सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

Qualification Pack

Transforming the skill landscape

Equipment Designer Level 5

QP Code: ASC/Q6405

Version: 1.0

NSQF Level: 5

Automotive Skills Development Council || 153, Gr Floor, Okhla Industrial Area, Phase – III, Leela Building
New Delhi – 110020

Contents

ASC/Q6405: Equipment Designer Level 5

Brief Job Description

Also known as Tool Designer .Individuals at this job need to design details of the equipment- mechanisms, fixtures, tools, gauges and other instruments for Manufacturing measuring the quality standards of the production process.

Personal Attributes

This job requires the individual to work independently and be judicious in making decisions pertaining to ones area of work. The individual should be result oriented. The individual should also be able to demonstrate skills for information ordering, imagination, oral expression, analytical approach, deductive reasoning and comprehension.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. ASC/N0002: Work effectively in a team
2. ASC/N0006: Maintain a safe and healthy working environment
3. ASC/N0021: Maintain 5S at the work premises
4. ASC/N6413: Design fixtures, workstation and its mechanisms
5. ASC/N6422: Release the drawings and manage the documentation for engineering change

Qualification Pack (QP) Parameters

Sector	Automotive
Sub-Sector	Manufacturing Support
Occupation	Process Engineering
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2015/2144.0301

Minimum Educational Qualification & Experience	Diploma (Industrial/Production/Mechanical Engineer/Diploma in Tool Design) with 1-2 Years of experience Tool designing/Manufacturing OR B.E./B.Tech (Industrial/Production/Mechanical Engineer/Diploma in Tool Design) with 1-2 Years of experience Tool designing/Manufacturing
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	CAD , Tool Design, GD & T
Minimum Job Entry Age	18 Years
Last Reviewed On	23/09/2013
Next Review Date	24/09/2021
Deactivation Date	24/09/2021
NSQC Approval Date	28/09/2015
Version	1.0
Reference code on NQR	2015/AUT/ASDC/01380
NQR Version	1.0

ASC/N0002: Work effectively in a team

Description

This NOS unit is about working effectively with colleagues, either in individuals own work group or in other work groups within organisation

Scope

This unit/task covers the following: Colleagues:

- Superiors
- Members of own work group
- People in other work groups within or outside the organisation Communicate:
- Face-to-face
- By telephone
- In writing

Elements and Performance Criteria

Effective communication

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

PC1. maintain clear communication with colleagues
PC2. work with colleagues
PC3. pass on information to colleagues in line with organisational requirements
PC4.. work in ways that show respect for colleagues
PC5. carry out commitments made to colleagues
PC6. let colleagues know in good time if cannot carry out commitments, explaining the reasons
PC7. identify problems in working with colleagues and take the initiative to solve these problems
PC8. follow the organisations policies and procedures for working with colleagues
PC9. ability to share resources with other members as per priority of tasks

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the organisations policies and procedures for working withcolleagues, role and responsibilities in relation to this
KU2. the importance of effective communication and establishing goodworking relationships with colleagues
KU3. different methods of communication and the circumstances inwhich it is appropriate to use these
KU4. benefits of developing productive working relationships withcolleagues
KU5. the importance of creating an environment of trust and mutualrespect
KU6. whether not meeting commitments, will have implications onindividuals and the organisation

KU7. different types of information that colleagues might need and theimportance of providing this information when it is required

KU8. the importance of problems, from colleagues perspective andhow to provide support, where necessary, to resolve these

Generic Skills (GS)

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

GS1. complete well written work with attention to detail

GS2. read instructions, guidelines/procedures

GS3. listen effectively and orally communicate information

GS4. make decisions on a suitable course of action or response

GS5. plan and organise work to achieve targets and deadlines

GS6. check that the work meets customer requirements

GS7. deliver consistent and reliable service to customers

GS8. apply problem solving approaches in different situations

GS9. apply balanced judgements to different situations

GS10. apply good attention to detail

GS11. check that the work is complete and free from errors

GS12. get work checked by peers

GS13. work effectively in a team environment

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Effective communication	**25**	**75**	**-**	**-**
PC1. maintain clear communication with colleagues	4	10	-	-
PC2. work with colleagues	2	7	-	-
PC3. pass on information to colleagues in line with organisational requirements	3	8	-	-
PC4.. work in ways that show respect for colleagues	3	8	-	-
PC5. carry out commitments made to colleagues	2	8	-	-
PC6. let colleagues know in good time if cannot carry out commitments, explaining the reasons	2	8	-	-
PC7. identify problems in working with colleagues and take the initiative to solve these problems	4	9	-	-
PC8. follow the organisations policies and procedures for working with colleagues	3	9	-	-
PC9. ability to share resources with other members as per priority of tasks	2	8	-	-
NOS Total	**25**	**75**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N0002
NOS Name	Work effectively in a team
Sector	Automotive
Sub-Sector	Manufacturing and R&D, Sales and Service, Road Transportation
Occupation	Maintenance
NSQF Level	4
Credits	TBD
Version	1.0
Next Review Date	30/09/2015

ASC/N0006: Maintain a safe and healthy working environment

Description

This NOS is about creating a Safe and Healthy work place, adhering to the safety guidelines in the working area, following practices which are not impacting the environment in a negative manner and training team members on health and safety related issues

Scope

The role holder will be responsible for

- identifying and reporting of risks
- creating and sustaining a safe, clean and environment friendly work place This NOS will be applicable to all Automotive sector manufacturing job roles

Elements and Performance Criteria

Identify and report the risks identified

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

PC1.. Identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals ,loud noise

PC2. Inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc

PC3. Inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during operations

PC4. Create awareness amongst other by sharing information on the identified risks

Create and sustain a Safe, clean and environment friendly work place

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

PC5.. Follow the instructions given on the equipment manual describing the operating process of the equipments

PC6.. Follow the Safety, Health and Environment related practices developed by the organization

PC7. Operate the machine using the recommended Personal Protective Equipments (PPE)

PC8. . Maintain a clean and safe working environment near the work place and ensure there is no spillage of chemicals, production waste, oil, solvents etc

PC9. Maintain high standards of personal hygiene at the work place

PC10. Ensure that the waste disposal is done in the designated area and manner as per organization SOP.

PC11. Inform appropriately the medical officer/ HR in case of self or an employees illness of contagious nature so that preventive actions can be planned for others

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant standards, procedures and policies related to Health, Safety and Environment followed in the company

KU2. basic knowledge of Safety procedures(fire fighting, first aid) within the organization

KU3. knowledge of various types of PPEs and their usage

KU4. basic knowledge of risks/hazards associated with each occupation in the organization

KU5. how to safely operate various tools and machines and risksassociated with the tools/ equipment

KU6. knowledge of personal hygiene and how an individual an contribute towards creating a highly safe and clean working environment

Generic Skills (GS)

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

GS1. write basic level notes and observations

GS2. read safety instructions put up across the plant premises

GS3. read safety precautions mentioned in equipment manuals and panels to understand the potential risks associated

GS4. effectively communicate information to team members

GS5. informemployees in the plant and concerned functions about events, incidents & potential risks observed related to Safety, Health and Environment.

GS6. question operator/ supervisor in order to understand the safety related issues

GS7. attentively listen with full attention and comprehend the information given by the speaker during safety drills and training programs

GS8. use common sense and make judgments during day to day basis

GS9. use reasoning skills to identify and resolve basic problems

GS10. use common sense and make judgments during day to day basis

GS11. use reasoning skills to identify and resolve basic problems

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Identify and report the risks identified	**8**	**23**	**-**	**-**
PC1.. Identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals ,loud noise	3	6	-	-
PC2. Inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc	2	6	-	-
PC3. Inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during operations	2	6	-	-
PC4. Create awareness amongst other by sharing information on the identified risks	1	5	-	-
Create and sustain a Safe, clean and environment friendly work place	**17**	**52**	**-**	**-**
PC5.. Follow the instructions given on the equipment manual describing the operating process of the equipments	3	7	-	-
PC6.. Follow the Safety, Health and Environment related practices developed by the organization	3	8	-	-
PC7. Operate the machine using the recommended Personal Protective Equipments (PPE)	3	8	-	-
PC8. . Maintain a clean and safe working environment near the work place and ensure there is no spillage of chemicals, production waste, oil, solvents etc	2	8	-	-
PC9. Maintain high standards of personal hygiene at the work place	2	7	-	-
PC10. Ensure that the waste disposal is done in the designated area and manner as per organization SOP.	3	8	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. Inform appropriately the medical officer/ HR in case of self or an employees illness of contagious nature so that preventive actions can be planned for others	1	6	-	-
NOS Total	**25**	**75**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N0006
NOS Name	Maintain a safe and healthy working environment
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Maintenance
NSQF Level	4
Credits	TBD
Version	1.0
Next Review Date	15/09/2015

ASC/N0021: Maintain 5S at the work premises

Description

This NOS is about ensuring all 5 S activities both at the shop floor and the office area to facilitate increase in work productivity

Scope

The individual needs to. Ensure sorting, streamlining & organizing, storage and documentation, cleaning, standardization and sustenance across the plant and office premises of the organization

Elements and Performance Criteria

Ensure sorting

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

PC1.. follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and unnecessary items are not cluttering the workbenches or work surfaces.

PC2.. ensure segregation of waste in hazardous/ non hazardous waste as per the sorting work instructions

PC3.. follow the technique of waste disposal and waste storage in the proper bins as per sop

PC4.. segregate the items which are labelled as red tag items for the process area and keep them in the correct places

PC5. sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5s guidelines/ work instructions

PC6. . ensure that areas of material storage areas are not overflowing

PC7. properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required

PC8. return the extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area

PC9. follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards

PC10. follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists

Ensure proper documentation and storage (organizing , streamlining)

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

PC11. check that the items in the respective areas have been identified as broken or damaged

PC12. follow the given instructions and check for labelling of fluids, oils. lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc

PC13. make sure that all material and tools are stored in the designated places and in the manner indicated in the 5s instructions

Ensure cleaning of self and the work place

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

PC14. check whether safety glasses are clean and in good condition

PC15. keep all outside surfaces of recycling containers are clean

PC16.. ensure that the area has floors swept, machinery clean and generally clean. in case of cleaning, ensure that proper displays are maintained on the floor which indicate potential safety hazards

PC17.. check whether all hoses, cabling & wires are clean, in goodcondition and clamped to avoid any mishap or mix up

PC18.. ensure workbenches and work surfaces are clean and in good condition

PC19. follow the cleaning schedule for the lighting system to ensure proper illumination

PC20. store the cleaning material and equipment in the correct location and in good condition

PC21. ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene

Ensure sustenance

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

PC22. follow the daily cleaning standards and schedules to create a clean working environment

PC23. attend all training programs for employees on 5 s

PC24. support the team during the audit of 5 s

PC25. participate actively in employee work groups on 5s and encourage team members for active participation

PC26. follow the guidelines for what to do and what not to do to build sustainability in 5s as mentioned in the 5s check lists/ work instructions

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant standards, procedures and policies related to 5S followed in the company

KU2. have basic knowledge of 5S procedures

KU3. know various types 5s practices followed in various areas

KU4. understand the 5S checklists provided in the department/ team

KU5. have skills to identify useful & non useful items

KU6. have knowledge of labels , signs & colours used as indicators

KU7. knowledge on how to sort and store various types of tools, equipment, material etc.

KU8. know , how to identify various types of waste products

KU9. understand the impact of waste/ dirt/ dust/unwanted substances on the process/ environment/ machinery/ human body

KU10. have knowledge of best ways of cleaning & waste disposal

KU11. understand the importance of standardization in processes

KU12. understand the importance of sustainability in 5S

KU13. have knowledge of TQM process

KU14. have knowledge of various materials and storage norms

KU15. understand visual controls, symbols, graphs etc.

Generic Skills (GS)

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

GS1. write basic level notes and observations
GS2. note down observations (if any) related to the process
GS3. read 5S instructions put up across the plant premises
GS4. effectively communicate information to team members inform employees in the plant and concerned functions about 5S
GS5. question the process head in order to understand the 5S related issues
GS6. attentively listen with full attention and comprehend the information given by the speaker during 5S training programs
GS7. use common sense and make judgments during day to day basis
GS8. use reasoning skills to identify and resolve basic problems using 5S
GS9. persuade co team members to follow 5 S
GS10. ensure that the co team members understand the importance of using 5 S tool
GS11. use innovative skills to perform and manage 5 S activities at the work desk and the shop floor
GS12. exhibit inquisitive behaviour to seek feedback and question on the existing set patterns of work
GS13. do what is right, not what is a popular practices
GS14. follow shop floor rules& regulations and avoid deviations; make 5S an integral way of life
GS15. ensure self-cleanliness on a daily basis
GS16. demonstrate the will to keep the work area in a clean and orderly manner

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure sorting	**10**	**30**	**-**	**-**
PC1.. follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and unnecessary items are not cluttering the workbenches or work surfaces.	1	3	-	-
PC2.. ensure segregation of waste in hazardous/ non hazardous waste as per the sorting work instructions	1	3	-	-
PC3.. follow the technique of waste disposal and waste storage in the proper bins as per sop	1	3	-	-
PC4.. segregate the items which are labelled as red tag items for the process area and keep them in the correct places	1	3	-	-
PC5. sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5s guidelines/ work instructions	1	3	-	-
PC6. . ensure that areas of material storage areas are not overflowing	1	3	-	-
PC7. properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required	1	3	-	-
PC8. return the extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area	1	3	-	-
PC9. follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards	1	3	-	-
PC10. follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists	1	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure proper documentation and storage (organizing , streamlining)	**3**	**9**	**-**	**-**
PC11. check that the items in the respective areas have been identified as broken or damaged	1	3	-	-
PC12. follow the given instructions and check for labelling of fluids, oils. lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc	1	3	-	-
PC13. make sure that all material and tools are stored in the designated places and in the manner indicated in the 5s instructions	1	3	-	-
Ensure cleaning of self and the work place	**8**	**24**	**-**	**-**
PC14. check whether safety glasses are clean and in good condition	1	3	-	-
PC15. keep all outside surfaces of recycling containers are clean	1	3	-	-
PC16.. ensure that the area has floors swept, machinery clean and generally clean. in case of cleaning, ensure that proper displays are maintained on the floor which indicate potential safety hazards	1	3	-	-
PC17.. check whether all hoses, cabling & wires are clean, in goodcondition and clamped to avoid any mishap or mix up	1	3	-	-
PC18.. ensure workbenches and work surfaces are clean and in good condition	1	3	-	-
PC19. follow the cleaning schedule for the lighting system to ensure proper illumination	1	3	-	-
PC20. store the cleaning material and equipment in the correct location and in good condition	1	3	-	-
PC21. ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene	1	3	-	-
Ensure sustenance	**4**	**12**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. follow the daily cleaning standards and schedules to create a clean working environment	1	3	-	-
PC23. attend all training programs for employees on 5 s	0.5	2	-	-
PC24. support the team during the audit of 5 s	1	3	-	-
PC25. participate actively in employee work groups on 5s and encourage team members for active participation	0.5	2	-	-
PC26. follow the guidelines for what to do and what not to do to build sustainability in 5s as mentioned in the 5s check lists/ work instructions	1	2	-	-
NOS Total	**25**	**75**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N0021
NOS Name	Maintain 5S at the work premises
Sector	Automotive
Sub-Sector	Generic
Occupation	Generic
NSQF Level	4
Credits	TBD
Version	1.0
Next Review Date	15/03/2016

ASC/N6413: Design fixtures, workstation and its mechanisms

Description

This OS unit is about the tool designer applying his technical knowledge for designing the equipment like tools , fixtures and workstations along with their mechanisms ofoperation for the process

Scope

The unit/ task covers the following:

Elements and Performance Criteria

Preparing thedrawings

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

PC1. analyze the requirement for a new equipment such as workstation mechanisms within online gauge fixtures & associated parts tools & dies for Metal forming processes for facilitating the process of manufacturing for broad classification of process types such as assembly Process machining Process basic metal forming Casting, Forging, Sheet metal etc special processes- Polymer parts, welding, Surface/ Heat treatment

PC2. finalize the dimensions for the new equipment based on the process requirement, space constraints, aux. main equipment selected for the process by the Process Engineer

PC3. prepare the drawings for the required equipment using CAD software

PC4. share the drawings for the new equipment to the in house tool room or third party agency whichever applicable for preview & later for fabrication

PC5. use the equipment prepared above for process and identify the sequence of equipment operation

PC6. based on the sequence of operations and the manufactured product end requirements , devise the mechanism of working for the equipment

PC7. if required , use simulation software for understanding the equipment operation and review the drawings

PC8. in case of robotics/ automation application for equipment functioning , finalize the operation sequence program in consultation with the process engineer

PC9.. get the outline , dimensions and other details for selected equipment to be used such as motors, sensors, automation parts, etc. for layout preparation

PC10.. repeat the above process till the final equipment dimensions ,profile ,mechanism of operation etc. are finalized.

PC11. if required , in consultation with Process Designer/ manager use outside Tool Room agency for design , and manufacture of tools, fixtures . Transfer necessary layout & other information to such agency. Make sure that typical allowances for trimming, shrinkage and warpage etc. are considered based on past experience of the metal forming process.

PC12.. once finalized , then inform the in house tool room or third party agency for reviewing the complete equipment profile , dimensions and accordingly if required update the drawings

PC13. for any on-line gauges designed as part of this exercise ensure GD & T requirements are adhered to.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. company manufacturing processes
KU2. sequence of operations
KU3. activity/ Process Flow
KU4. development Process in the organization
KU5. technical and functional requirements for tools, online gauges, fixtures etc.
KU6. all the economic factors involved in the activity
KU7. previous similar design & achieved data for QCT

Generic Skills (GS)

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

GS1. read the equipment literature & understand its features.
GS2. compile all the data related to main & auxiliary equipment required in theprocesses
GS3. communicate with the equipment operator to take inputs for finalizing the drawings of the equipment
GS4. Communicate with third party consultants used for die design/ manufacture on simultaneous engineering basis.
GS5. share operation knowledge with co-workers
GS6. plan the execution of equipment designing activity ; long term and short term activities so that he can finish the task activity wise in the stipulated time
GS7. analyze the way in which job is being performed and think of some other suitable method in order to optimize the QCT while performing the work
GS8. co-ordinate and link practical aspects of own work as inputs for the designactivity

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Preparing thedrawings	**30**	**70**	**-**	**-**
PC1. analyze the requirement for a new equipment such as workstation mechanisms within online gauge fixtures & associated parts tools & dies for Metal forming processes for facilitating the process of manufacturing for broad classification of process types such as assembly Process machining Process basic metal forming Casting, Forging, Sheet metal etc special processes- Polymer parts, welding, Surface/ Heat treatment	3	6	-	-
PC2. finalize the dimensions for the new equipment based on the process requirement, space constraints, aux. main equipment selected for the process by the Process Engineer	2	6	-	-
PC3. prepare the drawings for the required equipment using CAD software	3	6	-	-
PC4. share the drawings for the new equipment to the in house tool room or third party agency whichever applicable for preview & later for fabrication	2	5	-	-
PC5. use the equipment prepared above for process and identify the sequence of equipment operation	2	6	-	-
PC6. based on the sequence of operations and the manufactured product end requirements , devise the mechanism of working for the equipment	3	6	-	-
PC7. if required , use simulation software for understanding the equipment operation and review the drawings	3	6	-	-
PC8. in case of robotics/ automation application for equipment functioning , finalize the operation sequence program in consultation with the process engineer	2	6	-	-
PC9.. get the outline , dimensions and other details for selected equipment to be used such as motors, sensors, automation parts, etc. for layout preparation	3	6	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10.. repeat the above process till the final equipment dimensions ,profile ,mechanism of operation etc. are finalized.	2	4	-	-
PC11. if required , in consultation with Process Designer/ manager use outside Tool Room agency for design , and manufacture of tools, fixtures . Transfer necessary layout & other information to such agency. Make sure that typical allowances for trimming, shrinkage and warpage etc. are considered based on past experience of the metal forming process.	3	5	-	-
PC12.. once finalized , then inform the in house tool room or third party agency for reviewing the complete equipment profile , dimensions and accordingly if required update the drawings	1	4	-	-
PC13. for any on-line gauges designed as part of this exercise ensure GD & T requirements are adhered to.	1	4	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N6413
NOS Name	Design fixtures, workstation and its mechanisms
Sector	Automotive
Sub-Sector	Manufacturing Support
Occupation	Process Engineering
NSQF Level	5
Credits	NA
Version	1.0
Next Review Date	30/09/2015

ASC/N6422: Release the drawings and manage the documentation for engineering change

Description

This OS unit is about the equipment designer releasing the drawings of the finalized equipment and making the documentation for change management

Scope

This unit/ task covers the following:

- release of equipment drawings
- documentation for change management

Elements and Performance Criteria

Release of tool drawings

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

PC1.. complete the parts- list and drawings / specifications for all the items required for the Equipment.

PC2.. release the drawings of the equipment to Production department/ In House / external Tool Room as per SOP and monitor its development for any revisions, clarity required etc

PC3. in case of any problem encountered while development of the equipment, usage by Production during process , probe the reasons and if required , modify/re-design in coordination with in house tool room or third party agency, based on the severity of problem

Documentation for change management

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

PC4. . case of an Engineering Change Note for a design change OR a process change for CA/ CI activity review the impact on fixture parts / mechanism and decide the action of Rework / re make based on cost and time available / production schedules on the equipmen Co-ordinate activities related to WIP , stocks during ECN Mnaagement ; record these on the ECN document

PC5. based on the above make the changes in drawing / part-list and order the parts/ rework with help of Validation/ Process engineer

PC6. make final changes in documentation after trials by validation agency are declared successful and release the change documents as per SOP

PC7. in consultation with the process engineer / CFT meeting output share the finalized documents for equipment & PF FMEA ,CP with the end users

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. company manufacturing processes

KU2. sequence of operations

KU3. norms established CP
KU4. technical and functional requirements for tools, online gauges,fixtures etc
KU5. all the economic factors involved in the activity
KU6. previous similar design & achieved data for QCT
KU7. PFMEA/CP/WI documents
KU8. APQP,PPAP
KU9. ECN/PCN documentation requirements

Generic Skills (GS)

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

GS1. interpret and prepare the PFMEA/CP documents as per the TSrequirements
GS2. communicate with Production department for drawings releaseand equipment modification/re-designing
GS3. communicate with the process engineer for documents review
GS4. assist Production department if required for equipment operation
GS5. share operation knowledge with co-workers
GS6. coordinate and take inputs from the shop floor workers for devising alternative methods for work content reduction using the equipment
GS7. plan the equipment drawings release activity so that he can finish the activity in the stipulated time
GS8. equipment modification/re-designing
GS9. change in PFMEA/CP/WI documents in case of changemanagement
GS10. assess the problem, evaluate the possible solution(s) and use anoptimum /best possible solution(s)
GS11. identify immediate or temporary solutions to resolve delays andcrisis situations
GS12. how to learn from past mistakes to resolve technical and nontechnical problems

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Release of tool drawings	**15**	**30**	**-**	**-**
PC1.. complete the parts- list and drawings / specifications for all the items required for the Equipment.	5	11	-	-
PC2.. release the drawings of the equipment to Production department/ In House / external Tool Room as per SOP and monitor its development for any revisions, clarity required etc	5	8	-	-
PC3. in case of any problem encountered while development of the equipment, usage by Production during process , probe the reasons and if required , modify/re-design in coordination with in house tool room or third party agency, based on the severity of problem	5	11	-	-
Documentation for change management	**15**	**40**	**-**	**-**
PC4. . case of an Engineering Change Note for a design change OR a process change for CA/ CI activity review the impact on fixture parts / mechanism and decide the action of Rework / re make based on cost and time available / production schedules on the equipmen Co-ordinate activities related to WIP , stocks during ECN Mnaagement ; record these on the ECN document	4	10	-	-
PC5. based on the above make the changes in drawing / part-list and order the parts/ rework with help of Validation/ Process engineer	5	11	-	-
PC6. make final changes in documentation after trials by validation agency are declared successful and release the change documents as per SOP	3	9	-	-
PC7. in consultation with the process engineer / CFT meeting output share the finalized documents for equipment & PF FMEA ,CP with the end users	3	10	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N6422
NOS Name	Release the drawings and manage the documentation for engineering change
Sector	Automotive
Sub-Sector	Manufacturing Support
Occupation	Process Engineering
NSQF Level	5
Credits	TBD
Version	1.0
Next Review Date	30/09/2015

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each Element/ PC.

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

3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.

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

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

6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.

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

Minimum Aggregate Passing % at QP Level : 75

(**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/N0002.Work effectively in a team	25	75	-	-	100	10
ASC/N0006.Maintain a safe and healthy working environment	25	75	-	-	100	10
ASC/N0021.Maintain 5S at the work premises	25	75	-	-	100	10
ASC/N6413.Design fixtures, workstation and its mechanisms	30	70	-	-	100	40
ASC/N6422.Release the drawings and manage the documentation for engineering change	30	70	-	-	100	30
Total	**135**	**365**	**-**	**-**	**500**	**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.