सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

Qualification Pack

Automation Specialist

QP Code: ASC/Q6807

Version: 1.0

NSQF Level: 6

Automotive Skills Development Council || Automotive Skills Development Council,Sat Paul Mittal Building,1/6, Siri Institutional Area
August Kranti Marg (Khel Gaon Marg)New Delhi – 110049

Contents

ASC/Q6807: Automation Specialist

Brief Job Description

Individuals at this job are responsible for providing support to production operations through maintenance of process control systems installed at shop floor for various Manufacturing processes.

Personal Attributes

This job requires the individual to work independently and take 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, mathematical and logical reasoning, manual dexterity and oral expression skills along with comprehension. The individual must be physically fit as he has to maintain unusual working hours.

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/N6809: Repair and maintain the process control systems
4. ASC/N6810: Plan and arrange for installation of new systems

Qualification Pack (QP) Parameters

Sector	Automotive
Sub-Sector	Manufacturing Support
Occupation	Maintenance
Country	India
NSQF Level	6
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7412.0101
Minimum Educational Qualification & Experience	Diploma (Industrial/Electrical/Electronics Engineering) with 5-10 Years of experience Maintenance/Automation OR B.E./B.Tech (Industrial/Electrical/Electronics Engineering) with 5-10 Years of experience Maintenance/Automation

Minimum Level of Education for Training in School	
Pre-Requisite License or Training	Basic fundamentals training courses on working of equipments and machinery, process control systems like PLC, VFD,HMI, SCADA etc. TPM , Predictive maintenance Techniques, Automation, Robotics, spares management
Minimum Job Entry Age	18 Years
Last Reviewed On	23/09/2013
Next Review Date	30/06/2020
Deactivation Date	30/06/2020
NSQC Approval Date	28/09/2015
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
Last Reviewed Date	23/09/2013
Next Review Date	30/09/2015
NSQC Clearance Date	28/09/2015

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
Last Reviewed Date	15/09/2013
Next Review Date	15/09/2015
NSQC Clearance Date	20/07/2015

ASC/N6809: Repair and maintain the process control systems

Description

This OS unit is about the carrying out the routine maintenance activities of the process control and automation systems of the plant .

Scope

The unit/ task covers the following: inspecting process control and automation systems as per PM schedule carrying out the maintenance for the breakdown/faulty systems maintaining the documentation

Elements and Performance Criteria

Inspection of process control and automation systems

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

PC1.. prepare a PM schedule for the process control and automation systems listed below installed manufacturing process wise based on recommendations of the OE and past experience Limit switches VFDs HMIs SCADA PLCs Robotics

PC2.. based on the schedule , inspect the systems and identify the replacements in the systems

PC3.. if required , attend to the breakdown of systems during manufacturing processes in operation

PC4.. ensure that all the systems are integrated through a computer interface

PC5.. coordinate with the system vendor and arrange for procurement of critical spares

PC6.. store the spares received in plant at the designated locations of the warehouse for maintenance items in coordination with stores manager

PC7.. ensure that the software used for system interfacing are upgraded as per the requirement

PC8.. coordinate with machine/systems/robot vendors and if required , in consultation with sourcing department , finalize an amc for upkeep of the machines/systems/robots etc.

PC9.. use appropriate ppe, material handling equipment and tools and carry out the task .

PC10.. use recommended methods, consumables, tools,CDs for electrical / electronic connections verification of continuity joints, including soldered software program installations and upgradations

PC11.. take support from technician, experts, user , team members from maintenance during the activity if required

PC12.. clock the time for the task so that the scheduling and planning can be improved in future

PC13.. when carrying out the installation/ shifting activity record the time and unplanned tasks encountered in the activity

PC14.. discuss with seniors in manufacturing, maintenance for improving the activity to ensure all points are adequately considered

Carrying breakdown maintenance

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

PC15.. open the process control and automation systems under supervision of maintenance manager and if required , replace the spare parts as per the schedule

PC16.. check / confirm internal conditions of wiring , motherboards, software/ hardware malfunctioning, circuit failures etc. to verify working status to expected conditions.

PC17.. discuss with the user/ operator to learn about problems /unusual phenomenon noticed in the systems

PC18.. change the maintenance due / status sticker on the equipment.

PC19.. to attend the breakdown maintenance verify in appropriate sequence for the equipment charge leakage/ short circuit from parts breakage of wires, clamps unusual contact of electrical wires with moving parts erratic / problematic performance any problem condition as reported in the complaint

PC20.. execute sequence of activities for changing , correcting the situation after opening, verifying contact/ insulation conditions, failure of internal wires etc. and ensure the circuit elements, consumables are available at the work place.

PC21.. use appropriate ppe, material handling equipment and tools and carry out the task .

PC22.. use recommended methods, consumables, tools,CDs for electrical / electronic connections verification of continuity joints, including soldered software program installations and upgradations

PC23.. take support from technician, experts, user , team members from maintenance during the activity if required

PC24.. clock the time for the task so that the scheduling and planning can be improved in future

PC25.. when carrying out the installation/ shifting activity record the time and unplanned tasks encountered in the activity

PC26.. discuss with seniors in manufacturing, maintenance for improving the activity to ensure all points are adequately considered

Maintain the documentation

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

PC27.. maintain a record of all the vendor and system 2d/3d- as built drawings , equipment operation related diagrams , program codes etc. in a legible and safe condition

PC28.. maintain the history of the equipment for the pm/breakdown maintenance activities in log book/history sheets / erp

PC29.. prepare the documents required for process control and automation as per the quality management system (qms) requirements

PC30.. ensure that all the documents for qms are controlled and easily traceable for future requirements too

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. company manufacturing processes & the equipment in use

KU2. existing layout for the processes

KU3. sequence of operations for each process

KU4. contract agencies for maintenance activities outsourcing in the company

KU5. complete knowledge of the process in consideration

KU6. process control and automation systems installed for the processes

KU7. type of systems being used for the process
KU8. electrical -wiring drawings of existing layout/ equipment/systems
KU9. operation of electrical equipments viz motors etc . being used for the process
KU10. robotic instruments used for process
KU11. PLC , SCADA , & electrical elements operation ,testing
KU12. Trouble shooting/ fault finding in Pneumatic, Hydraulic, Electrical control system elements
KU13. QMS system requirements
KU14. material and information flow of the process
KU15. Problem solving techniques TOPS 8D 7 QC tools etc

Generic Skills (GS)

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

GS1. read the information displayed at the workplace
GS2. draft a pictorial representation of the existing layout for better comprehension
GS3. interpret the outputs obtained from process control systems like PLC , SCADA, HMI etc.
GS4. communicate with shop floor workers gathering inputs/requirements
GS5. coordinate with the shop floor workers , colleagues and enter the information related to maintenance activities in hard and soft copy as desired
GS6. interact with workers and gather all the information related to process requirements
GS7. share operation knowledge with co-workers
GS8. execute the PM of the process control and automation systems in an effective manner and on timely basis
GS9. provide inputs to maintenance manager for developing more economic and feasible measures for controlling the process parameters and specifications using the best systems

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Inspection of process control and automation systems	**14**	**33**	**-**	**-**
PC1.. prepare a PM schedule for the process control and automation systems listed below installed manufacturing process wise based on recommendations of the OE and past experience Limit switches VFDs HMIs SCADA PLCs Robotics	1	3	-	-
PC2.. based on the schedule , inspect the systems and identify the replacements in the systems	1	3	-	-
PC3.. if required , attend to the breakdown of systems during manufacturing processes in operation	1	2	-	-
PC4.. ensure that all the systems are integrated through a computer interface	1	3	-	-
PC5.. coordinate with the system vendor and arrange for procurement of critical spares	1	2	-	-
PC6.. store the spares received in plant at the designated locations of the warehouse for maintenance items in coordination with stores manager	1	2	-	-
PC7.. ensure that the software used for system interfacing are upgraded as per the requirement	1	3	-	-
PC8.. coordinate with machine/systems/robot vendors and if required , in consultation with sourcing department , finalize an amc for upkeep of the machines/systems/robots etc.	1	2	-	-
PC9.. use appropriate ppe, material handling equipment and tools and carry out the task .	1	2	-	-
PC10.. use recommended methods, consumables, tools,CDs for electrical / electronic connections verification of continuity joints, including soldered software program installations and upgradations	1	3	-	-
PC11.. take support from technician, experts, user , team members from maintenance during the activity if required	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12.. clock the time for the task so that the scheduling and planning can be improved in future	1	2	-	-
PC13.. when carrying out the installation/ shifting activity record the time and unplanned tasks encountered in the activity	1	2	-	-
PC14.. discuss with seniors in manufacturing, maintenance for improving the activity to ensure all points are adequately considered	1	2	-	-
Carrying breakdown maintenance	**12**	**31**	**-**	**-**
PC15.. open the process control and automation systems under supervision of maintenance manager and if required , replace the spare parts as per the schedule	1	4	-	-
PC16.. check / confirm internal conditions of wiring , motherboards, software/ hardware malfunctioning, circuit failures etc. to verify working status to expected conditions.	1	4	-	-
PC17.. discuss with the user/ operator to learn about problems /unusual phenomenon noticed in the systems	1	2	-	-
PC18.. change the maintenance due / status sticker on the equipment.	1	1	-	-
PC19.. to attend the breakdown maintenance verify in appropriate sequence for the equipment charge leakage/ short circuit from parts breakage of wires, clamps unusual contact of electrical wires with moving parts erratic / problematic performance any problem condition as reported in the complaint	1	4	-	-
PC20.. execute sequence of activities for changing , correcting the situation after opening, verifying contact/ insulation conditions, failure of internal wires etc. and ensure the circuit elements, consumables are available at the work place.	1	3	-	-
PC21.. use appropriate ppe, material handling equipment and tools and carry out the task .	1	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22.. use recommended methods, consumables, tools,CDs for electrical / electronic connections verification of continuity joints, including soldered software program installations and upgradations	1	3	-	-
PC23.. take support from technician, experts, user , team members from maintenance during the activity if required	1	2	-	-
PC24.. clock the time for the task so that the scheduling and planning can be improved in future	1	2	-	-
PC25.. when carrying out the installation/ shifting activity record the time and unplanned tasks encountered in the activity	1	2	-	-
PC26.. discuss with seniors in manufacturing, maintenance for improving the activity to ensure all points are adequately considered	1	1	-	-
Maintain the documentation	**4**	**6**	**-**	**-**
PC27.. maintain a record of all the vendor and system 2d/3d- as built drawings , equipment operation related diagrams , program codes etc. in a legible and safe condition	1	2	-	-
PC28.. maintain the history of the equipment for the pm/breakdown maintenance activities in log book/history sheets / erp	1	2	-	-
PC29.. prepare the documents required for process control and automation as per the quality management system (qms) requirements	1	1	-	-
PC30.. ensure that all the documents for qms are controlled and easily traceable for future requirements too	1	1	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N6809
NOS Name	Repair and maintain the process control systems
Sector	Automotive
Sub-Sector	Manufacturing and R&D
Occupation	Maintenance
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	23/09/2013
Next Review Date	30/09/2015
NSQC Clearance Date	

ASC/N6810: Plan and arrange for installation of new systems

Description

This OS unit is about the planning and installation of the new process control and automation systems

Scope

The unit/ task covers the following: requirements gathering for the new process and automation systems coordinating with Sourcing department for conducting the system trials procurement and installation of the new system from the approved vendor

Elements and Performance Criteria

Requirements gathering

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

PC1.. under supervision of the maintenance/ Process Engineering manager , identify the requirements for following process control and automation systems manufacturing process wise based on the organizations production capacity expansion/new capacity addition plans Limit switches VFDs HMIs SCADA PLCs Robotics RFIDs

PC2.. based on the requirements gathered , compute the individual quantity of the systems to be installed

PC3.. plan on the basis of standardization, modular arrangements etc.

Coordinate with Sourcing department for system trials

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

PC4.. identify from the existing vendor base for the new systems procurement

PC5.. send the required drawings for the systems along with rfq to vendors and based on the quotation received , approve the most conforming vendor

PC6.. in case of the existing vendor non-competency for providing the new system , identify and approve the most economically feasible and technologically advanced vendor

PC7.. visit the approved vendors site and review the trial system run at its facility

PC8.. suggest modification (if any) in the new system for meeting the requirements

PC9.. conduct re-trials with the modified system as per convenience of vendor and approve the final system for installation communicate to the maintenance manager the system trial progress and seek feedback, if required

PC10.. based on the feedback received , finalize the technical specifications for the new system and instruct the vendor for system installation within the desired process of the organization

Procure and install the new system

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

PC11.. raise the purchase order (p.o.) and procure the system in the organization

PC12.. inspect the system components for physical damages and if required , reject the damaged components with subsequent procurement of the fresh component

PC13.. in coordination with the vendor representative , install the new system within the desired locations in manufacturing processes

PC14.. on completion of installation , test run the entire system and identify the discrepancies (if any)

PC15.. in case of discrepancies observed , in team suggest and implement the countermeasure and re-run the system

PC16.. repeat steps pc13. to pc15. till the system is free from any discrepancies

PC17.. understand from the vendor the software coding , programming logic , electrical connections logic, hardware requirements, robotic parameters and its operation sequence etc. as per the applicability of the system. get these appropriately documented for future references

PC18.. communicate the progress to the maintenance manager and if required , run the system in his presence and seek feedback

PC19.. based on the feedback , resolve the minor discrepancies observed (if any) and finally submit the necessary system related documents and invoices to souring/purchase department

PC20.. continuously monitor the system functioning and if required consult the vendor for any issues observed

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. company manufacturing processes & the equipment in use

KU2. existing layout for the processes

KU3. sequence of operations for each process

KU4. protocol for new system installation followed in the company

KU5. approved vendor database for the process and automation systems

KU6. complete knowledge of the process in consideration

KU7. process control and automation systems installed for the processes

KU8. type of systems being used for the process

KU9. electrical -wiring drawings of existing layout/ equipment/systems

KU10. operation of electrical equipments viz motors etc . being used for the process

KU11. robotic instruments used for process

KU12. PLC , SCADA , & electrical elements operation ,testing

KU13. Trouble shooting, fault finding for electrical, Pneumatic, hydraulic controls

KU14. QMS system requirements

KU15. material and information flow of the process

Generic Skills (GS)

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

GS1. read the information displayed at the workplace

GS2. draft a pictorial representation of the existing layout for better comprehension

GS3. interpret the outputs obtained from process control systems like PLC , SCADA, HMI etc.

GS4. communicate with shop floor workers gathering inputs/requirements

GS5. coordinate with the shop floor workers , colleagues and enter the information related to maintenance activities in hard and soft copy as desired

GS6. communicate with Sourcing and Purchase department for system trials, procurement and installation

GS7. interact with workers and gather all the information related to process requirements

GS8. share operation knowledge with co-workers

GS9. coordinate with shop floor workers and team for performing the new system installation activity efficiently

GS10. execute the requirements gathering and installation for the process control and automation systems in an effective manner and on timely basis

GS11. plan the new system trials and installation in the process without disrupting the production schedule for the process

GS12. provide inputs to maintenance manager for developing more economic and feasible measures for controlling the process parameters and specifications using the best systems

GS13. decide the most economically and technologically feasible automation and process control system for the designated manufacturing process

GS14. identify the major alternate/new vendors for the new system procurement

GS15. assess the problem, evaluate the possible solution(s) and use an optimum /best possible solution(s)

GS16. identify immediate or temporary solutions to resolve delays and crisis situations

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Requirements gathering	**6**	**10**	**-**	**-**
PC1.. under supervision of the maintenance/ Process Engineering manager , identify the requirements for following process control and automation systems manufacturing process wise based on the organizations production capacity expansion/new capacity addition plans Limit switches VFDs HMIs SCADA PLCs Robotics RFIDs	2	3	-	-
PC2.. based on the requirements gathered , compute the individual quantity of the systems to be installed	2	3	-	-
PC3.. plan on the basis of standardization, modular arrangements etc.	2	4	-	-
Coordinate with Sourcing department for system trials	**9**	**25**	**-**	**-**
PC4.. identify from the existing vendor base for the new systems procurement	1	3	-	-
PC5.. send the required drawings for the systems along with rfq to vendors and based on the quotation received , approve the most conforming vendor	1	3	-	-
PC6.. in case of the existing vendor non-competency for providing the new system , identify and approve the most economically feasible and technologically advanced vendor	1	3	-	-
PC7.. visit the approved vendors site and review the trial system run at its facility	1	3	-	-
PC8.. suggest modification (if any) in the new system for meeting the requirements	1	3	-	-
PC9.. conduct re-trials with the modified system as per convenience of vendor and approve the final system for installation communicate to the maintenance manager the system trial progress and seek feedback, if required	2	5	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10.. based on the feedback received , finalize the technical specifications for the new system and instruct the vendor for system installation within the desired process of the organization	2	5	-	-
Procure and install the new system	**15**	**35**	**-**	**-**
PC11.. raise the purchase order (p.o.) and procure the system in the organization	1	4	-	-
PC12.. inspect the system components for physical damages and if required , reject the damaged components with subsequent procurement of the fresh component	2	5	-	-
PC13.. in coordination with the vendor representative , install the new system within the desired locations in manufacturing processes	1	5	-	-
PC14.. on completion of installation , test run the entire system and identify the discrepancies (if any)	2	5	-	-
PC15.. in case of discrepancies observed , in team suggest and implement the countermeasure and re-run the system	1	3	-	-
PC16.. repeat steps pc13. to pc15. till the system is free from any discrepancies	1	2	-	-
PC17.. understand from the vendor the software coding , programming logic , electrical connections logic, hardware requirements, robotic parameters and its operation sequence etc. as per the applicability of the system. get these appropriately documented for future references	3	3	-	-
PC18.. communicate the progress to the maintenance manager and if required , run the system in his presence and seek feedback	1	2	-	-
PC19.. based on the feedback , resolve the minor discrepancies observed (if any) and finally submit the necessary system related documents and invoices to souring/purchase department	2	3	-	-
PC20.. continuously monitor the system functioning and if required consult the vendor for any issues observed	1	3	-	-

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

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N6810
NOS Name	Plan and arrange for installation of new systems
Sector	Automotive
Sub-Sector	Manufacturing and R&D
Occupation	Maintenance
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	23/09/2013
Next Review Date	30/09/2015
NSQC Clearance Date	

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.

Recommended Pass % : 75

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	15
ASC/N0006.Maintain a safe and healthy working environment	25	75	-	-	100	15
ASC/N6809.Repair and maintain the process control systems	30	70	-	-	100	35

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N6810.Plan and arrange for installation of new systems	30	70	-	-	100	35
Total	**110**	**290**	**-**	**-**	**400**	**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.