Automotive Design Safety Specialist

QP Code: ASC/Q8310

Version: 1.0

NSQF Level: 6

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Contents

ASC/Q8310: Automotive Design Safety Specialist

Brief Job Description

The individual at this job is responsible for end-to-end design and development of systems and services (Electrical/Electronic/Mechanical), deployment of standards and review of systems and engineering activities. He/she leads the product engineering activities and guides team on technical functions through technologies, and engineering applications. He/she also develops management processes for team, PD (Product Development) programs and report and record QIP (Quality Improvement Plan) related activities towards achieving product quality excellence.

Personal Attributes

The person should be result oriented with good technical and analytical skills, should have excellent interpersonal skills, communication and presentation skills and be a good team player. He/she should have ability to manage projects, prioritizing of work, collaborating well, motivating team members and mentoring the budding engineers

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. ASC/N9810: Manage work and resources (Manufacturing)

2. ASC/N8112: Conduct safety analysis of electrical/electronic/ mechanical systems

3. ASC/N8113: Lead Computer Aided Engineering (CAE) simulations to ensure safety and vehicle performance

4. DGT/VSQ/N0104: Employability Skills (120 Hours)

Qualification Pack (QP) Parameters

Sector	Automotive
Sub-Sector	Research & Development
Occupation	Automotive Product Development
Country	India
NSQF Level	6
Credits	22

Aligned to NCO/ISCO/ISIC Code	NCO-2015/2141.2500
Minimum Educational Qualification & Experience	B.E./B.Tech with 1 Year of experience in relevant field OR M.E. (Pursuing 2nd year) OR Certificate-NSQF (Electric Vehicle Product Design Engineer/ Automotive Prototype Manufacturing Lead Technician Level 5) with 2 Years of experience in relevant field
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	22 Years
Last Reviewed On	NA
Next Review Date	NA
NSQC Approval Date	
Version	1.0

ASC/N9810: Manage work and resources (Manufacturing)

Description

This NOS unit is about implementing safety, planning work, adopting sustainable practices for optimising the use of resources.

Scope

The scope covers the following :

- Maintain safe and secure working environment
- Maintain Health and Hygiene
- Effective waste management practices
- Material/energy conservation practices

Elements and Performance Criteria

Maintain safe and secure working environment

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

PC1. identify hazardous activities and the possible causes of risks or accidents in the workplace

PC2. implement safe working practices for dealing with hazards to ensure safety of self and others

PC3. conduct regular checks of the machines with support of the maintenance team to identify potential hazards

PC4. ensure that all the tools/equipment/fasteners/spare parts are arranged as per specifications/utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/work instructions

PC5. organise safety drills or training sessions to create awareness amongst others on the identified risks and safety practices

PC6. fill daily check sheet to report improvements done and risks identified

PC7. ensure that relevant safety boards/signs are placed on the shop floor for the safety of self and others

PC8. report any identified breaches in health, safety and security policies and procedures to the designated person

Maintain Health and Hygiene

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

PC9. ensure workplace, equipment, restrooms etc. are sanitized regularly

PC10. ensure team is aware about hygiene and sanitation regulations and following them on the shop floor

PC11. ensure availability of running water, hand wash and alcohol-based sanitizers at the workplace

PC12. report advanced hygiene and sanitation issues to appropriate authority

PC13. follow stress and anxiety management techniques and support employees to cope with stress, anxiety etc

PC14. wear and dispose PPEs regularly and appropriately

Effective waste management practices

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

PC15. ensure recyclable, non-recyclable and hazardous wastes are segregated as per SOP

PC16. ensure proper mechanism is followed while collecting and disposing of non-recyclable, recyclable and reusable waste

Material/energy conservation practices

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

PC17. ensure malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment are resolved effectively

PC18. prepare and analyze material and energy audit reports to decipher excessive consumption of material and water

PC19. identify possibilities of using renewable energy and environment friendly fuels

PC20. identify processes where material and energy/electricity utilization can be optimized

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organisation procedures for health, safety and security, individual role and responsibilities in this context

KU2. the organisation's emergency procedures for different emergency situations and the importance of following the same

KU3. evacuation procedures for workers and visitors

KU4. how and when to report hazards as well as the limits of responsibility for dealing with hazards

KU5. potential hazards, risks and threats based on the nature of work

KU6. various types of fire extinguisher

KU7. various types of safety signs and their meaning

KU8. appropriate first aid treatment relevant to different condition e.g. bleeding, minor burns, eye injuries etc.

KU9. relevant standards, procedures and policies related to 5S followed in the company

KU10. the various materials used and their storage norms

KU11. importance of efficient utilisation of material and water

KU12. basics of electricity and prevalent energy efficient devices

KU13. common practices of conserving electricity

KU14. common sources and ways to minimize pollution

KU15. categorisation of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics

KU16. waste management techniques

KU17. significance of greening

Generic Skills (GS)

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

GS1. read safety instructions/guidelines

GS2. modify work practices to improve them

GS3. work with supervisors/team members to carry out work related tasks

GS4. complete tasks efficiently and accurately within stipulated time

GS5. inform/report to concerned person in case of any problem

GS6. make timely decisions for efficient utilization of resources

GS7. write reports such as accident report, in at least English/regional language

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Maintain safe and secure working environment	**20**	**13**	**-**	**8**
PC1. identify hazardous activities and the possible causes of risks or accidents in the workplace	4	2	-	2
PC2. implement safe working practices for dealing with hazards to ensure safety of self and others	3	1	-	2
PC3. conduct regular checks of the machines with support of the maintenance team to identify potential hazards	2	2	-	1
PC4. ensure that all the tools/equipment/fasteners/spare parts are arranged as per specifications/utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/work instructions	3	2	-	1
PC5. organise safety drills or training sessions to create awareness amongst others on the identified risks and safety practices	2	-	-	-
PC6. fill daily check sheet to report improvements done and risks identified	2	2	-	-
PC7. ensure that relevant safety boards/signs are placed on the shop floor for the safety of self and others	2	2	-	1
PC8. report any identified breaches in health, safety and security policies and procedures to the designated person	2	2	-	1
Maintain Health and Hygiene	**13**	**7**	**-**	**5**
PC9. ensure workplace, equipment, restrooms etc. are sanitized regularly	3	2	-	1
PC10. ensure team is aware about hygiene and sanitation regulations and following them on the shop floor	2	1	-	-
PC11. ensure availability of running water, hand wash and alcohol-based sanitizers at the workplace	2	2	-	1
PC12. report advanced hygiene and sanitation issues to appropriate authority	1	1	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. follow stress and anxiety management techniques and support employees to cope with stress, anxiety etc	2	1	-	1
PC14. wear and dispose PPEs regularly and appropriately	3	-	-	1
Effective waste management practices	**6**	**4**	**-**	**1**
PC15. ensure recyclable, non-recyclable and hazardous wastes are segregated as per SOP	3	2	-	-
PC16. ensure proper mechanism is followed while collecting and disposing of non-recyclable, recyclable and reusable waste	3	2	-	1
Material/energy conservation practices	**11**	**6**	**-**	**6**
PC17. ensure malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment are resolved effectively	2	2	-	1
PC18. prepare and analyze material and energy audit reports to decipher excessive consumption of material and water	3	2	-	1
PC19. identify possibilities of using renewable energy and environment friendly fuels	3	1	-	2
PC20. identify processes where material and energy/electricity utilization can be optimized	3	1	-	2
NOS Total	**50**	**30**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N9810
NOS Name	Manage work and resources (Manufacturing)
Sector	Automotive
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	30/09/2021
Next Review Date	30/09/2024
NSQC Clearance Date	30/09/2021

ASC/N8112: Conduct safety analysis of electrical/electronic/ mechanical systems

Description

This NOS unit is about performing product engineering of Electrical/Electronic/Mechanical systems adhering to safety standards like ISO 26262, AUTOSAR, CMVR and other applicable regulations for excellence in product performance through risk mitigation by identifying hazards and deploying measured steps to combat malfunctioning of automated functionalities.

Scope

The scope covers the following :

- Define the design targets for the Electrical/Electronic systems
- Develop the systems from concept to production drawing release stage
- Monitor the risk mitigation program
- Validate each system for compliance to standards
- Report and record data on safety analysis and progress of activities

Elements and Performance Criteria

Define the design targets for the Electrical/Electronic systems

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

PC1. Identify the parameters that can cause malfunctioning and enhance performance of vehicle by automation

PC2. Set the goals for engineering teams, hardware and software suppliers and associates providing services for creating suitable designs of the vehicle

PC3. Define the functional targets for design-simulation-prototyping-testing engineers

Develop the systems from concept to production drawing release stage

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

PC4. Deploy resources to generate design concepts complying with quality and cost targets

PC5. Design the Electrical/Electronic/Mechanical systems as per Product Quality plan (APQP) fulfilling the time and cost constraints

PC6. Apply appropriate technologies to meet the goals set for design, simulation, rapid-prototyping, validation

PC7. Co-ordinate with design teams to develop systems compatible to each other and complying with the design safety standards

Monitor the risk mitigation program

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

PC8. Identify all potential hazards out of system malfunctioning

PC9. Prepare comprehensive list of critical and non-critical risks arising out of hazardous operations

PC10. Monitor the engineering activities with a focus on the risk mitigation activities

Validate each system for compliance to standards

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

PC11. Analyse each system function by simulating normal performance and failure under critical conditions

PC12. Integrate systems on vehicle sub-systems to test virtually the design targets for performance and failures

PC13. Validate system performance on vehicle and clearly identify failure modes and corrective actions

PC14. Release final design after vehicle homologation tests on safety critical systems

PC15. Modify designs based on feedback from handlers in the product lifecycle or as part of continuous improvement, re-engineering or value-engineering and perform validation testing for safety compliance

Report and record data on safety analysis and progress of activities related to design safety

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

PC16. Perform safety analysis on each system at pre-defined intervals

PC17. Report the progress of safety related activities including failures, omissions and delays

PC18. Record all product engineering steps in the light of design safety for compliance audits or quality conformance

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Product portfolio of organization

KU2. Company manufacturing processes

KU3. Standard Operation Procedures (SOP) recommended by manufacturer for using equipment / machinery in use

KU4. Departments responsible for various organisational activities

KU5. The range of standard templates and tools available and how to use them

KU6. Role of Innovation & Role of technology in safety standards

KU7. Safety standards followed in industry

KU8. Various parameters that can cause malfunctioning and enhance performance of vehicle

KU9. Designing of the Electrical/Electronic systems as per Product Quality plan (APQP)

KU10. Process to integrate systems on vehicle sub-systems

KU11. Risk mitigation process

Generic Skills (GS)

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

GS1. Follow instructions, guidelines, procedures, rules, and service level agreements

GS2. Listen effectively and communicate information accurately

GS3. Follow rule-based decision-making processes

GS4. Make decisions on suitable courses

GS5. Plan and organize the work to achieve targets and meet deadlines

GS6. Apply problem-solving approaches to different situations

GS7. Analyse the business impact and disseminate relevant information to others

GS8. Apply balanced judgments to different situations

GS9. Check the work is complete and free from errors

GS10. Keen to Observe & analyse

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Define the design targets for the Electrical/Electronic systems	**7**	**7**	**-**	**3**
PC1. Identify the parameters that can cause malfunctioning and enhance performance of vehicle by automation	2	2	-	1
PC2. Set the goals for engineering teams, hardware and software suppliers and associates providing services for creating suitable designs of the vehicle	3	3	-	1
PC3. Define the functional targets for design-simulation-prototyping-testing engineers	2	2	-	1
Develop the systems from concept to production drawing release stage	**10**	**10**	**-**	**5**
PC4. Deploy resources to generate design concepts complying with quality and cost targets	2	2	-	1
PC5. Design the Electrical/Electronic/Mechanical systems as per Product Quality plan (APQP) fulfilling the time and cost constraints	3	3	-	1
PC6. Apply appropriate technologies to meet the goals set for design, simulation, rapid-prototyping, validation	3	3	-	2
PC7. Co-ordinate with design teams to develop systems compatible to each other and complying with the design safety standards	2	2	-	1
Monitor the risk mitigation program	**5**	**5**	**-**	**3**
PC8. Identify all potential hazards out of system malfunctioning	1	1	-	1
PC9. Prepare comprehensive list of critical and non-critical risks arising out of hazardous operations	2	2	-	1
PC10. Monitor the engineering activities with a focus on the risk mitigation activities	2	2	-	1
Validate each system for compliance to standards	**11**	**11**	**-**	**5**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. Analyse each system function by simulating normal performance and failure under critical conditions	2	2	-	1
PC12. Integrate systems on vehicle sub-systems to test virtually the design targets for performance and failures	3	3	-	1
PC13. Validate system performance on vehicle and clearly identify failure modes and corrective actions	2	2	-	1
PC14. Release final design after vehicle homologation tests on safety critical systems	2	2	-	1
PC15. Modify designs based on feedback from handlers in the product lifecycle or as part of continuous improvement, re-engineering or value-engineering and perform validation testing for safety compliance	2	2	-	1
Report and record data on safety analysis and progress of activities related to design safety	**7**	**7**	**-**	**4**
PC16. Perform safety analysis on each system at pre-defined intervals	3	3	-	2
PC17. Report the progress of safety related activities including failures, omissions and delays	2	2	-	1
PC18. Record all product engineering steps in the light of design safety for compliance audits or quality conformance	2	2	-	1
NOS Total	**40**	**40**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N8112
NOS Name	Conduct safety analysis of electrical/electronic/ mechanical systems
Sector	Automotive
Sub-Sector	Research & Development
Occupation	Automotive Product Designing
NSQF Level	6
Credits	4
Version	1.0
Next Review Date	NA

ASC/N8113: Lead Computer Aided Engineering (CAE) simulations to ensure safety and vehicle performance

Description

This NOS unit is about performing CAE simulations on Mechanical/Electrical/Electronic systems to predict performance and define life / warranty period through Finite Element Analysis (FEA) of structural parts and Computational Fluid Dynamics (CFD) of liquid/gas with product part number or the surrounding environment during operation

Scope

The scope covers the following :

- Identify the elements for virtual validation
- Develop Virtual Product Development (VPD) plan for CAE simulations
- Develop CAE and FE models for individual analysis methods
- Monitor the design safety verifications
- Perform virtual validation

Elements and Performance Criteria

Identify the elements for virtual validation of the design (DV) of parts and of the integration (PV) of systems

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

PC1.   Ensure availability of an array of CAE & CAD software, high performance computers and servers (local/cloud)

PC2.   Identify vehicle parts and operating conditions (load cases) to undergo CAE simulations (apt boundary condition)

PC3.   Identify electrical/electronic parts of each system and mechanical parts of each assembly for design verification

PC4.   Identify each aspect of vehicle integration and operations that calls for CAE simulation

Develop Virtual Product Development (VPD) plan for CAE simulations in sync with the Vehicle Development Plan (VDP)

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

PC5.   Ensure that the capability matrix and workload / capacity schedule are mutually supportive

PC6.   Develop detailed plan for simulations (light and server-intensive) best utilising the available computing resources

PC7.   Conduct virtual validation reviews in conjunction with Initial-Interim-Final Design Release and DV-PV-PPV Testing

Develop CAE models common for FEA, CFD, MDB and discrete F.E models for individual analysis methods

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

PC8.   Plan CAE strategy for pre-processing suiting the simulations (Crash/CFD/NVH) as per the VPD plan

PC9.   Lead F.E Meshing team in co-ordination with system design teams to make concurrent changes on F.E models

PC10. Monitor development of compatible F.E mesh common for analysis types (structure/fluid/acoustic)

Monitor the design safety verifications complying to crash safety standards and part failure conditions

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

PC11. Conduct virtual validation of electrical/electronic/mechanical parts for design integrity

PC12. Lead CAE simulation under extreme operating conditions for static/dynamic/transient conditions

PC13. Lead analysis of failure modes on safety critical parts and vehicle sub-assemblies

PC14. Monitor the post-processing and result-interpretation records at all stages of CAE

Perform virtual validation in coherence with designing, re-designing, re-engineering stages in the product lifecycle

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

PC15. Schedule all CAE simulation activities for accurate & timely results during designing, re-designing, re-engineering

PC16. Archive digital records systematically in a safe environment for easy retrieval during the stipulated time window by following organisational procedures

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Product portfolio of organization

KU2. Company manufacturing processes

KU3. Standard Operation Procedures (SOP) recommended by manufacturer for using equipment / machinery in use

KU4. Departments responsible for various organisational activities

KU5. CAE & CAD software, high performance computers and servers (local/cloud)

KU6. CAE simulation

KU7. Vehicle parts and operating conditions (load cases) to undergo CAE simulations

Generic Skills (GS)

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

GS1. Follow instructions, guidelines, procedures, rules, and service level agreements

GS2. Listen effectively and communicate information accurately

GS3. Follow rule-based decision-making processes

GS4. Make decisions on suitable courses

GS5. Plan and organize the work to achieve targets and meet deadlines

GS6. Apply problem-solving approaches to different situations

GS7. Analyse the business impact and disseminate relevant information to others

GS8. Apply balanced judgments to different situations

GS9. Check the work is complete and free from errors

GS10. Keen to observe & analyse

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Identify the elements for virtual validation of the design (DV) of parts and of the integration (PV) of systems	**9**	**9**	**-**	**6**
PC1. Ensure availability of an array of CAE & CAD software, high performance computers and servers (local/cloud)	2	2	-	1
PC2. Identify vehicle parts and operating conditions (load cases) to undergo CAE simulations (apt boundary condition)	3	3	-	2
PC3. Identify electrical/electronic parts of each system and mechanical parts of each assembly for design verification	2	2	-	2
PC4. Identify each aspect of vehicle integration and operations that calls for CAE simulation	2	2	-	1
Develop Virtual Product Development (VPD) plan for CAE simulations in sync with the Vehicle Development Plan (VDP)	**8**	**8**	**-**	**4**
PC5. Ensure that the capability matrix and workload / capacity schedule are mutually supportive	2	2	-	1
PC6. Develop detailed plan for simulations (light and server-intensive) best utilising the available computing resources	3	3	-	2
PC7. Conduct virtual validation reviews in conjunction with Initial-Interim-Final Design Release and DV-PV-PPV Testing	3	3	-	1
Develop CAE models common for FEA, CFD, MDB and discrete F.E models for individual analysis methods	**8**	**8**	**-**	**3**
PC8. Plan CAE strategy for pre-processing suiting the simulations (Crash/CFD/NVH) as per the VPD plan	3	3	-	1
PC9. Lead F.E Meshing team in co-ordination with system design teams to make concurrent changes on F.E models	3	3	-	1
PC10. Monitor development of compatible F.E mesh common for analysis types (structure/fluid/acoustic)	2	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Monitor the design safety verifications complying to crash safety standards and part failure conditions	**11**	**11**	**-**	**5**
PC11. Conduct virtual validation of electrical/electronic/mechanical parts for design integrity	3	3	-	2
PC12. Lead CAE simulation under extreme operating conditions for static/dynamic/transient conditions	3	3	-	1
PC13. Lead analysis of failure modes on safety critical parts and vehicle sub-assemblies	3	3	-	1
PC14. Monitor the post-processing and result-interpretation records at all stages of CAE	2	2	-	1
Perform virtual validation in coherence with designing, re-designing, re-engineering stages in the product lifecycle	**4**	**4**	**-**	**2**
PC15. Schedule all CAE simulation activities for accurate & timely results during designing, re-designing, re-engineering	2	2	-	1
PC16. Archive digital records systematically in a safe environment for easy retrieval during the stipulated time window by following organisational procedures	2	2	-	1
NOS Total	**40**	**40**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N8113
NOS Name	Lead Computer Aided Engineering (CAE) simulations to ensure safety and vehicle performance
Sector	Automotive
Sub-Sector	Research & Development
Occupation	Automotive Product Designing
NSQF Level	6
Credits	4
Version	1.0
Next Review Date	NA

DGT/VSQ/N0104: Employability Skills (120 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. understand the significance of employability skills in meeting the current job market requirement and future of work

PC2. identify and explore learning and employability relevant portals

PC3. research about the different industries, job market trends, latest skills required and the available opportunities

Constitutional values – Citizenship

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

PC4. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. for personal growth and the nation's progress

PC5. follow personal values and ethics such as honesty, integrity, caring and respecting others, etc.

PC6. follow and promote environmentally sustainable practices

Becoming a Professional in the 21st Century

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

PC7. recognize the significance of 21st Century Skills for employment

PC8. 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

PC9. adopt a continuous learning mindset for personal and professional development

Basic English Skills

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

PC10. use English as a medium of formal and informal communication while dealing with topics of everyday conversation in different contexts

PC11. speak over the phone in English, in an audible manner, using appropriate greetings, opening, and closing statements both on personal and work front

PC12. read and understand routine information, notes, instructions, mails, letters etc. written in English

PC13. write short messages, notes, letters, e-mails etc., using accurate English

Career Development & Goal Setting

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

PC14. identify career goals based on the skills, interests, knowledge, and personal attributes

PC15. prepare a career development plan with short- and long-term goals

Communication Skills

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

PC16. follow verbal and non-verbal communication etiquette while communicating in professional and public settings

PC17. use active listening techniques for effective communication

PC18. communicate in writing using appropriate style and format based on formal or informal requirements

PC19. work collaboratively with others in a team

Diversity & Inclusion

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

PC20. • ensure personal behaviour, conduct, and use appropriate communication by taking gender into
• consideration

PC21. empathize with a PwD and aid a PwD, if asked

PC22. escalate any issues related to sexual harassment at the workplace in accordance with the POSH Act

Financial and Legal Literacy

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

PC23. identify and select reliable institutions for various financial products and services such as bank account, debit and credit cards, loans, insurance etc.

PC24. carry out offline and online financial transactions, safely and securely, using various methods and check the entries in the passbook

PC25. identify common components of salary and compute income, expenses, taxes, investments etc

PC26. 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:

PC27. operate digital devices and use their features and applications securely and safely

PC28. carry out basic internet operations by connecting to the internet safely and securely, using the mobile data or other available networks through Bluetooth, Wi-Fi, etc.

PC29. display responsible online behaviour while using various social media platforms

PC30. create a personal email account, send and process received messages as per requirement

PC31. carry out basic procedures in documents, spreadsheets and presentations using respective and appropriate applications

PC32. utilize virtual collaboration tools to work effectively

Entrepreneurship

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

PC33. identify different types of Entrepreneurship and Enterprises

PC34. use research and networking skills to identify and assess opportunities for potential business

PC35. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion

PC36. 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:

PC37. identify different types of customers

PC38. identify and respond to customer requests and needs in a professional manner

PC39. use appropriate tools to collect customer feedback

PC40. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

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

PC41. create a professional Curriculum vitae (Résumé)

PC42. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively

PC43. apply to identified job openings using offline /online methods as per requirement

PC44. answer questions politely, with clarity and confidence, during recruitment and selection

PC45. 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

KU2. different learning and employability related portals

KU3. various constitutional and personal values

KU4. different environmentally sustainable practices and their importance

KU5. Twenty first (21st) century skills and their importance

KU6. how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

KU7. importance of career development and setting long- and short-term goals

KU8. Do's and don'ts of effective communication

KU9. POSH Act

KU10. inclusivity and its importance

KU11. different types of disabilities and appropriate verbal and non-verbal communication and behaviour towards PwD

KU12. different types of financial institutes, products, and services

KU13. components of salary and how to compute income and expenditure

KU14. importance of maintaining safety and security in offline and online financial transactions

KU15. different legal rights and laws

KU16. different types of digital devices and the procedure to operate them safely and securely

KU17. how to create and operate an e- mail account

KU18. use applications such as word processors, spreadsheets etc.

KU19. different types of Enterprises and ways to identify business opportunities

KU20. types and needs of customers

KU21. how to apply for a job and prepare for an interview

KU22. 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 in English and other languages

GS2. communicate effectively using appropriate language in formal and informal settings

GS3. behave politely and appropriately with all to maintain effective work relationship

GS4. how to work in a virtual mode, using various technological platforms

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. understand the significance of employability skills in meeting the current job market requirement and future of work	-	-	-	-
PC2. identify and explore learning and employability relevant portals	-	-	-	-
PC3. research about the different industries, job market trends, latest skills required and the available opportunities	-	-	-	-
Constitutional values – Citizenship	**2**	**1**	**-**	**-**
PC4. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. for personal growth and the nation's progress	-	-	-	-
PC5. follow personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC6. follow and promote environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	**2**	**3**	**-**	**-**
PC7. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC8. 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	-	-	-	-
PC9. adopt a continuous learning mindset for personal and professional development	-	-	-	-
Basic English Skills	**2**	**3**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. use English as a medium of formal and informal communication while dealing with topics of everyday conversation in different contexts	-	-	-	-
PC11. speak over the phone in English, in an audible manner, using appropriate greetings, opening, and closing statements both on personal and work front	-	-	-	-
PC12. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC13. write short messages, notes, letters, e-mails etc., using accurate English	-	-	-	-
Career Development & Goal Setting	**1**	**2**	**-**	**-**
PC14. identify career goals based on the skills, interests, knowledge, and personal attributes	-	-	-	-
PC15. prepare a career development plan with short- and long-term goals	-	-	-	-
Communication Skills	**2**	**3**	**-**	**-**
PC16. follow verbal and non-verbal communication etiquette while communicating in professional and public settings	-	-	-	-
PC17. use active listening techniques for effective communication	-	-	-	-
PC18. communicate in writing using appropriate style and format based on formal or informal requirements	-	-	-	-
PC19. work collaboratively with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**2**	**-**	**-**
PC20. • ensure personal behaviour, conduct, and use appropriate communication by taking gender into • consideration	-	-	-	-
PC21. empathize with a PwD and aid a PwD, if asked	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. escalate any issues related to sexual harassment at the workplace in accordance with the POSH Act	-	-	-	-
Financial and Legal Literacy	**2**	**3**	**-**	**-**
PC23. identify and select reliable institutions for various financial products and services such as bank account, debit and credit cards, loans, insurance etc.	-	-	-	-
PC24. carry out offline and online financial transactions, safely and securely, using various methods and check the entries in the passbook	-	-	-	-
PC25. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC26. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
Essential Digital Skills	**2**	**3**	**-**	**-**
PC27. operate digital devices and use their features and applications securely and safely	-	-	-	-
PC28. carry out basic internet operations by connecting to the internet safely and securely, using the mobile data or other available networks through Bluetooth, Wi-Fi, etc.	-	-	-	-
PC29. display responsible online behaviour while using various social media platforms	-	-	-	-
PC30. create a personal email account, send and process received messages as per requirement	-	-	-	-
PC31. carry out basic procedures in documents, spreadsheets and presentations using respective and appropriate applications	-	-	-	-
PC32. utilize virtual collaboration tools to work effectively	-	-	-	-
Entrepreneurship	**2**	**3**	**-**	**-**
PC33. identify different types of Entrepreneurship and Enterprises	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC34. use research and networking skills to identify and assess opportunities for potential business	-	-	-	-
PC35. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC36. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
Customer Service	**1**	**2**	**-**	**-**
PC37. identify different types of customers	-	-	-	-
PC38. identify and respond to customer requests and needs in a professional manner	-	-	-	-
PC39. use appropriate tools to collect customer feedback	-	-	-	-
PC40. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	**2**	**4**	**-**	**-**
PC41. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC42. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC43. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC44. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC45. 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/N0104
NOS Name	Employability Skills (120 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	6
Credits	4
Version	1.0
Last Reviewed Date	27/05/2021
Next Review Date	27/05/2024
NSQC Clearance Date	27/05/2021

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its

importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.

2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.

3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).

4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training centre based on these criteria.

5. In case of successfully passing only certain number of NOSs, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

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

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
ASC/N9810.Manage work and resources (Manufacturing)	50	30	-	20	100	15
ASC/N8112.Conduct safety analysis of electrical/electronic/ mechanical systems	40	40	-	20	100	40
ASC/N8113.Lead Computer Aided Engineering (CAE) simulations to ensure safety and vehicle performance	40	40	-	20	100	35
DGT/VSQ/N0104.Employability Skills (120 Hours)	20	30	-	-	50	10
Total	**150**	**140**	**-**	**60**	**350**	**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.