breach of safety procedure in the company	1	1	-	-
PC5. ensure zero accidents at work	1	1	-	1
PC6. avoid damage of components due to negligence in ESD procedures or any other loss due to safety negligence	1	1	-	1
PC7. participate regularly in fire drills or other safety related workshops organised by the company	2	1	-	1
Maintain good health and posture	**6**	**8**	**-**	**1**
PC8. maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials	2	3	-	1
PC9. participate in company organised health sessions such as yoga, physiotherapy or games	2	1	-	-
PC10. handle heavy and hazardous materials with care, while maintaining appropriate posture, using suitable tools and handling equipment such as trolleys, jacks and ladders	2	4	-	-
Effective waste management/recycling practices	**4**	**5**	**-**	**1**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. identify recyclable and non-recyclable, and hazardous waste generated to be segregated accordingly	2	1	-	1
PC12. dispose non-recyclable waste and hazardous waste as per recommended processes	1	3	-	-
PC13. deposit recyclable and reusable material at identified location	1	1	-	-
Adopt learning and self-direction	**4**	**5**	**-**	**1**
PC14. understand importance of skill advancement and develop mastery	1	1	-	1
PC15. adapt product / service to meet success criteria	1	2	-	-
PC16. understand accountability for timely completion of tasks	1	1	-	-
PC17. manage to express emotions in appropriate ways at workplace and understand the cause for the emotions	1	1	-	-
Develop system thinking in problem solving	**2**	**2**	**-**	**1**
PC18. analyse the problem accurately and communicate different possible solutions to the problem	1	1	-	-
PC19. manage to estimate the cause of the problem and validate	1	1	-	1
Material/Resources conservation practices	**11**	**18**	**-**	**1**
PC20. identify ways to optimize usage of material including water and electricity / energy in various tasks/activities/processes	2	2	-	-
PC21. check for spills/leakages in various tasks/activities/processes and plug them or escalate to appropriate authority	1	2	-	-
PC22. carry out routine cleaning of tools, machines and equipment	3	6	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. check if the equipment/machine is functioning normally before commencing work and rectify wherever required and report malfunctioning (fumes/sparks/emission/vibration/noise) or any lapse in maintenance of equipment	3	4	-	-
PC24. ensure electrical equipment and appliances are properly connected and turned off when not in use	2	4	-	1
NOS Total	**40**	**50**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N9002
NOS Name	Health and safety in workplace
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Generic
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	NA
Next Review Date	11/08/2025
NSQC Clearance Date	11/08/2020

DGT/VSQ/N0102: Employability Skills (60 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
- Career Development & Goal Setting
- 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. identify employability skills required for jobs in various industries

PC2. identify and explore learning and employability portals

Constitutional values – Citizenship

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

PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.

PC4. follow environmentally sustainable practices

Becoming a Professional in the 21st Century

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

PC5. recognize the significance of 21st Century Skills for employment

PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life

Basic English Skills

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

PC7. use basic English for everyday conversation in different contexts, in person and over the telephone

PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English

PC9. write short messages, notes, letters, e-mails etc. in English

Career Development & Goal Setting

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

PC10. understand the difference between job and career

PC11. prepare a career development plan with short- and long-term goals, based on aptitude

Communication Skills

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

PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings

PC13. work collaboratively with others in a team

Diversity & Inclusion

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

PC14. communicate and behave appropriately with all genders and PwD

PC15. escalate any issues related to sexual harassment at workplace according to POSH Act

Financial and Legal Literacy

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

PC16. select financial institutions, products and services as per requirement

PC17. carry out offline and online financial transactions, safely and securely

PC18. identify common components of salary and compute income, expenses, taxes, investments etc

PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

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

PC20. operate digital devices and carry out basic internet operations securely and safely

PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively

PC22. use basic features of word processor, spreadsheets, and presentations

Entrepreneurship

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

PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research

PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion

PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

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

PC26. identify different types of customers
PC27. identify and respond to customer requests and needs in a professional manner.
PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

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

PC29. create a professional Curriculum vitae (Résumé)
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively
PC31. apply to identified job openings using offline /online methods as per requirement
PC32. answer questions politely, with clarity and confidence, during recruitment and selection
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills and different learning and employability related portals
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 English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up
KU6. importance of career development and setting long- and short-term goals
KU7. about effective communication
KU8. POSH Act
KU9. Gender sensitivity and inclusivity
KU10. different types of financial institutes, products, and services
KU11. how to compute income and expenditure
KU12. importance of maintaining safety and security in offline and online financial transactions
KU13. different legal rights and laws
KU14. different types of digital devices and the procedure to operate them safely and securely
KU15. how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.
KU16. how to identify business opportunities
KU17. types and needs of customers
KU18. how to apply for a job and prepare for an interview
KU19. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

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

GS1. read and write different types of documents/instructions/correspondence
GS2. communicate effectively using appropriate language in formal and informal settings
GS3. behave politely and appropriately with all
GS4. how to work in a virtual mode
GS5. perform calculations efficiently
GS6. solve problems effectively
GS7. pay attention to details
GS8. manage time efficiently
GS9. maintain hygiene and sanitization to avoid infection

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
Constitutional values – Citizenship	**1**	**1**	**-**	**-**
PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC4. follow environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	**2**	**4**	**-**	**-**
PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
Basic English Skills	**2**	**3**	**-**	**-**
PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Career Development & Goal Setting	**1**	**2**	**-**	**-**
PC10. understand the difference between job and career	-	-	-	-
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
Communication Skills	**2**	**2**	**-**	**-**
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**2**	**-**	**-**
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
Financial and Legal Literacy	**2**	**3**	**-**	**-**
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
Essential Digital Skills	**3**	**4**	**-**	**-**
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-
Entrepreneurship	**2**	**3**	**-**	**-**
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
Customer Service	**1**	**2**	**-**	**-**
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	**2**	**3**	**-**	**-**
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	NA
Next Review Date	30/12/2026
NSQC Clearance Date	30/12/2021

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down a proportion of marks for Theory and Skills Practical for each PC.

2. The assessment for the theory part will be based on the 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 centre (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criterion.

6. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.

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

Minimum Aggregate Passing % at QP Level : 70

(**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
IAS/N5614.Develop DCS program	40	50	-	10	100	35
IAS/N5615.Test, commission and troubleshoot DCS project on-site	40	50	-	10	100	40
IAS/N9001.Work effectively with teams	40	50	-	10	100	10
IAS/N9002.Health and safety in workplace	40	50	-	10	100	5
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	10
Total	**180**	**230**	**-**	**40**	**450**	**100**

Acronyms

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

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.

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.