

Qualification Pack



Building Automation Specialist

QP Code: IAS/Q3006

NSQF Level: 5

Instrumentation, Automation, Surveillance & Communication Sector Skill Council || IASC SSC, 201-202,
STBP NSIC Complex, Okhla Industrial Estate, New Delhi
110020

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IAS/Q3006: Building Automation Specialist

Brief Job Description

Performs system design, wiring, integration, testing, installation & maintenance of automation systems in buildings involving HVAC, FAS, ACS & CCTV Systems.

Personal Attributes

This job requires interdisciplinary aptitude, ability to learn, ability to deal with a variety of technology and people of different trades and skills.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [IAS/N2003: Health and Safety in Workplace](#)
2. [IAS/N2100: Design, Install and Provide Technical Support for HVAC System](#)
3. [IAS/N2101: Design, Install and Provide Technical Support for Fire Alarm Systems](#)
4. [IAS/N2102: Install and Provide Technical Support for Access Controls Systems](#)
5. [IAS/N2103: Install and Provide Technical Support for CCTV Surveillance Systems](#)
6. [IAS/N2104: Integrating and Controlling Building automation System](#)
7. [IAS/N2105: Work Effectively With Teams](#)

Qualification Pack (QP) Parameters

| | |
|--------------------------------------|-----------------------------------|
| Sector | Instrumentation |
| Sub-Sector | Instrumentation & Automation |
| Occupation | Product Engineering/System Design |
| Country | India |
| NSQF Level | 5 |
| Aligned to NCO/ISCO/ISIC Code | NCO-2015/NIL |

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| | |
|---|---|
| Minimum Educational Qualification & Experience | Diploma (Mechanical/Civil/Industrial/Instrumentation/Electrical/Mechatronics/Electronics) |
| Minimum Level of Education for Training in School | |
| Pre-Requisite License or Training | NA |
| Minimum Job Entry Age | 19 Years |
| Last Reviewed On | 30/07/2019 |
| Next Review Date | 30/06/2020 |
| NSQC Approval Date | 03/08/2018 |
| Version | 1.0 |

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IAS/N2003: Health and Safety in Workplace

Description

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

Scope

This unit/ task covers the following: Following safety measures and standards Maintaining good health and posture

Elements and Performance Criteria

Follow safety measures and standards

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

- PC1.** Comply with general and special safety procedures followed in the company
- PC2.** Follow specified safety procedures while handling an equipment, hazardous material or tool
- PC3.** Remove ties, finger rings, or any other metal objects which may interfere with the work
- PC4.** Use safety materials such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, etc.
- PC5.** Escalate about any hazardous materials or things found in the premises
- PC6.** Report about any breach of safety procedure in the company
- PC7.** Ensure zero accidents at work
- PC8.** Avoid damage of components due to negligence in ESD procedures
- PC9.** Regularly participate in fire drills or other safety related workshops organized by the company
- PC10.** Ensure no loss for company due to safety negligence

Maintain good health and posture

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

- PC11.** Maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials
- PC12.** Participate in company organized health sessions such as yoga, physiotherapy or games
- PC13.** Handle heavy and hazardous materials with care and using appropriate tools and handling equipment such as trolleys, jacks and ladders

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Companys policies on: incentives, delivery standards, and personnel management
- KU2.** Company occupational safety and health policies
- KU3.** Company emergency evacuation procedure
- KU4.** Companys medical policy

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- KU5.** How to maintain the work area safe and secure
- KU6.** How to handle hazardous materials, tools and equipment
- KU7.** Emergency procedures to be followed such as fire accidents, electrocution etc
- KU8.** Long term value of good posture and use of appropriate handling equipment
- KU9.** Safety regulations and standards and how to apply these
- KU10.** Electrical grounding practices

Generic Skills (GS)

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

- GS1.** Compose e mails, letters, memos, reminders, and other documents clearly
- GS2.** Share knowledge, issues, problems and resolutions relating to safety and health
- GS3.** Read mails, messages, alerts
- GS4.** Read pictures, drawings, notes relating to safety and health
- GS5.** Question co-workers in order to understand the safety and health issues
- GS6.** Inform co-workers about safety and health issues
- GS7.** Report issues and problems relating to safety and health to managers in clear terms
- GS8.** Make decisions pertaining to safety and health issues at workplace
- GS9.** Make decisions about escalating safety and health issues at workplace to managers
- GS10.** Plan and organize work conforming to the safety and health norms of the company
- GS11.** Discuss customer needs with co-workers and identify most appropriate solution
- GS12.** Discuss problems relating to the safety and health, evaluate the possible solution(s) and arrive at optimum /best possible solution(s) in consultation with concerned people
- GS13.** Discuss use the available information with co-workers to arrive at actionable decision points
- GS14.** Analyze problems in team and identify causes and possible solutions
- GS15.** Collaborate with co-workers to analyze, and evaluate the information gathered from collective observation, experience, reasoning, or communication, as a guide to teamwork

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Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <i>Follow safety measures and standards</i> | 14 | 24 | - | - |
| PC1. Comply with general and special safety procedures followed in the company | 2 | 1 | - | - |
| PC2. Follow specified safety procedures while handling an equipment, hazardous material or tool | 1 | 1 | - | - |
| PC3. Remove ties, finger rings, or any other metal objects which may interfere with the work | 2 | 2 | - | - |
| PC4. Use safety materials such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, etc. | 1 | 3 | - | - |
| PC5. Escalate about any hazardous materials or things found in the premises | 1 | 3 | - | - |
| PC6. Report about any breach of safety procedure in the company | 1 | 2 | - | - |
| PC7. Ensure zero accidents at work | 2 | 3 | - | - |
| PC8. Avoid damage of components due to negligence in ESD procedures | 1 | 3 | - | - |
| PC9. Regularly participate in fire drills or other safety related workshops organized by the company | 2 | 3 | - | - |
| PC10. Ensure no loss for company due to safety negligence | 1 | 3 | - | - |
| <i>Maintain good health and posture</i> | 6 | 6 | - | - |
| PC11. Maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials | 2 | 2 | - | - |
| PC12. Participate in company organized health sessions such as yoga, physiotherapy or games | 2 | 2 | - | - |

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| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| PC13. Handle heavy and hazardous materials with care and using appropriate tools and handling equipment such as trolleys, jacks and ladders | 2 | 2 | - | - |
| NOS Total | 20 | 30 | - | - |

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National Occupational Standards (NOS) Parameters

| | |
|----------------------------|-----------------------------------|
| NOS Code | IAS/N2003 |
| NOS Name | Health and Safety in Workplace |
| Sector | Instrumentation |
| Sub-Sector | Instrumentation & Automation |
| Occupation | Product Engineering/System Design |
| NSQF Level | 5 |
| Credits | TBD |
| Version | 1.0 |
| Last Reviewed Date | 30/07/2016 |
| Next Review Date | 30/07/2019 |
| NSQF Clearance Date | 03/08/2018 |

IAS/N2100: Design, Install and Provide Technical Support for HVAC System

Description

This OS unit is about Design, Installation, Supervision, Testing and providing Technical Support of HVAC Systems involved in building automation systems.

Scope

This unit/task covers the following:

- Capturing the requirements of HVAC Systems by site survey
- Suggesting and taking approval from the customer for HVAC Systems
- Installing approved HVAC components as per site requirements
- Wiring Electrical and Electronics components as per specifications
- Testing of HVAC systems
- Providing Technical Support for HVAC Systems

Elements and Performance Criteria

Capturing the requirements of HVAC Systems by site survey

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

- PC1.** Capturing work requirements of the client by site survey
- PC2.** Developing BOQ according to the requirement of the client
- PC3.** Creating 2D models using BAS Software
- PC4.** Developing program on BAS Tools for HVAC
- PC5.** Developing program on BAS Tools based on Logic gates
- PC6.** Developing program related to Air Conditioning on BAS Tools
- PC7.** Managing wiring of components in AC Drives and Soft Starters

Suggesting and taking approval from the customer for HVAC Systems

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

- PC8.** Suggesting appropriate HVAC components to the customer according to the site
- PC9.** Assisting the customer in choosing different types of technologies and specifications used in HVAC Systems
- PC10.** Taking approval from the customer
- PC11.** Maintaining complete documentation of the components to be installed

Installing approved HVAC components as per site requirements

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

- PC12.** Collecting and checking of components at customer premises as per checklist
- PC13.** Installing HVAC components including VFD at site as per the requirement
- PC14.** Installing AHU (Air Handling Unit)
- PC15.** Installing Chiller

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PC16. Installing Sensors

PC17. Installing VAV (Variable Air Volume), TFA (Treated Fresh Air) etc.

Wiring Electrical and Electronics components as per the requirements

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

PC18. Wiring Power Supplies, Earthing & Grounding

PC19. Wiring and connecting Shielded & Unshielded Cables, Cable Gauges & AWG sizes

PC20. Wiring of HVAC hardware PC

Testing of HVAC systems

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

PC21. Testing of installed HVAC System

PC22. Ensuring proper working of the installed HVAC System

PC23. Assuring 100% satisfaction from the customer after installation

PC24. Troubleshooting errors if the system is not working as per the requirements

Providing Technical Support for HVAC Systems

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

PC25. Calculating total number of HVAC controllers as per I/O summary

PC26. Managing refrigeration process needed for the site by BAS controller

PC27. Managing Wiring and drawings of Components used in Centralized Air-Conditioning

PC28. Providing Technical Support for HVAC functions using BAS controller

PC29. Calculating Heat Load

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Company policies on delivery standards, services and warranty

KU2. Company sales and after sales policies

KU3. Sequence of reporting for each process

KU4. Companies policies on incentives and reimbursement

KU5. Latest technologies introduced by the company for Fire Alarm Systems

KU6. Complete knowledge of the HVAC processing consideration

KU7. Operation of machinery and equipment being used for HVAC process

KU8. Engineering drawings of existing layout/equipment

KU9. Electrical/electronic standard parts

KU10. Understanding Basic concepts of Electrical and Electronics Engineering

KU11. Knowledge of different detection technologies used in fire alarm systems

KU12. Material and information flow of HVAC process

KU13. Understanding Installation procedures given in the manuals

KU14. Power Requirements by different components used in HVAC

KU15. Knowledge of safety measures and quality standards of fire alarm components

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- KU16.** Knowledge of integrating other systems with fire alarm systems
- KU17.** Compete knowledge of fire alarm system works under considerations

Generic Skills (GS)

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

- GS1.** Compile all the data related to main and auxiliary equipment required in the process
- GS2.** Compile all the data related to study of existing facility in the form of presentation and reports
- GS3.** Record Faults in instruments.
- GS4.** Read the equipment literature and understand its features
- GS5.** Read the information displayed at the workplace
- GS6.** Discuss task lists, schedules, and work-loads with co-workers
- GS7.** Communicate the new equipment and facilities design activities to the higher management in meetings for their support
- GS8.** Spell out effectively the findings of the study to the higher management in meetings
- GS9.** Interact with coworkers and gather all the information related to process requirement
- GS10.** Make decisions pertaining to the concerned area of work
- GS11.** Plan the execution of entire project detailing long term and short term activities so that he/she can finish the project in the stipulated time.
- GS12.** Organize expert support from/within outside organization for new technology and feasibility studies.
- GS13.** Understand real needs of the customer and suggest most appropriate solution
- GS14.** Support customer when they need help
- GS15.** Think through the problem, evaluate the possible solution(s) and suggest an optimum/best possible solution(s)
- GS16.** Identify immediate or temporary solutions to resolve delays
- GS17.** Use the existing information to arrive at actionable decision points
- GS18.** Use the existing information for improving the customer satisfaction
- GS19.** Use the existing information to optimize solution and company business
- GS20.** Analyze problems and identify causes and possible solutions
- GS21.** Apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action
- GS22.** Analyze the way in which the existing facility layout is in operation and think of more economic and feasible measures for existing layout modification.

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Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <i>Capturing the requirements of HVAC Systems by site survey</i> | 18 | 18 | - | - |
| PC1. Capturing work requirements of the client by site survey | 2 | 3 | - | - |
| PC2. Developing BOQ according to the requirement of the client | 3 | 3 | - | - |
| PC3. Creating 2D models using BAS Software | 3 | 2 | - | - |
| PC4. Developing program on BAS Tools for HVAC | 3 | 2 | - | - |
| PC5. Developing program on BAS Tools based on Logic gates | 3 | 2 | - | - |
| PC6. Developing program related to Air Conditioning on BAS Tools | 2 | 3 | - | - |
| PC7. Managing wiring of components in AC Drives and Soft Starters | 2 | 3 | - | - |
| <i>Suggesting and taking approval from the customer for HVAC Systems</i> | 8 | 9 | - | - |
| PC8. Suggesting appropriate HVAC components to the customer according to the site | 2 | 2 | - | - |
| PC9. Assisting the customer in choosing different types of technologies and specifications used in HVAC Systems | 2 | 2 | - | - |
| PC10. Taking approval from the customer | 2 | 2 | - | - |
| PC11. Maintaining complete documentation of the components to be installed | 2 | 3 | - | - |
| <i>Installing approved HVAC components as per site requirements</i> | 9 | 17 | - | - |
| PC12. Collecting and checking of components at customer premises as per checklist | 2 | 3 | - | - |

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| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| PC13. Installing HVAC components including VFD at site as per the requirement | 2 | 3 | - | - |
| PC14. Installing AHU (Air Handling Unit) | 1 | 3 | - | - |
| PC15. Installing Chiller | 1 | 3 | - | - |
| PC16. Installing Sensors | 1 | 3 | - | - |
| PC17. Installing VAV (Variable Air Volume), TFA (Treated Fresh Air) etc. | 2 | 2 | - | - |
| <i>Wiring Electrical and Electronics components as per the requirements</i> | 6 | 7 | - | - |
| PC18. Wiring Power Supplies, Earthing & Grounding | 2 | 2 | - | - |
| PC19. Wiring and connecting Shielded & Unshielded Cables, Cable Gauges & AWG sizes | 2 | 3 | - | - |
| PC20. Wiring of HVAC hardware PC | 2 | 2 | - | - |
| <i>Testing of HVAC systems</i> | 7 | 11 | - | - |
| PC21. Testing of installed HVAC System | 2 | 3 | - | - |
| PC22. Ensuring proper working of the installed HVAC System | 2 | 3 | - | - |
| PC23. Assuring 100% satisfaction from the customer after installation | 2 | 2 | - | - |
| PC24. Troubleshooting errors if the system is not working as per the requirements | 1 | 3 | - | - |
| <i>Providing Technical Support for HVAC Systems</i> | 7 | 13 | - | - |
| PC25. Calculating total number of HVAC controllers as per I/O summary | 1 | 2 | - | - |
| PC26. Managing refrigeration process needed for the site by BAS controller | 1 | 3 | - | - |
| PC27. Managing Wiring and drawings of Components used in Centralized Air-Conditioning | 1 | 3 | - | - |

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| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| PC28. Providing Technical Support for HVAC functions using BAS controller | 1 | 3 | - | - |
| PC29. Calculating Heat Load | 3 | 2 | - | - |
| NOS Total | 55 | 75 | - | - |

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National Occupational Standards (NOS) Parameters

| | |
|----------------------------|---|
| NOS Code | IAS/N2100 |
| NOS Name | Design, Install and Provide Technical Support for HVAC System |
| Sector | Instrumentation |
| Sub-Sector | Instrumentation & Automation |
| Occupation | Product Engineering/System Design |
| NSQF Level | 5 |
| Credits | TBD |
| Version | 1.0 |
| Last Reviewed Date | 30/07/2016 |
| Next Review Date | 30/07/2019 |
| NSQC Clearance Date | 03/08/2018 |

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IAS/N2101: Design, Install and Provide Technical Support for Fire Alarm Systems

Description

This OS unit is about design, installation, supervision and testing of Fire Alarm Systems in building automation systems.

Scope

This unit/task covers the following:

- Capturing the requirements of Fire Alarm Systems by site survey
- Suggesting and taking approval from the customer for Fire Alarm System
- Installing approved Fire Alarm components as per site requirements
- Wiring Electrical and Electronics components as per specifications
- Testing of new systems at customer premises
- Providing Technical Support for Fire Alarm Systems at the site

Elements and Performance Criteria

Capturing the requirements of Fire Alarm Systems by site survey

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

- PC1.** Capturing work requirements of the client by site survey
- PC2.** Developing BOQ according to the requirement of the client
- PC3.** Assisting customer about different types of technologies used in FAS according to the need of site
- PC4.** Ensuring that Suggesting components matches to customers requirement
- PC5.** Assisting the customers about the company policies towards services and warranty
- PC6.** Managing proper documentation of site survey and customers requirements

Suggesting and taking approval from the customer for Fire Alarm Systems

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

- PC7.** Suggesting appropriate FAS components to the customer according to the site
- PC8.** Assisting the customers about Fire Alarm systems with their specifications
- PC9.** Taking approval for installing FAS components from the customer
- PC10.** Preparing and assembling FAS components as per the requirement
- PC11.** Creating check list before going to the site for installation
- PC12.** Maintaining complete documentation of the components to be installed

Installing approved Fire Alarm components as per site requirements

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

- PC13.** Collecting and checking of components before moving to customer premises
- PC14.** Assisting technicians for checking hardware components before FAS Installation
- PC15.** Replacing FAS components if found malfunctioning

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PC16. Preparing Checklist and ensure the availability of every component before installation

PC17. Installing FAS components at the customers site

PC18. Installing fire Detection components as per site requirement

PC19. Installing Heat/RoR Detectors, Smoke Detectors and Multi Criteria detectors as per requirement

Wiring Electrical and Electronics components as per the requirements

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

PC20. Wiring Power Supplies, Earthing & Grounding

PC21. Wiring and connecting Shielded & Unshielded Cables, Cable Gauges, SWG & AWG sizes

PC22. Ensuring adequate length of connecting cables as per the requirements

PC23. Wiring of FAS hardware

PC24. Using proper terminals as prescribed for joining cables

PC25. Use power cable for connecting power supply with proper rating

Testing of new systems at customer site

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

PC26. Testing installed FAS components at customer premises

PC27. Ensuring proper working of every component

PC28. Ensuring proper working of FAS systems before leaving the site and explaining the customer how to operate the system properly

PC29. Assuring 100% satisfaction from the customer after installation

PC30. Troubleshooting the errors if the system is not working as per the requirements

Providing Technical Support for Fire Alarm Systems at the site

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

PC31. Providing Technical Support for Fire Detection & Alarm System as per Fire Life cycle and Class of Fire

PC32. Providing Technical Support for intelligent Fire Panels & conventional Fire Panels installed

PC33. Managing Detector & Device Wiring Schema

PC34. Integrating Fireman's Telephony & Talkback system with fire alarm

PC35. Selecting Fire Safety Strategies for prevention

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Company policies on delivery standards, services and warranty

KU2. Company sales and after sales policies

KU3. Sequence of reporting for each process

KU4. Companies policies on incentives and reimbursement

KU5. Latest technologies introduced by the company for Fire Alarm Systems

KU6. Complete knowledge of the FAS process in consideration

KU7. Operation of machinery and equipment being used for FAS process

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- KU8.** Engineering drawings of existing layout/equipment
- KU9.** Electrical/electronic standard parts
- KU10.** Understanding Basic concepts of Electrical and Electronics Engineering
- KU11.** Knowledge of different detection technologies used in fire alarm systems
- KU12.** Material and information flow of FAS process
- KU13.** Understanding Installation procedures given in the manuals
- KU14.** Power Requirements by different components used in FAS
- KU15.** Knowledge of safety measures and quality standards of fire alarm components
- KU16.** Knowledge of integrating other systems with fire alarm systems
- KU17.** Compete knowledge of fire alarm system works under considerations

Generic Skills (GS)

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

- GS1.** Compile all the data related to main and auxiliary equipment required in the process
- GS2.** Compile all the data related to study of existing facility in the form of presentation and reports
- GS3.** Record Faults in instruments.
- GS4.** Read the equipment literature and understand its features
- GS5.** Read the information displayed at the workplace
- GS6.** Discuss task lists, schedules, and work-loads with co-workers
- GS7.** Communicate the new equipment and facilities required to the higher management in meetings for their support
- GS8.** Spell out effectively the findings of the study to the higher management in meetings
- GS9.** Interact with coworkers and gather all the information related to process requirement
- GS10.** Make decisions pertaining to the concerned area of work
- GS11.** Plan the execution of entire project detailing long term and short term activities so that he/she can finish the project in the stipulated time.
- GS12.** Organize expert support from/within outside organization for new technology and feasibility studies.
- GS13.** Understand real needs of the customer and suggest most appropriate solution
- GS14.** Support customer when they need help
- GS15.** Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS16.** Identify immediate or temporary solutions to resolve delays
- GS17.** Use the existing information to arrive at actionable decision points
- GS18.** Use the existing information for improving the customer satisfaction
- GS19.** Use the existing information to optimize solution and company business
- GS20.** Analyze problems and identify causes and possible solutions

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- GS21.** Apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action
- GS22.** Analyze the way in which the existing facility layout is in operation and think of more economic and feasible measures for existing layout modification.

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Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <i>Capturing the requirements of Fire Alarm Systems by site survey</i> | 10 | 12 | - | - |
| PC1. Capturing work requirements of the client by site survey | 1 | 2 | - | - |
| PC2. Developing BOQ according to the requirement of the client | 2 | 2 | - | - |
| PC3. Assisting customer about different types of technologies used in FAS according to the need of site | 2 | 2 | - | - |
| PC4. Ensuring that Suggesting components matches to customers requirement | 2 | 2 | - | - |
| PC5. Assisting the customers about the company policies towards services and warranty | 2 | 2 | - | - |
| PC6. Managing proper documentation of site survey and customers requirements | 1 | 2 | - | - |
| <i>Suggesting and taking approval from the customer for Fire Alarm Systems</i> | 6 | 10 | - | - |
| PC7. Suggesting appropriate FAS components to the customer according to the site | 1 | 2 | - | - |
| PC8. Assisting the customers about Fire Alarm systems with their specifications | 1 | 3 | - | - |
| PC9. Taking approval for installing FAS components from the customer | 1 | 2 | - | - |
| PC10. Preparing and assembling FAS components as per the requirement | 1 | 1 | - | - |
| PC11. Creating check list before going to the site for installation | - | - | - | - |
| PC12. Maintaining complete documentation of the components to be installed | 2 | 2 | - | - |
| <i>Installing approved Fire Alarm components as per site requirements</i> | 11 | 15 | - | - |

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| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| PC13. Collecting and checking of components before moving to customer premises | 2 | 2 | - | - |
| PC14. Assisting technicians for checking hardware components before FAS Installation | 1 | 2 | - | - |
| PC15. Replacing FAS components if found malfunctioning | 2 | 2 | - | - |
| PC16. Preparing Checklist and ensure the availability of every component before installation | 1 | 2 | - | - |
| PC17. Installing FAS components at the customers site | 2 | 2 | - | - |
| PC18. Installing fire Detection components as per site requirement | 2 | 2 | - | - |
| PC19. Installing Heat/RoR Detectors, Smoke Detectors and Multi Criteria detectors as per requirement | 1 | 3 | - | - |
| <i>Wiring Electrical and Electronics components as per the requirements</i> | 8 | 13 | - | - |
| PC20. Wiring Power Supplies, Earthing & Grounding | 1 | 2 | - | - |
| PC21. Wiring and connecting Shielded & Unshielded Cables, Cable Gauges, SWG & AWG sizes | 2 | 2 | - | - |
| PC22. Ensuring adequate length of connecting cables as per the requirements | 1 | 2 | - | - |
| PC23. Wiring of FAS hardware | 1 | 3 | - | - |
| PC24. Using proper terminals as prescribed for joining cables | 1 | 2 | - | - |
| PC25. Use power cable for connecting power supply with proper rating | 2 | 2 | - | - |
| <i>Testing of new systems at customer site</i> | 8 | 13 | - | - |
| PC26. Testing installed FAS components at customer premises | 2 | 1 | - | - |

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| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| PC27. Ensuring proper working of every component | 1 | 3 | - | - |
| PC28. Ensuring proper working of FAS systems before leaving the site and explaining the customer how to operate the system properly | 2 | 2 | - | - |
| PC29. Assuring 100% satisfaction from the customer after installation | 1 | 3 | - | - |
| PC30. Troubleshooting the errors if the system is not working as per the requirements | 2 | 4 | - | - |
| <i>Providing Technical Support for Fire Alarm Systems at the site</i> | 9 | 10 | - | - |
| PC31. Providing Technical Support for Fire Detection & Alarm System as per Fire Life cycle and Class of Fire | 2 | 2 | - | - |
| PC32. Providing Technical Support for intelligent Fire Panels & conventional Fire Panels installed | 2 | 2 | - | - |
| PC33. Managing Detector & Device Wiring Schema | 2 | 2 | - | - |
| PC34. Integrating Fireman's Telephony & Talkback system with fire alarm | 2 | 2 | - | - |
| PC35. Selecting Fire Safety Strategies for prevention | 1 | 2 | - | - |
| NOS Total | 52 | 73 | - | - |

Qualification Pack

National Occupational Standards (NOS) Parameters

| | |
|----------------------------|--|
| NOS Code | IAS/N2101 |
| NOS Name | Design, Install and Provide Technical Support for Fire Alarm Systems |
| Sector | Instrumentation |
| Sub-Sector | Instrumentation & Automation |
| Occupation | Product Engineering/System Design |
| NSQF Level | 5 |
| Credits | TBD |
| Version | 1.0 |
| Last Reviewed Date | 30/07/2016 |
| Next Review Date | 30/07/2019 |
| NSQC Clearance Date | 03/08/2018 |

Qualification Pack

IAS/N2102: Install and Provide Technical Support for Access Controls Systems

Description

This OS unit is about Installing and Commissioning Access Controls Systems at the customers premises

Scope

This unit/task covers the following: Capturing the requirements of Access Controls Systems by site survey Suggesting and taking approval from the customer for Access Controls System Installing approved Access Controls components as per site requirements Wiring Electrical and Electronics components as per specifications Testing Access Control systems at customer premises Providing Technical Support for Access Controls Systems Achieving Quality and Productivity as per company norms

Elements and Performance Criteria

Capturing the requirements of Access Controls Systems by site survey

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

- PC1.** Capturing work requirements of the client by site survey
- PC2.** Developing BOQ according to the requirement of the client
- PC3.** Assisting customer about different types of technologies used in Access Control Systems according to the need of site
- PC4.** Ensuring that Suggesting components matches to customers requirement
- PC5.** Assisting the customers about the company policies towards services and warranty
- PC6.** Managing proper documentation of site survey and customers requirements

Suggesting and taking approval from the customer for Access Controls System

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

- PC7.** Suggesting appropriate Access Controls components to the customer according to the site
- PC8.** Assisting the customers about technologies used in Access Control systems with their specifications
- PC9.** Taking approval for installing Access Control Systems from the customer
- PC10.** Preparing and assembling Access Control Systems components as per the requirement
- PC11.** Creating check list before going to the site for installation
- PC12.** Maintaining complete documentation of the components to be installed

Installing approved Access Controls components as per site requirements

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

- PC13.** Collecting and checking of components before moving to customer premises
- PC14.** Assisting technicians for checking hardware components before Installation
- PC15.** Replacing components if found malfunctioning
- PC16.** Preparing Checklist and ensure the availability of every component before installation
- PC17.** Installing components at the customers site

Qualification Pack

PC18. Installing hardware such as smart hub, RFID Card, Door control unit, card readers etc.

PC19. Ensuring that components are matching with customers requirement and installed as per standard operating operation

Wiring Electrical and Electronics components as per specifications

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

PC20. Determining the type of cable requirement for different types of network type such as USB, twisted pair, etc.

PC21. Ensuring adequate length of cables are available for installation

PC22. Wiring of Power Supplies, Earthing & Grounding.

Testing Access Control systems at customer premises

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

PC23. Checking voltage and resistance at all appropriate points of the system

PC24. Correcting alignment and operation of access point hardware

PC25. Verifying access levels

PC26. Checking correct operation of each reader

PC27. Testing Release time for each lock using software

PC28. Checking the signals if doors are held open and signaling is required

PC29. Checking all the data for correct entry in the ACS software

PC30. Checking alarms to display correctly

PC31. Defining level of particular object in the software

Providing Technical Support for Access Controls Systems

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

PC32. Identifying the operating system and software requirement for the access control system

PC33. Providing Technical Support for Access controls devices at the customer premises

PC34. Commissioning Access Controls Systems performance as per customer requirements

PC35. Achieving zero errors in commissioning as per company policy

PC36. Identifying problems and alert on time

PC37. Fixing for any errors (if any) identified

PC38. Verifying software implementation checks of input/output I/O points (AI, AO, DI,DO)

PC39. Verifying sensor calibration, control sequence logic, graphics and alarm code

PC40. Performing software functionality test

Achieving Quality and Productivity as per company norms

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

PC41. Achieving 100% work schedule as planned for the week

PC42. Meeting 100% daily or monthly target

PC43. Achieving zero component damage

PC44. Keeping work area clean and organized

PC45. Identifying problems and alert in time

PC46. Achieving 100% compliance with health and safety guidelines and rules

Qualification Pack

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Company's policies on: incentives, delivery standards and personnel management, customer management
- KU2.** Reporting and documentation processes
- KU3.** Importance of the individual's role in the workflow
- KU4.** Reporting structure
- KU5.** Access Control System process
- KU6.** Operation of components used in Access Control system
- KU7.** Engineering drawings and layout of site
- KU8.** Electrical/electronic/mechanical parts required for the ACS
- KU9.** Material requirement of components with their specifications
- KU10.** Equipment used in Access Controls system
- KU11.** Knowledge of Graphic Generation Tools in BAS
- KU12.** Understanding of Direct Digital Controllers in BAS
- KU13.** Knowledge of communication between ACS and other devices
- KU14.** Knowledge of programming in BAS softwares
- KU15.** Knowledge of devices communication protocols
- KU16.** Knowledge of integrating communication protocols
- KU17.** Knowledge of different types of cables used for data transmission and power transmission
- KU18.** Power requirements of hardware
- KU19.** Different types of access controls hardware available in the market

Generic Skills (GS)

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

- GS1.** Preparing indents and list of equipment required for the specified Access Controls System
- GS2.** Compiling all the related documents as per the requirements
- GS3.** Record Faults in instruments and submit to the team leader.
- GS4.** Read warnings, instructions and other text material on product levels, components etc.
- GS5.** Reading drawings and job sheets or work orders
- GS6.** Discuss work load with superiors
- GS7.** Communicate with team leader for proper understanding of the work
- GS8.** Interact with coworkers and gather all the information related to process requirement
- GS9.** Make decisions according to the situations
- GS10.** Plan the execution of entire design activity; long term and short term activities so that he can finish the task activity wise in the stipulated time.

Qualification Pack

- GS11.** Organize expert support from/within outside professional environment for new technology and feasibility studies.
- GS12.** Understand real needs of the customer and suggest appropriate solution
- GS13.** Support customers when they need help
- GS14.** Think and provide best possible solution required for the system
- GS15.** Identify immediate or temporary solutions to resolve delays
- GS16.** Use the existing information to arrive at actionable decision points
- GS17.** Use the existing information for improving the customer satisfaction
- GS18.** Use the existing information to optimize solution and company business
- GS19.** Analyze problems and identify causes and possible solutions
- GS20.** Analyze the work flow and suggest superiors to provide improvement for better production

Qualification Pack

Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <i>Capturing the requirements of Access Controls Systems by site survey</i> | 9 | 9 | - | - |
| PC1. Capturing work requirements of the client by site survey | 2 | 1 | - | - |
| PC2. Developing BOQ according to the requirement of the client | 2 | 2 | - | - |
| PC3. Assisting customer about different types of technologies used in Access Control Systems according to the need of site | 1 | 2 | - | - |
| PC4. Ensuring that Suggesting components matches to customers requirement | 2 | 1 | - | - |
| PC5. Assisting the customers about the company policies towards services and warranty | 1 | 1 | - | - |
| PC6. Managing proper documentation of site survey and customers requirements | 1 | 2 | - | - |
| <i>Suggesting and taking approval from the customer for Access Controls System</i> | 6 | 8 | - | - |
| PC7. Suggesting appropriate Access Controls components to the customer according to the site | 1 | 2 | - | - |
| PC8. Assisting the customers about technologies used in Access Control systems with their specifications | 1 | 1 | - | - |
| PC9. Taking approval for installing Access Control Systems from the customer | 1 | 1 | - | - |
| PC10. Preparing and assembling Access Control Systems components as per the requirement | 1 | 1 | - | - |
| PC11. Creating check list before going to the site for installation | 1 | 2 | - | - |
| PC12. Maintaining complete documentation of the components to be installed | 1 | 1 | - | - |

Qualification Pack

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <i>Installing approved Access Controls components as per site requirements</i> | 9 | 17 | - | - |
| PC13. Collecting and checking of components before moving to customer premises | 1 | 1 | - | - |
| PC14. Assisting technicians for checking hardware components before Installation | 1 | 1 | - | - |
| PC15. Replacing components if found malfunctioning | 1 | 3 | - | - |
| PC16. Preparing Checklist and ensure the availability of every component before installation | 2 | 4 | - | - |
| PC17. Installing components at the customers site | 2 | 3 | - | - |
| PC18. Installing hardware such as smart hub, RFID Card, Door control unit, card readers etc. | 1 | 3 | - | - |
| PC19. Ensuring that components are matching with customers requirement and installed as per standard operating operation | 1 | 2 | - | - |
| <i>Wiring Electrical and Electronics components as per specifications</i> | 3 | 6 | - | - |
| PC20. Determining the type of cable requirement for different types of network type such as USB, twisted pair, etc. | 1 | 1 | - | - |
| PC21. Ensuring adequate length of cables are available for installation | 1 | 2 | - | - |
| PC22. Wiring of Power Supplies, Earthing & Grounding. | 1 | 3 | - | - |
| <i>Testing Access Control systems at customer premises</i> | 11 | 22 | - | - |
| PC23. Checking voltage and resistance at all appropriate points of the system | 2 | 3 | - | - |
| PC24. Correcting alignment and operation of access point hardware | 2 | 4 | - | - |

Qualification Pack

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| PC25. Verifying access levels | 1 | 3 | - | - |
| PC26. Checking correct operation of each reader | 1 | 2 | - | - |
| PC27. Testing Release time for each lock using software | 1 | 1 | - | - |
| PC28. Checking the signals if doors are held open and signaling is required | 1 | 1 | - | - |
| PC29. Checking all the data for correct entry in the ACS software | 1 | 3 | - | - |
| PC30. Checking alarms to display correctly | 1 | 3 | - | - |
| PC31. Defining level of particular object in the software | 1 | 2 | - | - |
| <i>Providing Technical Support for Access Controls Systems</i> | 10 | 19 | - | - |
| PC32. Identifying the operating system and software requirement for the access control system | 1 | 3 | - | - |
| PC33. Providing Technical Support for Access controls devices at the customer premises | 1 | 2 | - | - |
| PC34. Commissioning Access Controls Systems performance as per customer requirements | 1 | 2 | - | - |
| PC35. Achieving zero errors in commissioning as per company policy | 1 | 2 | - | - |
| PC36. Identifying problems and alert on time | 1 | 2 | - | - |
| PC37. Fixing for any errors (if any) identified | 1 | 2 | - | - |
| PC38. Verifying software implementation checks of input/output I/O points (AI, AO, DI,DO) | 1 | 2 | - | - |
| PC39. Verifying sensor calibration, control sequence logic, graphics and alarm code | 2 | 2 | - | - |
| PC40. Performing software functionality test | 1 | 2 | - | - |

Qualification Pack

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <i>Achieving Quality and Productivity as per company norms</i> | 9 | 12 | - | - |
| PC41. Achieving 100% work schedule as planned for the week | 1 | 2 | - | - |
| PC42. Meeting 100% daily or monthly target | 2 | 2 | - | - |
| PC43. Achieving zero component damage | 1 | 2 | - | - |
| PC44. Keeping work area clean and organized | 2 | 2 | - | - |
| PC45. Identifying problems and alert in time | 2 | 2 | - | - |
| PC46. Achieving 100% compliance with health and safety guidelines and rules | 1 | 2 | - | - |
| NOS Total | 57 | 93 | - | - |

Qualification Pack

National Occupational Standards (NOS) Parameters

| | |
|----------------------------|---|
| NOS Code | IAS/N2102 |
| NOS Name | Install and Provide Technical Support for Access Controls Systems |
| Sector | Instrumentation |
| Sub-Sector | Instrumentation & Automation |
| Occupation | Product Engineering/System Design |
| NSQF Level | 5 |
| Credits | TBD |
| Version | 1.0 |
| Last Reviewed Date | 30/07/2016 |
| Next Review Date | 30/07/2019 |
| NSQC Clearance Date | 03/08/2018 |

Qualification Pack

IAS/N2103: Install and Provide Technical Support for CCTV Surveillance Systems

Description

This OS unit is about Installing and Providing Technical Support for CCTV Surveillance Systems at the customers premises

Scope

This unit/task covers the following: Capturing the requirements of CCTV Surveillance Systems by site survey Suggesting and taking approval from the customer for CCTV System to be installed Installing approved CCTV components as per site requirements Wiring Electrical and Electronics components as per specifications Testing CCTV systems at customer premises Providing Technical Support for CCTV Systems Achieving Quality and Productivity as per company norms

Elements and Performance Criteria

Capturing the requirements of CCTV Surveillance Systems by site survey

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

- PC1.** Capturing work requirements of the client by site survey
- PC2.** Developing BOQ according to the requirement of the client
- PC3.** Assisting customer about different types of technologies used in CCTV Surveillance Systems according to the need of site
- PC4.** Ensuring that Suggesting components matches to customers requirement
- PC5.** Assisting the customers about the company policies towards services and warranty
- PC6.** Managing proper documentation of site survey and customer requirements

Suggesting and taking approval from the customer for CCTV System to be installed

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

- PC7.** Suggesting appropriate CCTV components to the customer according to the site
- PC8.** Assisting the customers about technologies used in CCTV systems with their specifications
- PC9.** Taking approval for installing CCTV Systems from the customer
- PC10.** Preparing and assembling CCTV Systems components as per the requirement
- PC11.** Creating check list before going to the site for installation
- PC12.** Maintaining complete documentation of the components to be installed

Installing approved CCTV components as per site requirements

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

- PC13.** Assisting procurement of hardware required for CCTV system installation
- PC14.** Collecting and checking of components before going to customer premises
- PC15.** Assisting technicians for checking hardware components before Installation
- PC16.** Replacing components if found malfunctioning
- PC17.** Preparing Checklist and ensure the availability of every component before installation

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- PC18.** Installing CCTV components at the customers site
- PC19.** Mounting the CCTV camera so as to cover maximum area
- PC20.** Deciding on the height of camera installation according to the end purpose
- PC21.** Setting up the camera such as pan, tilt, zoom unit as per customer requirements
- PC22.** Set camera controls
- PC23.** Connecting the power and video output cable to the camera
- PC24.** Ensuring that all the hardware matches the customer requirement, agreed features and specifications

Wiring Electrical and Electronics components as per specifications

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

- PC25.** Determining the type of cable requirement for different types of network type such as USB, twisted pair, etc.
- PC26.** Ensuring adequate length of cables are available for installation
- PC27.** Wiring Power Supplies, Earthing & Grounding.
- PC28.** Laying the cables in the building or site to connect the camera and system
- PC29.** Using BNC connectors for joining cables and crimping them
- PC30.** Using power cable of specified thickness to connect CCTV system with power supply
- PC31.** Connecting all the cables from multiple cameras to the CCTV system area

Testing CCTV Components at customer premises

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

- PC32.** Checking voltage and resistance at all appropriate points of the system
- PC33.** Correcting alignment and operation of CCTV hardware
- PC34.** Checking correct operation of each component. Ensure that there are no malfunctioning, if yes than replace the component
- PC35.** Checking the signals of CCTV components
- PC36.** Checking all the data received by CCTV as per the requirement
- PC37.** Ensuring that there are no cable joins, sharp bends during cabling
- PC38.** Ensure 100% satisfaction from customers for all the installed components

Providing Technical Support for CCTV Systems

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

- PC39.** Providing Technical Support for CCTV devices at the customer premises
- PC40.** Commissioning CCTV Systems performance as per customer requirements
- PC41.** Achieving zero errors in commissioning as per company policy
- PC42.** Identifying problems and alert on time
- PC43.** Fixing for any errors (if any) identified
- PC44.** Verifying software implementation checks;(AI, AO, DI,DO) I/O points
- PC45.** Ensuring zero-material damage while handling the equipment during installation process
- PC46.** Performing software functionality test

Achieving Quality and Productivity as per company norms

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

Qualification Pack

- PC47.** Achieving 100% work schedule as planned for the week
- PC48.** Following standard operating procedure of tools and equipment and avoid any hazard
- PC49.** Achieving zero component damage
- PC50.** Keeping work area clean and organized
- PC51.** Achieving 100% compliance with health and safety guidelines and rules
- PC52.** Ensuring installed components as per company norms and standards

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Company's policies on: incentives, delivery standards and personnel management, customer management
- KU2.** Reporting and documentation processes
- KU3.** Importance of the individual's role in the workflow
- KU4.** Reporting structure
- KU5.** Complete knowledge of CCTV Surveillance System
- KU6.** Knowledge of Ethernet and I/P & Industrial Networks
- KU7.** Operation of components used in CCTV system
- KU8.** Elements of CCTV systems such as camera, DVR, monitor
- KU9.** Electrical/electronic/mechanical parts required for the ACS
- KU10.** Material requirement of components with their specifications
- KU11.** Installation procedures given in the manuals
- KU12.** Different type of cables used for data transmission and power transmission
- KU13.** Power requirement of different CCTV related equipment
- KU14.** Knowledge of communication between CCTV and other BAS components
- KU15.** Video recording of footage analog and digital
- KU16.** Different types of camera available in the market
- KU17.** Camera specifications such as focus, lens type, zoom
- KU18.** Controls of different options in camera such as rotation, speed of movement in pan / tilt camera
- KU19.** Voltage and power requirement for different hardware devices
- KU20.** How to operate the system and other hardware
- KU21.** Understanding of Networks protocols
- KU22.** Safety rules, policies and procedures
- KU23.** Quality standards to be followed

Generic Skills (GS)

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

Qualification Pack

- GS1.** Preparing indents and list of equipment required for the specified Access Controls System
- GS2.** Compiling all the related documents as per the requirements
- GS3.** Record Faults in instruments and submit to the team leader.
- GS4.** Read warnings, instructions and other text material on product levels, components etc.
- GS5.** Reading drawings and job sheets or work orders
- GS6.** Discuss work load with superiors
- GS7.** Communicate with team leader for proper understanding of work
- GS8.** Interact with coworkers and gather all the information related to process requirement
- GS9.** Make decisions according to the situations
- GS10.** Plan the execution of entire design activity; long term and short term activities so that he can finish the task activity wise in the stipulated time.
- GS11.** Organize expert support from/within outside professional environment for new technology and feasibility studies.
- GS12.** Understand real needs of the customer and suggest most appropriate solution
- GS13.** Support customer when they need help
- GS14.** Think and provide best possible solution required for the system
- GS15.** Identify immediate or temporary solutions to resolve delays
- GS16.** Use the existing information to arrive at actionable decision points
- GS17.** Use the existing information for improving the customer satisfaction
- GS18.** Use the existing information to optimize solution and company business
- GS19.** Analyze problems and identify causes and possible solutions
- GS20.** Analyze the work flow and suggest superiors to provide improvement for better production

Qualification Pack

Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <i>Capturing the requirements of CCTV Surveillance Systems by site survey</i> | 7 | 9 | - | - |
| PC1. Capturing work requirements of the client by site survey | 2 | 1 | - | - |
| PC2. Developing BOQ according to the requirement of the client | 1 | 2 | - | - |
| PC3. Assisting customer about different types of technologies used in CCTV Surveillance Systems according to the need of site | 1 | 2 | - | - |
| PC4. Ensuring that Suggesting components matches to customers requirement | 1 | 2 | - | - |
| PC5. Assisting the customers about the company policies towards services and warranty | 1 | 1 | - | - |
| PC6. Managing proper documentation of site survey and customer requirements | 1 | 1 | - | - |
| <i>Suggesting and taking approval from the customer for CCTV System to be installed</i> | 6 | 8 | - | - |
| PC7. Suggesting appropriate CCTV components to the customer according to the site | 1 | 2 | - | - |
| PC8. Assisting the customers about technologies used in CCTV systems with their specifications | 1 | 1 | - | - |
| PC9. Taking approval for installing CCTV Systems from the customer | 1 | 1 | - | - |
| PC10. Preparing and assembling CCTV Systems components as per the requirement | 1 | 1 | - | - |
| PC11. Creating check list before going to the site for installation | 1 | 1 | - | - |
| PC12. Maintaining complete documentation of the components to be installed | 1 | 2 | - | - |
| <i>Installing approved CCTV components as per site requirements</i> | 12 | 19 | - | - |

Qualification Pack

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| PC13. Assisting procurement of hardware required for CCTV system installation | 1 | 1 | - | - |
| PC14. Collecting and checking of components before going to customer premises | 1 | 1 | - | - |
| PC15. Assisting technicians for checking hardware components before Installation | - | - | - | - |
| PC16. Replacing components if found malfunctioning | 1 | 1 | - | - |
| PC17. Preparing Checklist and ensure the availability of every component before installation | 1 | 3 | - | - |
| PC18. Installing CCTV components at the customers site | 2 | 3 | - | - |
| PC19. Mounting the CCTV camera so as to cover maximum area | 1 | 2 | - | - |
| PC20. Deciding on the height of camera installation according to the end purpose | 1 | 2 | - | - |
| PC21. Setting up the camera such as pan, tilt, zoom unit as per customer requirements | 1 | 2 | - | - |
| PC22. Set camera controls | 1 | 2 | - | - |
| PC23. Connecting the power and video output cable to the camera | 1 | 1 | - | - |
| PC24. Ensuring that all the hardware matches the customer requirement, agreed features and specifications | 1 | 1 | - | - |
| <i>Wiring Electrical and Electronics components as per specifications</i> | 9 | 16 | - | - |
| PC25. Determining the type of cable requirement for different types of network type such as USB, twisted pair, etc. | 1 | 3 | - | - |
| PC26. Ensuring adequate length of cables are available for installation | 2 | 3 | - | - |

Qualification Pack

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| PC27. Wiring Power Supplies, Earthing & Grounding. | 2 | 3 | - | - |
| PC28. Laying the cables in the building or site to connect the camera and system | 1 | 2 | - | - |
| PC29. Using BNC connectors for joining cables and crimping them | 1 | 2 | - | - |
| PC30. Using power cable of specified thickness to connect CCTV system with power supply | 1 | 1 | - | - |
| PC31. Connecting all the cables from multiple cameras to the CCTV system area | 1 | 2 | - | - |
| <i>Testing CCTV Components at customer premises</i> | 7 | 15 | - | - |
| PC32. Checking voltage and resistance at all appropriate points of the system | 1 | 2 | - | - |
| PC33. Correcting alignment and operation of CCTV hardware | 1 | 2 | - | - |
| PC34. Checking correct operation of each component. Ensure that there are no malfunctioning, if yes than replace the component | 1 | 3 | - | - |
| PC35. Checking the signals of CCTV components | 1 | 2 | - | - |
| PC36. Checking all the data received by CCTV as per the requirement | 1 | 2 | - | - |
| PC37. Ensuring that there are no cable joins, sharp bends during cabling | 1 | 2 | - | - |
| PC38. Ensure 100% satisfaction from customers for all the installed components | 1 | 2 | - | - |
| <i>Providing Technical Support for CCTV Systems</i> | 8 | 16 | - | - |
| PC39. Providing Technical Support for CCTV devices at the customer premises | 1 | 2 | - | - |
| PC40. Commissioning CCTV Systems performance as per customer requirements | 1 | 2 | - | - |

Qualification Pack

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| PC41. Achieving zero errors in commissioning as per company policy | 1 | 2 | - | - |
| PC42. Identifying problems and alert on time | 1 | 2 | - | - |
| PC43. Fixing for any errors (if any) identified | 1 | 2 | - | - |
| PC44. Verifying software implementation checks;(AI, AO, DI,DO) I/O points | 1 | 2 | - | - |
| PC45. Ensuring zero-material damage while handling the equipment during installation process | 1 | 2 | - | - |
| PC46. Performing software functionality test | 1 | 2 | - | - |
| <i>Achieving Quality and Productivity as per company norms</i> | 6 | 12 | - | - |
| PC47. Achieving 100% work schedule as planned for the week | 1 | 2 | - | - |
| PC48. Following standard operating procedure of tools and equipment and avoid any hazard | 1 | 2 | - | - |
| PC49. Achieving zero component damage | 1 | 2 | - | - |
| PC50. Keeping work area clean and organized | 1 | 2 | - | - |
| PC51. Achieving 100% compliance with health and safety guidelines and rules | 1 | 2 | - | - |
| PC52. Ensuring installed components as per company norms and standards | 1 | 2 | - | - |
| NOS Total | 55 | 95 | - | - |

Qualification Pack

National Occupational Standards (NOS) Parameters

| | |
|----------------------------|---|
| NOS Code | IAS/N2103 |
| NOS Name | Install and Provide Technical Support for CCTV Surveillance Systems |
| Sector | Instrumentation |
| Sub-Sector | Instrumentation & Automation |
| Occupation | Product Engineering/System Design |
| NSQF Level | 5 |
| Credits | TBD |
| Version | 1.0 |
| Last Reviewed Date | 30/07/2016 |
| Next Review Date | 30/07/2019 |
| NSQC Clearance Date | 03/08/2018 |

Qualification Pack

IAS/N2104: Integrating and Controlling Building automation System

Description

This OS unit is about Integrating CCTV Surveillance Systems, Fire Alarm Systems, Access Control Devices and HVAC Components in the control Panel

Scope

This unit/task covers the following: Integrating HVAC Components Integrating Fire Alarm Systems Integrating Access Control Devices Integrating CCTV Surveillance Systems Controlling and Supervising Building Automation Systems using Control Panel

Elements and Performance Criteria

Integrating HVAC Components

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

- PC1.** Installing and Controlling HVAC Components using DDC Controllers
- PC2.** Graphically monitor, control, alarm and diagnose Building Equipment remotely
- PC3.** Creating communication between DDC Controllers using data Bus
- PC4.** Using BACnet, LON(Echelon) and MODBUS to communicate on data Bus
- PC5.** Integrating installed HVAC Components with other Building Automation Systems using Software and programming on Single Control Panel

Integrating Fire Alarm Systems

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

- PC6.** Integrating different detectors such as Heat, Smoke, Flame Ionization Detectors, Beam Detectors etc. with control panel
- PC7.** Using Conventional Systems and analogue addressable systems for fire panels
- PC8.** Creating and testing communication between control panel and detectors
- PC9.** Using Intelligent addressable systems as per the requirement
- PC10.** Integrating Fire Alarm Components with central fire alarm system
- PC11.** Integrating Fire alarm system with centralized control panel

Integrating Access Control Devices

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

- PC12.** Inter facing between different networks used in Access Controls systems
- PC13.** Integrating tailgate detectors to remove unauthorized access
- PC14.** Controlling and monitoring multiple doors using reader controllers
- PC15.** Creating communication between control panel and access control servers
- PC16.** Integrating DIU (Door interface Units)
- PC17.** Integrating access control and intrusion detection
- PC18.** Installing Biometric systems on application device
- PC19.** Installing and creating communication between magnetic locks and doors

Qualification Pack

- PC20.** Managing Smart card management systems
- PC21.** Integrating Access Control System with Time/Attendance payroll system
- PC22.** Managing Weigand Communication for specific interface between card and readers.
- PC23.** Integrating Access Control devices with BAS control Panel

Integrating CCTV Surveillance Systems

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

- PC24.** Managing Iris and Auto Iris functionality of installed CCTV System
- PC25.** Managing Automatic Shutter Speed
- PC26.** Creating communication between CCTV Camera and DVR or NVR
- PC27.** Managing Automatic Gain Control
- PC28.** Managing Synchronization between installed CCTV Camera
- PC29.** Creating communication between IP cameras and network
- PC30.** Managing NVR and NVR Software
- PC31.** Installing and managing Facial and number plate recognition system
- PC32.** Integrating CCTV Surveillance System with Security system to provide centralized management of access control
- PC33.** Integrating centralized Access Control System with Building Automation System control Panel

Controlling and Supervising Building Automation Systems using Control Panel

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

- PC34.** Testing of overall integrated Building Automation System through control panel
- PC35.** Ensuring proper working and controlling of every installed device using control panel
- PC36.** Assuring 100% satisfaction from the customer after installation of BAS
- PC37.** Troubleshooting errors if the system is not working as per the requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Company manufacturing processes
- KU2.** Existing layout for the processes
- KU3.** Sequence of operations for each process
- KU4.** Facility planning methodology being followed in the company
- KU5.** Future capacity expansions plans (if any) of the company
- KU6.** Complete knowledge of the BAS Software Integration
- KU7.** Understanding of the latest technologies used in HVAC Systems
- KU8.** Fire alarm system technology and components used
- KU9.** Access controller installation and integration techniques
- KU10.** Standard Electrical/electronic parts and assemblies
- KU11.** Standard Mechanical, pneumatic and hydraulic parts and assemblies
- KU12.** Understanding wiring and drawings for communication

Qualification Pack

- KU13.** Integrating all the components as per customers requirement
- KU14.** Understanding refrigerants, chillers and components used in air conditioning system
- KU15.** Understanding fixed air volume and variable air volume applications
- KU16.** Understanding Psychometrics
- KU17.** Knowledge of sensors, actuators, input devices, output devices, logic statements and PID loops
- KU18.** Understanding point scheduling and I/O summary
- KU19.** Knowledge of Building Management System (BMS) graphics screens and tags
- KU20.** Knowledge of Ethernet and I/P & Industrial Networks such as MODBUS, LON, BAC net etc.
- KU21.** Understanding Direct Digital Controllers in BAS
- KU22.** Understanding Laws of Thermodynamics
- KU23.** Understanding characteristics of fire classes
- KU24.** Understanding Fire Detection technologies
- KU25.** Knowledge of Fire panel Technologies
- KU26.** Understanding detectors and device wiring schema
- KU27.** Knowledge of Firemans Telephony, Talkback systems and Mass Evacuation
- KU28.** Understanding Peer-to-peer & Daisy Chain Networks
- KU29.** Understanding NFPA Guidelines and fire safety strategies
- KU30.** Knowledge of Access control System components such as Magnetic swipe, RF proximity cards, smart cards, Mifare smart cards, i-class smart cards, readers etc.
- KU31.** Understanding data encryption and security
- KU32.** Knowledge of complete CCTV Surveillance system and components used
- KU33.** Understanding power requirements of different components
- KU34.** Knowledge of different cables used with their specifications
- KU35.** Knowledge of different types of camera technologies used with their specifications

Generic Skills (GS)

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

- GS1.** Compile all the data related to main and auxiliary equipment required in the process
- GS2.** Compile all the data related to study of existing facility in the form of presentation and reports
- GS3.** Record Faults in instruments.
- GS4.** Read the equipment literature and understand its features
- GS5.** Read the information displayed at the workplace
- GS6.** Discuss task lists, schedules, and work-loads with co-workers
- GS7.** Communicate the new equipment and facilities design activities to the higher management in meetings for their support
- GS8.** Spell out effectively the findings of the study to the higher management in meetings
- GS9.** Interact with coworkers and gather all the information related to process requirement

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- GS10.** Make decisions pertaining to the concerned area of work
- GS11.** Plan the execution of entire design activity; long term and short term activities so that he can finish the task activity wise in the stipulated time.
- GS12.** Organize expert support from/within outside professional environment for new technology and feasibility studies.
- GS13.** Understand real needs of the customer and suggest most appropriate solution
- GS14.** Support customers when they need help
- GS15.** Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS16.** Identify immediate or temporary solutions to resolve delays
- GS17.** Use the existing information to arrive at actionable decision points
- GS18.** Use the existing information for improving the customer satisfaction
- GS19.** Use the existing information to optimize solution and company business
- GS20.** Analyze problems and identify causes and possible solutions
- GS21.** Apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action.
- GS22.** Analyze the way in which the existing facility layout is in operation and think of more economic and feasible measures for existing layout modification.

Qualification Pack

Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <i>Integrating HVAC Components</i> | 9 | 10 | - | - |
| PC1. Installing and Controlling HVAC Components using DDC Controllers | 2 | 2 | - | - |
| PC2. Graphically monitor, control, alarm and diagnose Building Equipment remotely | 2 | 2 | - | - |
| PC3. Creating communication between DDC Controllers using data Bus | 1 | 2 | - | - |
| PC4. Using BACnet, LON(Echelon) and MODBUS to communicate on data Bus | 2 | 2 | - | - |
| PC5. Integrating installed HVAC Components with other Building Automation Systems using Software and programming on Single Control Panel | 2 | 2 | - | - |
| <i>Integrating Fire Alarm Systems</i> | 6 | 10 | - | - |
| PC6. Integrating different detectors such as Heat, Smoke, Flame Ionization Detectors, Beam Detectors etc. with control panel | 1 | 2 | - | - |
| PC7. Using Conventional Systems and analogue addressable systems for fire panels | 1 | 2 | - | - |
| PC8. Creating and testing communication between control panel and detectors | 1 | 2 | - | - |
| PC9. Using Intelligent addressable systems as per the requirement | 1 | 1 | - | - |
| PC10. Integrating Fire Alarm Components with central fire alarm system | 1 | 1 | - | - |
| PC11. Integrating Fire alarm system with centralized control panel | 1 | 2 | - | - |
| <i>Integrating Access Control Devices</i> | 15 | 25 | - | - |
| PC12. Inter facing between different networks used in Access Controls systems | 1 | 2 | - | - |

Qualification Pack

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| PC13. Integrating tailgate detectors to remove unauthorized access | 1 | 1 | - | - |
| PC14. Controlling and monitoring multiple doors using reader controllers | 1 | 1 | - | - |
| PC15. Creating communication between control panel and access control servers | 2 | 1 | - | - |
| PC16. Integrating DIU (Door interface Units) | 1 | 3 | - | - |
| PC17. Integrating access control and intrusion detection | 2 | 4 | - | - |
| PC18. Installing Biometric systems on application device | 2 | 3 | - | - |
| PC19. Installing and creating communication between magnetic locks and doors | 1 | 3 | - | - |
| PC20. Managing Smart card management systems | 1 | 2 | - | - |
| PC21. Integrating Access Control System with Time/Attendance payroll system | 1 | 1 | - | - |
| PC22. Managing Weigand Communication for specific interface between card and readers. | 1 | 1 | - | - |
| PC23. Integrating Access Control devices with BAS control Panel | 1 | 3 | - | - |
| <i>Integrating CCTV Surveillance Systems</i> | 12 | 26 | - | - |
| PC24. Managing Iris and Auto Iris functionality of installed CCTV System | 2 | 3 | - | - |
| PC25. Managing Automatic Shutter Speed | 2 | 4 | - | - |
| PC26. Creating communication between CCTV Camera and DVR or NVR | 1 | 3 | - | - |
| PC27. Managing Automatic Gain Control | 1 | 2 | - | - |
| PC28. Managing Synchronization between installed CCTV Camera | 1 | 1 | - | - |

Qualification Pack

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| PC29. Creating communication between IP cameras and network | 1 | 3 | - | - |
| PC30. Managing NVR and NVR Software | 1 | 3 | - | - |
| PC31. Installing and managing Facial and number plate recognition system | 1 | 2 | - | - |
| PC32. Integrating CCTV Surveillance System with Security system to provide centralized management of access control | 1 | 3 | - | - |
| PC33. Integrating centralized Access Control System with Building Automation System control Panel | 1 | 2 | - | - |
| <i>Controlling and Supervising Building Automation Systems using Control Panel</i> | 4 | 8 | - | - |
| PC34. Testing of overall integrated Building Automation System through control panel | 1 | 2 | - | - |
| PC35. Ensuring proper working and controlling of every installed device using control panel | 1 | 2 | - | - |
| PC36. Assuring 100% satisfaction from the customer after installation of BAS | 1 | 2 | - | - |
| PC37. Troubleshooting errors if the system is not working as per the requirements | 1 | 2 | - | - |
| NOS Total | 46 | 79 | - | - |

Qualification Pack

National Occupational Standards (NOS) Parameters

| | |
|----------------------------|--|
| NOS Code | IAS/N2104 |
| NOS Name | Integrating and Controlling Building automation System |
| Sector | Instrumentation |
| Sub-Sector | Instrumentation & Automation |
| Occupation | Product Engineering/System Design |
| NSQF Level | 5 |
| Credits | TBD |
| Version | 1.0 |
| Last Reviewed Date | 30/07/2016 |
| Next Review Date | 30/07/2019 |
| NSQC Clearance Date | 03/08/2018 |

Qualification Pack

IAS/N2105: Work Effectively With Teams

Description

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

Scope

This unit/task covers the following: Creating team environment Communicating giving and receiving Working cooperatively Participating in team decision making Demonstrating Sense of Responsibility Showing respect for opinions, customs and preferences

Elements and Performance Criteria

Create Team Environment

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

- PC1.** Know and understand the team objectives and goals
- PC2.** Know team members by name. Greet them appropriately and respond to their greetings.
- PC3.** Know the roles and responsibilities of team members. Ensure others know about you and your role in the team
- PC4.** Learn about the culture and preferences of team members especially if they belong to other organizations or nationalities
- PC5.** Follow organizations policies and procedures for working with team members within and outside the organization especially relating to privacy, confidentiality and security.
- PC6.** Create an environment of trust and mutual respect

Communicate Give and Receive

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

- PC7.** Use appropriate mode of communication verbal, written, mail, phone or text and clearly articulate your message to ensure that the recipient understands the message
- PC8.** Listen to team members and try to understand what they are wanting to say. Seek or provide clarifications if you see any gap in understanding
- PC9.** Communicate professionally and follow organization protocols. Do not overload the team members with unnecessary and unsolicited information
- PC10.** Share important information with the team timely.
- PC11.** Respond to communications promptly.

Work Cooperatively

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

- PC12.** Perform own role and produce output in time for other team members to consume
- PC13.** Receive inputs from others and work upon it per role requirement
- PC14.** Make adjustments within the permissible rules so that work flows smoothly.
- PC15.** Help team members to perform their role effectively and provide any clarifications and support they need

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- PC16.** Share tools and common resources fairly, taking cognizance of others needs and schedules
- PC17.** Resolve any contentious issues amicably, involving the team lead or the supervisor if needed
- PC18.** Let team members know in good time if you cannot carry out your commitments, explaining the reasons and alternate solutions, if any. Let the team lead know about this.

Participate in Team Decision making

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

- PC19.** Think positively and make constructive suggestions to meet the goals
- PC20.** Accept and give suggestions with open mind
- PC21.** Take initiatives and volunteer to contribute
- PC22.** Help team members with facts and figures to arrive at workable decisions
- PC23.** Accept decisions professionally and support these, even if these do not match your suggestions and personal views

Demonstrate Sense of Responsibility

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

- PC24.** Act in the interest of the team and the organization to ensure that things do not fall through the gap and team goals are achieved.
- PC25.** Take initiative to correct the situation if something seems to be going wrong.
- PC26.** Seek help or escalate if the situation demands

Show Respect for Opinions, Customs and Preferences

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

- PC27.** Follow organizations and statutory guidelines about making references or comments to social customs or preferences
- PC28.** Refrain from making any comments to hurt sentiments
- PC29.** Accommodate team members preferences to the extent feasible. If these come in the way of fulfilling team goals, discuss with the supervisor/ team leader.
- PC30.** Seek information and clarifications from others if you do not understand any customs.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** The organizations policies and procedures for working with colleagues, roles and responsibilities in relation to this
- KU2.** The importance of effective communication and establishing good working relationships with colleagues
- KU3.** Different methods of communication and the circumstances in which it is appropriate to use these
- KU4.** The importance of creating an environment of trust and mutual respect
- KU5.** The implications of own work on the work and schedule of others
- KU6.** Different types of information that colleagues might need and the importance of providing this information when it is required

Qualification Pack

KU7. The importance of helping colleagues with problems, in order to meet quality and time standards as a team

Generic Skills (GS)

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

- GS1.** Complete written work with attention to detail
- GS2.** Read instructions, guidelines/procedures
- GS3.** Listen effectively and orally communicate information
- GS4.** Ask for clarification and advice from the concerned person
- GS5.** Make decisions on a suitable course of action or response keeping in view resource utilization while meeting commitments
- GS6.** Plan and organize work to achieve targets and deadlines
- GS7.** Understand real needs of the customer and suggest most appropriate solution
- GS8.** Support customer when they need help
- GS9.** Apply problem solving approaches in different situations
- GS10.** Use the existing information to arrive at actionable decision points
- GS11.** Use the existing information for improving the customer satisfaction
- GS12.** Use the existing information to optimize solution and company business
- GS13.** Analyze problems and identify causes and possible solutions
- GS14.** Apply balanced judgments to different situations

Qualification Pack

Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <i>Create Team Environment</i> | 6 | 11 | - | - |
| PC1. Know and understand the team objectives and goals | 1 | 2 | - | - |
| PC2. Know team members by name. Greet them appropriately and respond to their greetings. | 1 | 1 | - | - |
| PC3. Know the roles and responsibilities of team members. Ensure others know about you and your role in the team | 1 | 1 | - | - |
| PC4. Learn about the culture and preferences of team members especially if they belong to other organizations or nationalities | 1 | 4 | - | - |
| PC5. Follow organizations policies and procedures for working with team members within and outside the organization especially relating to privacy, confidentiality and security. | 1 | 1 | - | - |
| PC6. Create an environment of trust and mutual respect | 1 | 2 | - | - |
| <i>Communicate Give and Receive</i> | 5 | 10 | - | - |
| PC7. Use appropriate mode of communication verbal, written, mail, phone or text and clearly articulate your message to ensure that the recipient understands the message | 1 | 1 | - | - |
| PC8. Listen to team members and try to understand what they are wanting to say. Seek or provide clarifications if you see any gap in understanding | 1 | 2 | - | - |
| PC9. Communicate professionally and follow organization protocols. Do not overload the team members with unnecessary and unsolicited information | 1 | 3 | - | - |
| PC10. Share important information with the team timely. | 1 | 2 | - | - |

Qualification Pack

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| PC11. Respond to communications promptly. | 1 | 2 | - | - |
| <i>Work Cooperatively</i> | 7 | 8 | - | - |
| PC12. Perform own role and produce output in time for other team members to consume | 1 | 2 | - | - |
| PC13. Receive inputs from others and work upon it per role requirement | 1 | 1 | - | - |
| PC14. Make adjustments within the permissible rules so that work flows smoothly. | 1 | 1 | - | - |
| PC15. Help team members to perform their role effectively and provide any clarifications and support they need | 1 | 1 | - | - |
| PC16. Share tools and common resources fairly, taking cognizance of others needs and schedules | 1 | 1 | - | - |
| PC17. Resolve any contentious issues amicably, involving the team lead or the supervisor if needed | 1 | 1 | - | - |
| PC18. Let team members know in good time if you cannot carry out your commitments, explaining the reasons and alternate solutions, if any. Let the team lead know about this. | 1 | 1 | - | - |
| <i>Participate in Team Decision making</i> | 5 | 7 | - | - |
| PC19. Think positively and make constructive suggestions to meet the goals | 1 | 1 | - | - |
| PC20. Accept and give suggestions with open mind | 1 | 1 | - | - |
| PC21. Take initiatives and volunteer to contribute | 1 | 1 | - | - |
| PC22. Help team members with facts and figures to arrive at workable decisions | 1 | 1 | - | - |
| PC23. Accept decisions professionally and support these, even if these do not match your suggestions and personal views | 1 | 3 | - | - |
| <i>Demonstrate Sense of Responsibility</i> | 3 | 5 | - | - |

Qualification Pack

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| PC24. Act in the interest of the team and the organization to ensure that things do not fall through the gap and team goals are achieved. | 1 | 3 | - | - |
| PC25. Take initiative to correct the situation if something seems to be going wrong. | 1 | 1 | - | - |
| PC26. Seek help or escalate if the situation demands | 1 | 1 | - | - |
| <i>Show Respect for Opinions, Customs and Preferences</i> | 4 | 4 | - | - |
| PC27. Follow organizations and statutory guidelines about making references or comments to social customs or preferences | 1 | 1 | - | - |
| PC28. Refrain from making any comments to hurt sentiments | 1 | 1 | - | - |
| PC29. Accommodate team members preferences to the extent feasible. If these come in the way of fulfilling team goals, discuss with the supervisor/ team leader. | 1 | 1 | - | - |
| PC30. Seek information and clarifications from others if you do not understand any customs. | 1 | 1 | - | - |
| NOS Total | 30 | 45 | - | - |

Qualification Pack

National Occupational Standards (NOS) Parameters

| | |
|----------------------------|------------------------------|
| NOS Code | IAS/N2105 |
| NOS Name | Work Effectively With Teams |
| Sector | Instrumentation |
| Sub-Sector | Instrumentation & Automation |
| Occupation | Maintenance |
| NSQF Level | 4 |
| Credits | TBD |
| Version | 1.0 |
| Last Reviewed Date | 30/07/2016 |
| Next Review Date | 30/07/2019 |
| NSQC Clearance Date | 03/08/2018 |

Qualification Pack

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) (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 center (as per assessment criteria below).
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center 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

Recommended Pass % : 70

Assessment Weightage

Compulsory NOS

| National Occupational Standards | Theory Marks | Practical Marks | Project Marks | Viva Marks | Total Marks | Weightage |
|--|--------------|-----------------|---------------|------------|-------------|-----------|
| IAS/N2003.Health and Safety in Workplace | 20 | 30 | - | - | 50 | 5 |
| IAS/N2100.Design, Install and Provide Technical Support for HVAC System | 55 | 75 | - | - | 130 | 20 |
| IAS/N2101.Design, Install and Provide Technical Support for Fire Alarm Systems | 52 | 73 | - | - | 125 | 20 |
| IAS/N2102.Install and Provide Technical Support for Access Controls Systems | 57 | 93 | - | - | 150 | 20 |

Qualification Pack

| National Occupational Standards | Theory Marks | Practical Marks | Project Marks | Viva Marks | Total Marks | Weightage |
|---|--------------|-----------------|---------------|------------|-------------|------------|
| IAS/N2103.Install and Provide Technical Support for CCTV Surveillance Systems | 55 | 95 | - | - | 150 | 20 |
| IAS/N2104.Integrating and Controlling Building automation System | 46 | 79 | - | - | 125 | 10 |
| IAS/N2105.Work Effectively With Teams | 30 | 45 | - | - | 75 | 5 |
| Total | 315 | 490 | - | - | 805 | 100 |

Acronyms

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

Qualification Pack

Glossary

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

Qualification Pack

| | |
|---|--|
| 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. |