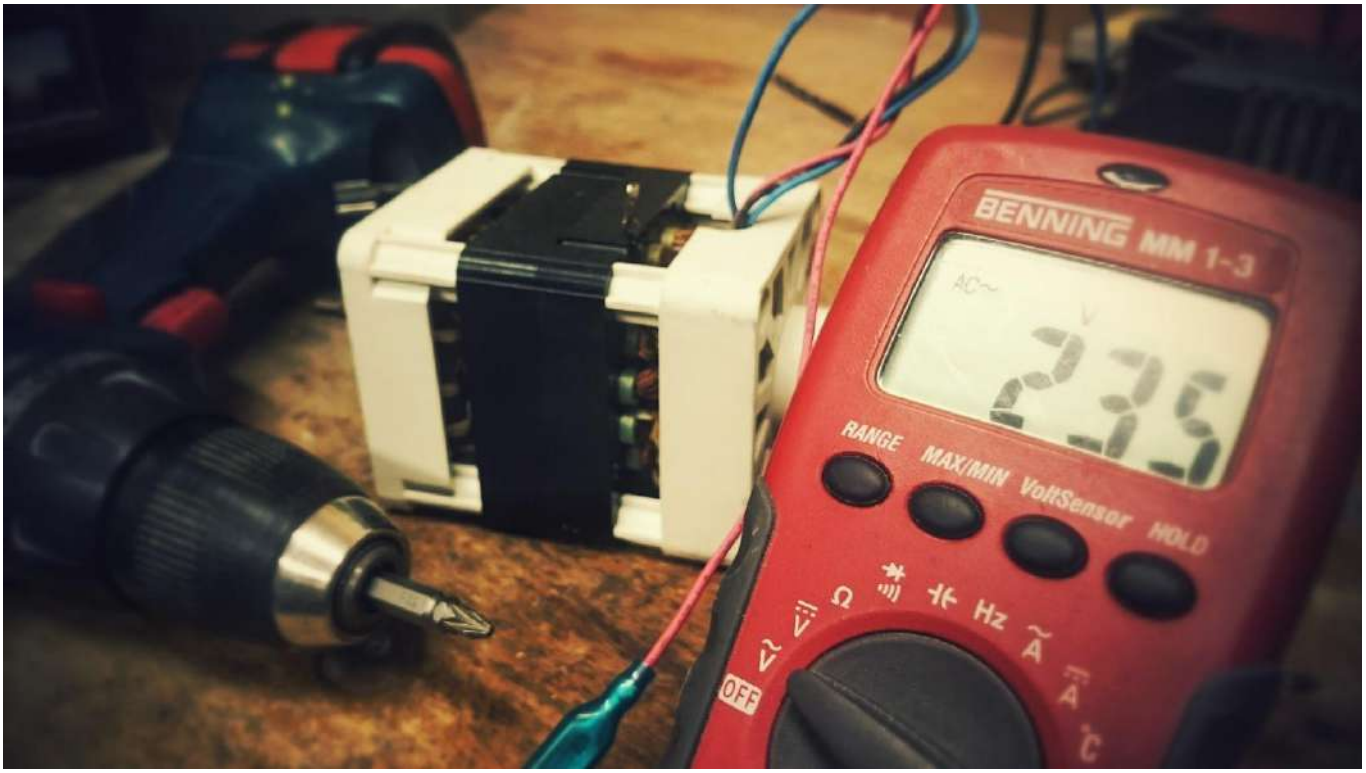
Qualification Pack



Testing and Calibration Technician (Electrotechnical)

QP Code: IAS/Q5002

NSQF Level: 4

Instrumentation Automation Surveillance & Communication Sector Skill Council
201-202 STBP NSIC Complex (Gate No. 02), Okhla Industrial Area,
New Delhi-110020

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IAS/Q5002: Testing and Calibration Technician (Electrotechnical)

Brief Job Description

The individual at work is responsible for calibration of electrotechnical parameters, such as AC/DC Voltage & Current, RLC and Q below 1GHz and temperature simulation, using authorised calibration setup and procedure in accordance to ISO/IEC 17025:2005 or equivalent standards.

Personal Attributes

This job requires the individual to be an effective communicator, disciplined, assertive and a team player. The individual should also possess analytical and problem-solving skills and have the ability to work under pressure.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. IAS/N5001: Performing pre-calibration activities
2. IAS/N5002: Calibration of electrotechnical parameters
3. IAS/N5003: Preventive maintenance and task reporting
4. IAS/N9001: Work effectively with teams
5. IAS/N9002: Maintain health and safety at workplace

Qualification Pack (QP) Parameters

Sector	Instrumentation Automation Surveillance and Communication
Sub-Sector	Instrumentation and Automation
Occupation	Testing & QA
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/ 7311.1001
Minimum Educational Qualification & Experience	B.Sc. (with Physics as a subject)/Diploma in Mechanical, Instrumentation, Electrical or Electronics
Minimum Level of Education for Training in School	NA
Pre-Requisite License or Training	NA
Minimum Job Entry Age	19 Years
Last Reviewed On	05/02/2020
Next Review Date	05/02/2024
NSQC Approval Date	NA
Version	1.0

IAS/N5001: Performing pre-calibration activities

Description

This OS unit is about ensuring appropriate calibration environment, readiness and usability of the calibration system and safety at the workplace as mandated by the organisation. The individual follows organisation specified handling methods and keeps the calibration equipment and setup in good order.

Scope

This unit/task covers the following:

- Analyse general calibration requirements to ensure presence of an optimal environment
- Inspect equipment, instruments and system required for calibration

Elements and Performance Criteria

Analyse general calibration requirements to ensure presence of an optimal environment

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

PC1. inspect the central air conditioning plants and other external factors to assess the temperature of the area/laboratory

PC2. inspect the room/area for any abnormal noise in the calibration area and assess the source of vibration in case felt (refer to SOP for acceptable noise level—usually less than 60dba)

PC3. check for lighting/ associated electrical equipment in the calibration installation area and match it with the recommended level of illumination (typically, 250- 500 Lux on the working table, or as specified in the SOP documents)

PC4. check for temporary/unsafe electrical wiring that may be put calibration in jeopardy

PC5. check for ambient temperature and humidity in the calibration area as specified in the SOP documents

PC6. inspect the environment parameters to analyse if they may adversely affect the required accuracy of measurement and report to the supervisor in case discrepancies are detected

PC7. check that the SOP norms for intensity and location of magnetic field sources, such as transformers, looped wires, ferrous materials, etc., in order to minimise magnetic interference in the measurements, especially for magnetic measurements such as inductor, etc.

PC8. Ensure that Electromagnetic interference (EMI) and electromagnetic compatibility (EMC) norms are to be followed as per SOP for emission and immunity testing

PC9. ensure earthing norms are correctly followed for power supply, AC/DC mains and entire circuitry as per SOP in accordance with relevant specification (as per IS:3043 general standards earth resistance should be less than 1 ohm and earth to neutral voltage should be less than 1 volt)

PC10. inspect the calibration area/laboratory to ensure it is free from dust and external air pressure, and positive air pressure is normally maintained inside the laboratory to avoid ingress of dust

PC11. assess possible treatment to be given, as per standards and first-aid guidelines specified in the organizational documents, for electric shock

PC12. ensure that a wall chart listing emergency helpline numbers, steps to take for treatment of electric shock and proper first-aid procedure for the same is placed near the power supply switchgear and at other prominent places (as prescribed under Indian Electricity Rules 1956)

Inspect equipment, instruments and system required for calibration

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

PC13. check proper and correct RF/Microwave (1 GHz and Above), time and frequency (LF and HF, Time interval, Time Period) and temperature simulation are as per SOP documents

PC14. ensure that the power supply, usually from a UPS, is as per standards (e.g. ensure correct voltage, frequency, Total Harmonic Distortion or THD, transients, regulation, etc. are all as per SOP values

PC15. check that any installed isolation transformers, filters, etc. are not tampered with and the "hum" interference is within standard limits

PC16. assess the operation of heavy loads in the premises or nearby locations to ensure it does not cause any dip in voltage or transient currents that may adversely affect calibration and report any concerns to the relevant department

PC17. check for availability of instruments in the Electrotechnical Metrology Calibration setup

PC18. analyse requirements and arrange for protective measures, such as transient suppressors, to ensure that the laboratory is prepared for high current spikes and transients emanating from operation of heavy machines, surges in power supply and other such reasons

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organisation's SOPs for various calibrations that are performed

KU2. the requirements of maintaining ambient conditions for calibration

KU3. the role of calibration in the organisation (whether as a part of the end user production and quality assurance process or of a calibration service provider) and its impact on company business

KU4. electrotechnical calibration process and its impact on calibration accuracy

KU5. calibration methods— Comparison Method, Direct Method, Automated Method, Voltmeter-Ammeter Method

KU6. different types of measuring standards

KU7. procedure for connecting, setting up and operating different type of instruments

KU8. environmental requirements along with specified limits and their impact on calibration quality

KU9. standard environmental conditions to be maintained in the laboratory

Generic Skills (GS)

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

GS1. read and write formats and checklist for workplace readiness, emails and messages in preferred language

GS2. analyse and collect product/instrument/system literature, working practices, safety information and manuals relevant for the job

GS3. communicate site conditions and issues to management, co-workers and supervisors

GS4. complete the job within the time frame as per the agreement

GS5. prioritise daily activities for the upkeep of calibration environment and instruments by ensuring availability of the calibration setup and its components

GS6. analyse the requirements of the customer and suggest most appropriate solution

GS7. provide support to the customers when they need help

GS8. analyse the problem, risks and opportunities to evaluate and suggest an optimum/best possible solution(s) for mitigation and business optimisation

GS9. identify immediate or temporary solutions to resolve delays

GS10. use existing information to arrive at actionable decision points for improving customer satisfaction

GS11. apply, analyse and evaluate the information gathered from observation, experience, reasoning or communication, as a guide for thought and action

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Maintain workplace cleanliness	**5**	**2**	-	-
PC1. perform workplace checks as prescribed by checklists and organisational norms and report any deviations	2	2	-	-
PC2. check for cleanliness of work area and equipment	2	-	-	-
PC3. organise activities to ensure an uncluttered workplace	1	-	-	-
Ensure vibration norms are followed	**5**	**7**	-	**4**
PC4. check / feel for any abnormal vibrations generated by central air conditioning plants, vehicular traffic and other sources	1	2	-	1
PC5. assess the source of vibration in case it is felt	1	1	-	1
PC6. check if special/ protective devices such as vibration free tables and pillars, etc., isolating the equipment from the floor, are affected in any way	1	2	-	-
PC7. report any deviations or findings to the supervisor and the concerned department	1	-	-	1
PC8. implement closure of calibration operation in case vibration is above specified limit as per the organisation's SOP	1	2	-	1
Ensure acoustic noise norms are followed	**4**	**4**	-	-
PC9. check / listen for any abnormal noise in the calibration area, refer to SOP for acceptable noise level—usually less than 60dba	1	-	-	-
PC10. assess the source of vibration in case felt	1	2	-	-
PC11. report any deviations and findings to the supervisor and the concerned department	1	2	-	-
PC12. implement closure of calibration operation in case noise is above specified limit as per the organisation's SOP	1	-	-	-
Ensure lighting environment norms are followed	**3**	**4**	-	-
PC13. check for lighting/ associated electrical equipment at electrotechnical calibration installation area; the recommended level of illumination is 250- 500 Lux on the working table, or as specified in the SOP	1	2	-	-
PC14. check for temporary/unsafe electrical wiring	1	2	-	-

PC15. report any deviations to the electrical department	1	-	-	-
Ensure EMI/EMC norms are followed	**4**	**8**	**-**	**1**
PC16. check that the norms specified in SOP are observed for intensity and location of magnetic field sources, such as transformers, looped wires, ferrous materials, etc., in order to minimise magnetic interference in the measurements—especially for magnetic measurements such as inductor, transformers, etc.	1	2	-	-
PC17. check that EMI/EMC norms are observed as per SOP	2	4	-	1
PC18. report any deviations to the concerned department	1	2	-	-
Inspect earthing and ground isolation	**3**	**4**	**-**	**1**
PC19. ensure earthing norms are observed for mains as per SOP in accordance with relevant specification, IS:3043; general standards are earth resistance less than 1 ohm and earth to neutral voltage less than 1 volt	2	4	-	1
PC20. report any deviations to the concerned department	1	-	-	-
Ensure optimal quality of power supply and THD	**7**	**12**	**-**	**2**
PC21. ensure that the power supply, usually from a UPS, is of right quality (voltage, frequency, THD, transients, regulation, etc.) as specified in SOP	2	4	-	1
PC22. check that any installed isolation transformers, filters, etc. are not tampered with and the hum interference is within limits	2	4	-	1
PC23. assess the operation of heavy loads in the premises or nearby locations to ensure it does not cause any dip in voltage or transient currents	2	2	-	-
PC24. report any deviations to the concerned department	1	2	-	-
Comply with dust and external air pressure norms	**2**	**2**	**-**	**1**
PC25. inspect the laboratory to ensure it is free from dust and external air pressure and positive air pressure is normally maintained inside the laboratory to avoid ingress of dust	1	2	-	1
PC26. report any deviations to the concerned department	1	-	-	-

Demonstrate safety precautions	**3**	**5**	**-**	**-**
PC27. check for availability of suitable fire extinguishing equipment as per SOP for possible fire hazards in the laboratory	1	2	-	-
PC28. follow procedure to become familiar with method of giving treatment in case of electric shock; wall chart showing the procedure should be placed near the power supply switchgear and at other prominent places, as prescribed under Indian Electricity Rules 1956	1	3	-	-
PC29. report any deviations to the concerned department	1	-	-	-
Inspect the calibration instruments and system	**2**	**2**	**-**	**1**
PC30. check for availability of instruments in the Electrotechnical Metrology Calibration setup	1	2	-	-
PC31. check for availability of electrical power and its quality (whether UPS backed and its voltage and frequency) as specified in the SOP	1	-	-	1
Comply with workplace operational guidelines	**2**	**-**	**-**	**-**
PC32. work with equipment in recommended and safe manner	1	-	-	-
PC33. use hand gloves of specified material for handling the UUC	1	-	-	-
NOS Total	**40**	**50**	**-**	**10**

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National Occupational Standards (NOS) Parameters

NOS Code	IAS/N5001
NOS Name	Prerequisites for electrotechnical calibration
Sector	Instrumentation Automation Surveillance and Communication
Sub-Sector	Instrumentation and Automation
Occupation	Testing & QA
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	
Next Review Date	
NSQC Clearance Date	

IAS/N5002: Calibration of electrotechnical parameters

Description

This OS unit is about calibration of a range of AC/DC voltage sources, current sources, function generators and similar instruments, such as passive resistors, inductors and capacitors (R, L, C)—either as single components or as a combination such as decade boxes and temperature simulators.

Scope

This unit/task covers the following:

- Perform calibration activities
- Calculate electrotechnical parameters

Elements and Performance Criteria

Perform calibration activities

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

PC1. identify the method of calibration, as requested in the Job Order, of different parameters such as AC/DC voltage sources, AC/DC current sources, function generators and other similar instruments, etc.

PC2. identify the comparison methods to be used (such as Difference Method, Null Method, Substitution Method, Direct/Automated Method etc.)

PC3. create an observation sheet and record the details of the UUC (company name, lab reference number, type, make, model, serial number, date, time, technician's name, etc.) as per the standard form/format specified in the SOP

PC4. ensure that while performing calibration to achieve Calibration and measurement capability (CMC), Test uncertainty Ratio (TUR) of preferably 3:1 must be followed

PC5. verify that the UUC is defect-free, i.e. it has no sign of physical damage, has readable markings, is clean

PC6. identify the reference instruments and components (i.e. divider, Digital multimeter, Oscilloscope, Multifunction Calibrator etc.) to use for the parameter measurements and ensure their functionalities

PC7. connect the reference equipment, the UUC and any other accessories as per the recommended configuration norms and method of calibration

PC8. select appropriate functions, parameters and range for the reference equipment and UUC

PC9. set up the recommended automation environment, if the measurements are automated, enable the software and enter the required configuration parameters as per the SOP documents

PC10. observe and record the readings of ambient temperature and relative humidity using recommended devices before calibration

PC11. ensure the reference equipment and the UUC has stabilised after calibration, as recommended by the manufacturer or the SOP

PC12. use hand gloves of specified material and any other handling SOP specified for handling the Unit Under Calibration (UUC)

Calculate electrotechnical parameters

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

PC13. identify parameters to measure, calculate the chosen parameters for the number of times as specified in the SOP document using the UUC and reference instruments and record the readings/observations of each calculation

PC14. perform the required calibration steps in a sequence and in case the measurements are automated, then ensure that the steps monitored on the HMI (computer display) are occurring as per SOP

PC15. use appropriate software/application for recording readings and messages in case of automated calculations of parameters

PC16. calculate the value of parameters from the true value by taking temperature and humidity error into account

PC17. select the calculation equation(s) for the type of calibration to be performed after referring to the SOP and the appropriate NOS

PC18. use the form/format specified in the SOP for performing calculations and recording observations

PC19. perform the required calculations using calculator (manually) or software (automated) as specified in the SOP for specific parameters

PC20. perform Type 'A' and Type 'B' uncertainty calculations based on measurement data as per SOP (estimation of measurement uncertainty such as U1 Uncertainty reported in the calibration certificate of the standard(s) / master(s), U2 Uncertainty arising from stability data of the measurement standard(s) / master(s) used for calibration, U3: Uncertainty from the resolution of the UUC, and so on)

PC21. record the results of calculations, including uncertainty, in the specified format

PC22. prepare post-calibration report in the format specified in the SOP and share the report with the designated persons/supervisor

PC23. return the reference instruments and accessories to their recommended storage conditions and positions

PC24. return the UUC to its recommended storage condition

PC25. fix/attach any recommended tag/markings on the UUC to signify that its calibration has been done

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organisation's SOPs for various calibrations performed

KU2. the requirements of maintaining environment and workplace properly for calibration operation and how this impacts the calibration readings and calculations

KU3. optimum calculation values for various parameters and instruments

KU4. UUC's optimum condition and values

KU5. how to follow the SOPs rigorously and takes guidance from the calibration supervisor when in doubt

KU6. how to records any non-compliance with the SOP, report it to the calibration supervisor and take guidance

KU7. electrotechnical calibration process and its impact on calibration accuracy

KU8. different calibration methods

KU9. the sources of errors in the calibration process, how these can be avoided and their impact on calibration accuracy

KU10. various calibration techniques, requirements, environments and tracing instruments

KU11. electrotechnical devices, their types, source of inaccuracies and equipment needed

KU12. how to derive calibration results—data processing and interpretation

Generic Skills (GS)

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

GS1. record data in formats and checklist for electrotechnical calibration and reports

GS2. report for scheduled tasks, discrepancies and exceptions as per the organizational hierarchy and procedure

GS3. understand the company policy related to electrotechnical calibration environment, processes and equipment handling

GS4. identify the terminology, symbols, codes, standards, methods and common practices related to electrotechnical calibration

GS5. identify the data processing steps, uncertainty calculations and reporting of results related to electrotechnical calibration

GS6. consult with supervisor for calibration details and specific information about the UUC

GS7. prioritise daily tasks and batches of calibration efficiently and effectively to meet client and company needs

GS8. diagnose reasons for any down time in the calibration setup, provide possible solutions and discuss with the supervisor

GS9. think through the problem, risks and opportunities to evaluate the possible solution(s) and suggest an optimum /best possible solution(s) for mitigation and business optimisation

GS10. identify immediate or temporary solutions to resolve delays and discuss with the supervisor

GS11. use the existing information to arrive at actionable decision points for improving customer satisfaction

GS12. apply, analyse and evaluate the information gathered from observation, experience, reasoning or communication, as a guide for thought and action

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Plan and prepare for calibration	**20**	**25**	**-**	**5**
PC1. identify the method of calibration, as requested in the Job Order, of different parameters such as AC/DC voltage sources, AC/DC current sources, function generators and similar instruments, passive resistors, inductors and capacitors (R, L, C), either as single components or as a combination such as decade boxes and temperature simulators	1	-	-	-
PC2. prepare observation sheet (use a standard form/format as specified in the SOP) appropriate for the method	1	2	-	-
PC3. record in the observation sheet the details of the UUC (requesting company name, lab reference number, type, make, model, serial number, date, time, technician's name, etc.)	2	2	-	-
PC4. verify that the UUC is in good shape (i.e., no physical damage, readable markings, clean)	1	-	-	-
PC5. record all parameters to be measured for the requested calibration (voltage, frequency, phase, THD, modulation, IMD, etc.), parameter ranges to calibrate and the number of readings to be taken for each parameter	1	3	-	1
PC6. identify the reference instruments and components (i.e., divider, etc.) to use for the parameter measurements	1	2	-	1
PC7. verify that the RI are available and are in good shape (i.e., usable for calibration and with valid certificates)	1	2	-	-
PC8. verify that the measurement environment is appropriate for the reference instruments	2	2	-	1
PC9. connect the reference equipment, the UUC and any other accessories according to the recommended configuration and the method of calibration and switch on the reference equipment and the UUC	2	4	-	1
PC10. select appropriate functions, parameters and range for the reference and the UUC	2	2	-	-
PC11. set up the recommended automation environment if the measurements are automated, enable the software and enter the required configuration parameters as per the SOP	2	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. record readings of ambient temperature and relative humidity using recommended devices	2	2	-	-
PC13. allow the reference equipment and the UUC to stabilise, as recommended by the manufacturer or the SOP	2	2	-	-
Perform measurements	**9**	**8**	**-**	**1**
PC14. select a parameter from the list of parameters to measure	1	-	-	-
PC15. measure the chosen parameter using the reference instrument and record the reading	2	3	-	-
PC16. measure the chosen parameter using the UUC and record the reading	2	3	-	-
PC17. repeat steps 15 and 26 for a number of times, as specified in the SOP, record all readings, select the next parameter and repeat steps of measurement till all parameters are covered	2	-	-	-
PC18. check that the required steps are happening in a sequence if the measurements are automated; the steps can be monitored on the HMI (computer display). If prompted by the software, provide appropriate response	1	-	-	-
PC19. record readings of ambient temperature and relative humidity after taking measurements using recommended devices	1	2	-	1
Perform calculations and prepare report	**8**	**17**	**-**	**3**
PC20. select the equation for the type of calibration to be performed after referring to the SOP and the appropriate NOS	1	-	-	-
PC21. use the form/format specified in the SOP for performing calculations	1	2	-	-
PC22. perform the required calculations using calculator or software as specified	1	3	-	-
PC23. perform Type 'A' uncertainty calculations based on measurement data as per SOP	1	4	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. perform Type 'B' components for uncertainty calculations as per SOP. The following Type 'B' components are necessarily considered as a minimum for estimation of measurement uncertainty: a. U1: Uncertainty reported in the calibration certificate of the standard(s) / master(s) b. U2: Uncertainty arising from stability data of the measurement standard(s) / master(s) used for calibration c. U3: Uncertainty from the resolution of the device/UUC d. U4: Uncertainty due to accuracy of the device/UUC e. U5: Uncertainty due to other influential factors such as temperature, humidity variation, etc. affecting the measurements.	2	4	-	1
PC25. record the results, including uncertainty, in the specified format	1	2	-	1
PC26. prepare report in the format specified in the SOP and share the report with the designated persons	1	2	-	-
Restore the reference instruments and UUC	**3**	**-**	**-**	**1**
PC27. return the reference instruments and accessories to their recommended storage condition and position	1	-	-	-
PC28. return the UUC to its recommended storage condition	1	-	-	-
PC29. fix/attach any recommended tag/markings on the UUC to signify that its calibration has been done	1	-	-	1
NOS Total	**40**	**50**	**-**	**10**

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National Occupational Standards (NOS) Parameters

NOS Code	IAS/N5002
NOS Name	Calibration of electrotechnical parameters
Sector	Instrumentation Automation Surveillance and Communication
Sub-Sector	Instrumentation and Automation
Occupation	Testing & QA
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	
Next Review Date	
NSQC Clearance Date	

IAS/N5003: Preventive maintenance and task reporting

Description

This unit is about conducting regular preventive maintenance, reporting and record keeping activities of the calibration setup.

Scope

This unit/task covers the following:

- Perform visual checks and preventive maintenance on calibration setup and equipment
- Record observations and report anomalies

Elements and Performance Criteria

Perform visual checks and preventive maintenance on calibration setup and equipment

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

PC1. prepare a list of devices and instruments to check

PC2. inspect/visually check the calibration setup for system health using SOP of the organisation, and list observations and further actions needed, if any

PC3. inspect calibration gauges, instruments and accessories for any zero errors, ageing effects, rusting, burrs, stains, foreign objects, missing or loose screws or any other visible deficiency

PC5. check validity of calibration certificate for all reference instruments, equipment and accessories

PC6. perform regular maintenance activities for tools, equipment and accessories, such as cleaning, greasing and tightening of screws, etc., as per recommended procedure in the SOP

Record observations and report anomalies

PC7. create and record date of calibration, next review date for calibration and observations in the preventive maintenance schedule list of calibration setup and equipment

PC8. record and notify the supervisor about the observations and faults/issues in the corrective maintenance list for equipment which is beyond repair and restoration and requires replacement

PC9. record the completed task in logbook, or another document, as defined by the SOP

PC11. report any break-in, tampering or theft that has caused physical damage to the calibration setup to the supervisor

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. preventive maintenance norms as defined by the company

KU2. scope of work for maintenance

KU3. maintenance policy of the company with respect to calibration strategy

KU4. troubleshooting of instruments and equipment

KU5. how to use calibration manuals when required

KU5. authorised cleaning solvents, greases and approved cleaning tissues/cloth/fibre for maintenance activities in the specified quantities

Generic Skills (GS)

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

GS1. identify the formats and checklist for preventive maintenance planning and reports

GS2. write and read emails and messages about maintenance related issues

GS3. read company policy related to preventive maintenance

GS4. describe condition of control valves and accessories and notify co- workers and supervisor about any issues

GS5. communicate to the co-workers, supervisor and management in meetings about maintenance issues and limitations which need management attention

GS6. prioritise daily tasks and batches of calibration efficiently and effectively to meet client and company needs

GS7. diagnose reasons for any downtime in the calibration setup and provide possible solutions

GS8. use the existing information to arrive at actionable decision points for improving customer satisfaction

GS9. consult calibration supervisor on how to measure the required parameters in case of any discrepancy

GS10. apply, analyse and evaluate the information gathered from observation, experience, reasoning or communication to help in maintenance activities

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Perform visual checks and action	**20**	**25**	**-**	**6**
PC1. prepare a list of devices and instruments for preventive maintenance	2	3	-	1
PC2. carry out visual checks for system health check using SOP of the organisation, and list observations and actions needed, if any	2	3	-	1
PC3. check for any damaged cable, broken plug/socket and leakage current in all electrical/electronic instruments	2	3	-	1
PC4. check validity of calibration certificate for all reference instruments, equipment and accessories	2	3	-	1
PC5. check calibration instruments, meters and accessories for proper operation over their range	5	5	-	1
PC6. check all environmental parameters for compliance with SOP norms such as stray magnetic field, EMI/EMC, power source quality etc..	5	5	-	1
PC7. consult calibration supervisor for guidance on how to measure the required parameters and whom to report issues as per SOP	2	3	-	-
Complete preventive maintenance schedule	**8**	**12**	**-**	**1**
PC8. perform corrective action for the listed items as per recommended procedure in the SOP	2	3	-	-
PC9. work without tampering with any reference instrument or device, or making any adjustments - this must be done by an authorised calibration agency having due certification	2	3	-	-
PC10. prepare preventive maintenance schedule list of electrotechnical calibration setup and accessories	2	3	-	1
PC11. prepare corrective maintenance list and add to the list if the preventive maintenance procedure does not restore the device to the required condition	2	3	-	-
Perform task reporting	**12**	**13**	**-**	**3**
PC12. record the completed task in logbook or another document as defined by the SOP	2	3	-	1
PC13. report faults/issues to immediate supervisor	2	2	-	-
PC14. perform entry of preventive maintenance check lists/reports	2	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. report any visible changes in the Electrotechnical Calibration setup or its accessories to the supervisor	2	2	-	-
PC16. report any theft in the Electrotechnical Calibration setup to the supervisor	2	2	-	-
PC17. report any suspicious movement of new persons near the Electrotechnical Calibration setup to security and supervisor	2	2	-	1
NOS Total	**40**	**50**	**-**	**10**

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N5003
NOS Name	Preventive maintenance and task reporting
Sector	Instrumentation Automation Surveillance and Communication
Sub-Sector	Instrumentation and Automation
Occupation	Testing & QA
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	
Next Review Date	
NSQC Clearance Date	

IAS/N9001: Work effectively with teams

Description

This NOS unit is about working co-operatively with people and groups inside and outside the organisation, using skills to achieve the team goals and objectives, and showing respect towards all customs, preferences as well as people with disability and different genders

Scope

This unit/task covers the following:

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

Elements and Performance Criteria

Work as per the organisational team environment

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

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

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

PC3. build trust and mutual respect

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

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

Communicate effectively

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

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

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

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

Co-operate with team members and superiors

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

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

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

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

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

Respect customs / preferences and gender / ability differences

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

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

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

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

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

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

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

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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

KU2. organisation's hierarchy and escalation matrix

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

KU4. work area inspection procedures and practices

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

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

KU7. knowledge of gender-based concepts, issues and legislation

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

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

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

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

Generic Skills (GS)

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

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

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

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

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

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

GS6. listen effectively and orally communicate information

GS7. ask for clarification and advice from the concerned person

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

GS9. plan and organise work to achieve targets and deadlines

GS10. understand real needs of the customer and suggest most appropriate solution

GS11. support customer when needed

GS12. match symptoms of the fault noticed to the cause of the problem

GS13. anticipate and avoid hazards that may occur during repairs because of tools, materials used or repair processes

GS14. spot process disruptions and delays

GS15. practice and acceptance of gender and its concepts

GS16. develop empathy across genders and towards PwD

GS17. reflect on own gender identity, gender roles and PwD issues

GS18. engage and participate in discussions to end gender and disability discrimination

GS19. improve and modify work practices

GS20. maintain positive and effective relationships with colleagues and customers

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Work as per the organisational team environment	**15**	**8**	**-**	**5**
PC1. Identify team objectives and goals, team members by name, their role and responsibilities, greet them appropriately and respond to their greetings	4	4	-	-
PC2. comply with organisation's policies and procedures for working with team members within and outside the organisation—especially related to privacy, confidentiality and security	4	-	-	2
PC3. work as per the environment to build trust and mutual respect	2	-	-	1
PC4. participate in decision making by providing facts and figures, give / accept constructive suggestions, take initiatives to help team members arrive at workable decisions and meet the goals	4	4	-	1
PC5. accept decisions professionally and support even if they do not match suggestions and personal views	1	-	-	1
Communicate effectively	**6**	**10**	**-**	**1**
PC6. communicate professionally as per organisation's protocols, using appropriate mode of communication—verbal, written, mail, phone or text—and clearly articulate the message to ensure that the receiver understands the message	2	6	-	1
PC7. listen to team members attentively, respond promptly, seek / provide clarifications if required	2	-	-	-
PC8. share important information with the team timely and refrain from overloading them with unnecessary and unsolicited information	2	4	-	-
Co-operate with team members and superiors	**8**	**18**	**-**	**1**
PC9. perform own role, receive inputs from others and make adjustments within permissible rules as per requirement, to produce output in time for other team members to follow	2	6	-	-
PC10. help team members to perform their role effectively and provide any clarifications/support they need, including tools /equipment / common resources as well as resolve any contentious issues amicably, involving the team lead or the supervisor if needed	-	6	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. let team members know in good time if commitments cannot be carried out, explaining the reasons, and provide alternate solutions, if any; let the team lead know about this	2	-	-	-
PC12. act in the interest of the team and the organisation, take initiative to correct the wrong, seek help or escalate if needed to ensure that things do not 'fall through the gap' and team goals are achieved	4	6	-	-
Respect customs / preferences and gender / ability differences	**11**	**14**	**-**	**3**
PC13. follow organisation's policies and statutory guidelines w.r.t seeking information about others' customs / preferences, making references or comments on social customs / preferences, and refrain from hurting sentiments	2	4	-	-
PC14. accommodate team members' preferences to the extent feasible, and in case they come in the way of fulfilling team goals, discuss with the supervisor/ team leader	2	-	-	1
PC15. ensure personal behaviour, conduct and communication styles, taking gender and disability of the person into consideration	2	6	-	1
PC16. list the different types of disabilities with their respective issues and ways to help them overcome challenges	1	-	-	1
PC17. use inclusive language, verbal as well as non-verbal, irrespective of the disability and the gender of the person	2	4	-	-
PC18. ensure equal treatment for all clients, colleagues and co-workers while respecting their personal space	2	-	-	-
NOS Total	**40**	**50**	**-**	**10**

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N9001
NOS Name	Work effectively with teams
Sector	Instrumentation Automation Surveillance and Communication
Sub-Sector	Instrumentation and Automation
Occupation	Testing & QA
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	
Next Review Date	
NSQC Clearance Date	

IAS/N9002: Maintain health and safety at workplace

Description

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

Scope

This unit/task covers the following:

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

Elements and Performance Criteria

Adhere to standard safety procedures of the company

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

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

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

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

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

PC5. ensure zero accidents at work

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

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

Maintain good health and posture

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

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

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

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

Effective waste management/recycling practices

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

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

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

PC13. deposit recyclable and reusable material at identified location

Adopt learning and self-direction

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

PC14. understand importance of skill advancement and develop mastery

PC15. adapt product / service to meet success criteria

PC16. understand accountability for timely completion of tasks

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

Develop system thinking in problem solving

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

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

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

Material/Resources conservation practices

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

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

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

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

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

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

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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

KU2. company occupational safety and health policy

KU3. company emergency evacuation procedure

KU4. company's medical policy

KU5. how to maintain the work area safe and secure

KU6. how to handle hazardous materials, tools and equipment

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

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

KU9. electrical grounding practices

KU10. safety regulations and standards and how to apply these

KU11. common sources of pollution and ways to minimize it

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

KU13. usage of different colours of dustbins

KU14. waste management and methods of waste disposal

KU15. organisation's procedures for minimizing waste

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

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

KU18. seek feedback from supervisor and deal in constructive manner

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

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

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

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

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

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

KU25. efficient and inefficient utilization of material and water

KU26. basics of electricity and prevalent energy efficient devices

KU27. ways to recognize common electrical problems

KU28. common practices of conserving electricity

Generic Skills (GS)

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

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

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

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

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

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

GS6. inform co-workers about safety and health issues

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

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

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

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

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

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

GS13. use the existing information for improving customer satisfaction

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

GS15. analyse problems and identify causes and possible solutions

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

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

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

GS19. identify cause and effect of greening of jobs

GS20. record data on waste disposal at workplace

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

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

GS23. be punctual, utilize time and manage workload efficiently

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

GS25. test a hypothesis about the cause of the problem

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

GS27. record data on waste disposal at workplace

GS28. make timely decisions for efficient utilization of resources

GS29. complete statutory documents relevant to safety and hygiene

GS30. read Standard Operating Practices (SOP) documents

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

GS32. complete tasks efficiently and accurately within stipulated time

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

GS34. identify cause and effect of greening of jobs

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Adhere to standard safety procedures of the company	**13**	**12**	**-**	**5**
PC1. comply with general safety procedures and those for handling an equipment, hazardous material or tool, followed in the company	2	2	-	1
PC2. remove finger rings or any other metal objects likely to interfere with the work before working on the unit	2	4	-	-
PC3. use of safety materials such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, etc.	4	6	-	1
PC4. escalate the issue about hazardous materials or things found in the premises or any breach of safety procedure in the company	1	-	-	-
PC5. ensure zero accidents at work	1	-	-	1
PC6. avoid damage of components due to negligence in ESD procedures or any other loss due to safety negligence	1	-	-	1
PC7. participate regularly in fire drills or other safety related workshops organised by the company	2	-	-	1
Maintain good health and posture	**4**	**10**	**-**	**2**
PC8. maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials	2	4	-	1
PC9. participate in company organised health sessions such as yoga, physiotherapy or games	2	-	-	-
PC10. handle heavy and hazardous materials with care, while maintaining appropriate posture, using suitable tools and handling equipment such as trolleys, jacks and ladders	0	6	-	1
Effective waste management/recycling practices	**2**	**8**	**-**	**1**
PC11. identify recyclable and non-recyclable, and hazardous waste generated to be segregated accordingly	2	-	-	1
PC12. dispose non-recyclable waste and hazardous waste as per recommended processes	-	4	-	-
PC13. deposit recyclable and reusable material at identified location	-	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Adopt learning and self-direction	**7**	-	-	-
PC14. understand importance of skill advancement and develop mastery	2	-	-	-
PC15. adapt product / service to meet success criteria	2	-	-	-
PC16. understand accountability for timely completion of tasks	2	-	-	-
PC17. manage to express emotions in appropriate ways at workplace and understand the cause for the emotions	1	-	-	-
Develop system thinking in problem solving	**4**	-	-	-
PC18. analyse the problem accurately and communicate different possible solutions to the problem	2	-	-	-
PC19. manage to estimate the cause of the problem and validate	2	-	-	-
Material/Resources conservation practices	**10**	**20**	-	**2**
PC20. identify ways to optimize usage of material including water and electricity / energy in various tasks/activities/processes	2	2	-	-
PC21. check for spills/leakages in various tasks/activities/processes and plug them or escalate to appropriate authority	2	-	-	1
PC22. carry out routine cleaning of tools, machines and equipment	2	6	-	1
PC23. check if the equipment/machine is functioning normally before commencing work and rectify wherever required and report malfunctioning (fumes/sparks/emission/vibration/noise) or any lapse in maintenance of equipment	2	6	-	-
PC24. ensure electrical equipment and appliances are properly connected and turned off when not in use	2	6	-	-
NOS Total	**40**	**50**	-	**10**

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N9002
NOS Name	Maintain health and safety at workplace
Sector	Instrumentation Automation Surveillance and Communication
Sub-Sector	Instrumentation and Automation
Occupation	Testing & QA
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	
Next Review Date	
NSQC Clearance Date	

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down the proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training centre (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training centre based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score a minimum of 70% of % aggregate marks to successfully clear the assessment.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Recommended Pass % aggregate for QP: 70

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
IAS/N5001: Prerequisites for electrotechnical calibration	40	50	-	10	100	20
IAS/N5002: Calibration and calculation of electrotechnical parameters	40	50	-	10	100	20
IAS/N5003: Preventive maintenance and task reporting of electrotechnical calibration setup	40	50	-	10	100	20
IAS/N9001: Work effectively with teams	40	50	-	10	100	20
IAS/N9002: Maintain health and safety at workplace	40	50	-	10	100	20
Total	**200**	**250**	**-**	**50**	**500**	**100**

Acronyms

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

Glossary

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