

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY**CIRCULAR /SU/Certificate Courses/2023-24/06/2023**

It is hereby inform to all concerned that, on the recommendation of the Dean, Faculty of Commerce & Management; the Academic Council at its meeting held on 13.06.2023 has accepted the **"Certificate Courses of 1] Robotic Process-Test Engineer 2] Industrial Automation Technician and 3] Assistant-Electrician"** Under the Faculty of Commerce & Management.

This is effective from the Academic Year 2023-24 and Onwards as per appended herewith.

All concerned are requested to note the contents of this circular and bring notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.

REF.NO. SU/CC/2023-24) 3735-44

Date:- 04-07-2023.

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*Deputy Registrar,
Academic Section
Syllabus unit.*

Copy forwarded with compliments to :-

- 1] **Coordinator, AEL Entrepreneurship and Skill Development Center, Dr. Babasaheb Ambedkar Marathwada University.**
- 2] The Director, University Network & Information Centre, UNIC, with **a request to upload this Circular on University Website.**

Copy to :-

- 1] The Director, Board of Examination & Evaluation,
- 2] **The Section Officer, [B.Com. Unit] Examination Branch,**
- 3] The Section officer, [Eligibility Unit],
- 4] **The Programmer [Computer Unit-1] Examinations,**
- 5] **The Programmer [Computer Unit-2] Examinations,**
- 6] The In-charge, [E-Suvidha Kendra], Rajarshi Shahu Maharaj Pariksha Bhavan, Dr. Babasaheb Ambekar Marathwada University.
- 7] The Public Relation Officer,
- 8] The Record Keeper.

Dr. Babasaheb Ambedkar Marathwada University,

Aurangabad-431004 Maharashtra (India)

Re-accredited by NAAC with 'A' Grade in 2019

Prof. (Dr.) Sarwade W. K.

M.Com, M.B.A., Ph.D

Coordinator - AEL - Entrepreneurship

& Skill Development Center,

Dr. Babasaheb Ambedkar Marathwada
University, Aurangabad



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Ref/Coordinator/AEL/2023/

Date: 20/05/2023

To

The Dy. Registrar,

Academic Section,

Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad.



Ref.: - Proposal to be submitted in Academic Council.

Dear Sir,

Aurangabad Electrical Pvt. Ltd. And Dr. Babasaheb Ambedkar Marathwada University have entered in a Memorandum of Understanding to establish a Skill Development Centre wherein Skill based training will be provided to the students free of cost. This type of training is very important for the upliftment of student's employability skills and make them job ready. The courses introduced and run by this centre are widely recognized and demanded in the industries present in Aurangabad MIDC area and rest of the Maharashtra as well.

In the meeting held on 28 April 2023 at AEL Skill Development Centre, Aurangabad Electrical Pvt. Ltd. And representatives from Dr. Babasaheb Ambedkar Marathwada University have agreed to introduce three courses to be introduced at AEL Skill development Center.

Pl. find attached herewith the proposal of the same to be considered in Academic Council going to be held on 13 June 2023.

Thanking You,

Coordinator
AEL Entrepreneurship and
Skill Development Center

	classroom teaching, practical, laboratories required etc. 5. After completion of the classroom teaching and practical, University will arrange the assessment of students as per NSDC guidelines. 6. Students, who complete the course successfully, will get certificate from NSDC after assessment. 7. University will register AEL Skill Development Centre on NSDC website to run above mention courses and arrange Infrastructure, Teaching and Administrative staff for the same. AEL will support this Skill Development Centre financially as per criteria provided in NSDC standard guidelines.
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Sr. No.	Name of Course	Credits	Classroom Teaching Hrs.	Practical Hrs.	Total Hrs.	Amount per hour	Amount per student	Eligibility for admission
1	Robotic Process – Test Engineer	38	510	50	560	38	21,280/-	Diploma
2	Industrial Automation Technician	20	200	100	300	38	11,400/-	ITI
3	Assistant Electrician	27	310	90	400	38	15,200/-	10th

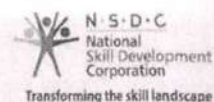
	On the basis of above mutually agreed points, we are proposing following three courses to be introduced at AEL Skill Development Centre from 2023-24 academic year. a. Robotic Process Automation – Test Engineer b. Industrial Automation Technician c. Assistant - Electrician Submitted in the academic council for approval please.  Prof. W.K. Sarwade Coordinator AEL Entrepreneurship & Skill Development Center
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Model Curriculum

Iron & Steel-Fitter: Electrical Assembly

SECTOR: IRON & STEEL
**SUB-SECTOR: STEEL, SPONGE – IRON, FERRO ALLOYS,
RE ROLLERS**
OCCUPATION: ELECTRICAL MAINTENANCE
REF ID: ISC/Q1001
NSQF LEVEL: 3



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

INDIAN IRON AND STEEL SECTOR SKILL COUNCIL

for the

MODEL CURRICULUM

Complying to National Occupational Standards of

Job Role/ Qualification Pack: 'Iron & Steel – Fitter: Electrical Assembly' QP No. 'ISC/ Q 1001 NSQF Level 3'

Date of Issuance: December 22nd, 2015

Valid up to: December 21st, 2016

* Valid up to the next review date of the Qualification Pack

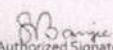

Authorized Signatory
(Indian Iron and Steel Sector Skill Council)



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Fitter: Electrical Assembly

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "Fitter: Electrical Assembly", in the "Iron & Steel" Sector/Industry and aims at building the following key competencies amongst the learner.

Program Name	Fitter: Electrical Assembly		
Qualification Pack Name & Reference ID.	Iron & Steel – Fitter: Electrical Assembly ISC/Q1001		
Version No.	1.0	Version Update Date	7-7-2016
Pre-requisites to Training	Minimum qualification – 12 th standard (Science) / ITI Pass		
Training Outcomes	After completing this programme, participants will be able to: • Prepare for assembling operation • Assemble the electrical components • Perform post - assembly activities • Carry out housekeeping • Carry out reporting and documentation • Carry out quality checks • Carry out problem identification and escalation • Use basic health and safety practices at the workplace • Work effectively with others		

This course encompasses 9 out of 9 National Occupational Standards (NOS) of "Fitter: Electrical Assembly" Qualification Pack issued by "Indian Iron & Steel Sector Skill Council".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	Over view of Iron & Steel Industry Theory Duration (hh:mm) 03:00 Practical Duration (hh:mm) 00:00 Corresponding NOS Code	• Understanding Iron & steel industry • Understanding types of Iron & Steel Industry • Understanding products of Iron & Steel industry • Activities in Iron & Steel Industry	PPTs of Iron and steel manufacturing, Charts showing the same
2	Occupational, Health and Safety (OHAS)	• Understanding the Occupational health & Safety • Understanding of work related hazards. • Documentation for Health and safety	PPTs for OHAS related to Job Role, Display Material for PPEs



Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Theory Duration (hh:mm) 08:00 Practical Duration (hh:mm) 16:00 Corresponding NOS Code ISC/N0008	- Working at Heights, confined spaces - Solutions for fire at work place	related to Job Role, Safety Material
3	5S & House keeping Theory Duration (hh:mm) 06:00 Practical Duration (hh:mm) 16:00 Corresponding NOS Code ISC/N1004	- Identification of bottlenecks in functioning of work place - Various methods of housekeeping both pre-work & post-work as well	PPTs of 5S, Display Charts of 5S, Audit Checklists of 5S
4	Hand tools, measuring instruments Theory Duration (hh:mm) 04:00 Practical Duration (hh:mm) 08:00 Corresponding NOS Code ISC/N1002, ISC/N1003	- Knowing of tools - Work wise recognition of tools - Diagnosing the common defects of tools - Using of hand tools - Using of measuring instruments	PPTs of various hand tools and display of same calibration tools & precession measuring instruments
5	Common Electrical Machines & their working in Iron and Steel Industry Duration (hh:mm) 08:00 Practical Duration (hh:mm) 16:00 Corresponding NOS Code ISC/N1002, ISC/N1003 & ISC/N1004	- Knowing following machines and understanding their workings - Motors & pumps - Compressors & Generators - Electrical Panel & EOT Cranes	Display charts and physical Motors Pumps, Compressors and Panels



Sr. No.	Module	Key Learning Outcomes	Equipment Required
6	Assembling and dismantling of common machines on the worksite Theory Duration (hh:mm) 24:00 Practical Duration (hh:mm) 115:00 Corresponding NOS Code ISC/N1002, ISC/N1003	- Understanding the engineering drawings - Prepare equipment to perform the assembling of components - Ensure material appropriateness for assembly - Ensuring housekeeping and safety on the shop floor - Proper identification of tools and tackles - Correct handling of tools and tackles - Documentation of defects and reporting's	Electrical machines display/ Drawings/ Blueprints, Tools and Equipment's, Different types of cables, switch, socket, relay, MCB, Contactors etc., Electrical machines
7	Post -Assembly Activities Theory Duration (hh:mm) 04:00 Practical Duration (hh:mm) 24:00 Corresponding NOS Code ISC/N1003	- Testing of assembled machine/equipment/electrical panels - Disposal of waste - Ensuring housekeeping and safety on the shop-floor	Lubricant and coolant
8	Carry out Housekeeping Theory Duration (hh:mm) 02:00 Practical Duration (hh:mm) 08:00 Corresponding NOS Code ISC/N1004	- Preparing for Housekeeping Activities - Carry out Housekeeping Activities - Post Housekeeping Activities	Material and Equipment for cleaning
9	Carry out reporting and documentation Theory Duration (hh:mm) 02:00 Practical Duration (hh:mm) 04:00 Corresponding NOS Code ISC/N1005	- Reporting - Documentation - Recording - Information Security	Sample Documents for reporting, documentation and recording



Sr. No.	Module	Key Learning Outcomes	Equipment Required
10	Carry out quality checks Theory Duration (hh:mm) 03:00 Practical Duration (hh:mm) 08:00 Corresponding NOS Code ISC/N1006	- Carrying out quality checks to identify problems - Take corrective actions - Reporting the result	Sample quality Controlling formats
11	Carry out problem identification and escalation Theory Duration (hh:mm) 04:00 Practical Duration (hh:mm) 08:00 Corresponding NOS Code ISC/N1007	- Identify problems across: - Materials - Products - Equipment - Others - Take corrective action - Escalation of unresolved identified problems	Sample Documents for reporting, documentation and recording
12	Use basic health and safety practices at the workplace Theory Duration (hh:mm) 04:00 Practical Duration (hh:mm) 08:00 Corresponding NOS Code ISC/N0008	- Health and safety procedures - Fire safety procedures - Emergencies, rescue and first aid procedures	PPE, Different Type of Safety Sign, First Aid Box, Safety instrument and clothing, Step Ladder, Sample Accident reports, Fire Extinguishers, Items required for fire extinguisher and fire Safety
13	Work effectively with others Theory Duration (hh:mm) 03:00 Practical Duration (hh:mm) 04:00 Corresponding NOS Code ISC/N0009	- Ensure appropriate communication with superiors, peers and others as applicable at work place - Demonstrate appropriate behaviour and etiquette at work place	Communication skills PPTs, Posters Team management posters



Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Total Duration Theory Duration 75:00 Practical Duration 235:00	Unique Equipment Required: • Sample Electrical Drawing, Blueprints, • Basic Electrician Tools and Equipment's, • Hand tools such as files, pliers etc • Precessions measuring instruments such as Micro meter, Venire calliper & various gauges • Different types of cables, switch, socket, relay, MCB, Contactors etc. • Electrical Panels and Different Machines such as motors, generators, pumps, compressors • Assembling tools Lubricant and coolant • Material and Equipment for cleaning • Sample Documents, • Sample quality Controlling formats • Personal protective Equipment's and clothes • Different Type of Safety Sign, First Aid Box, Safety instrument and clothing, • Step Ladder, Sample Accident reports , • Fire Extinguishers, • Items required for fire extinguisher and fire Safety	

Grand Total Course Duration: 310Hours, 0 Minutes

(This syllabus/ curriculum has been approved by Indian Iron and Steel Sector Skills Council)

Trainer Prerequisites for Job role: "Iron & Steel-Fitter: Electrical assembly" mapped to Qualification Pack: "ISC/Q1001"

Sr. No.	Area	Details
1	Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack "ISC/Q1001".
2	Personal Attributes	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	Minimum Educational Qualifications	Min. ITI Electrical pass and preferably passed from Craftsman Training Institute/Advanced Training Institute or Diploma Electrical
4a	Domain Certification	Certified for Job Role: "Iron & Steel -Fitter : Electrical Assembly" mapped to QP: "ISC/Q1001". Minimum accepted score is 80%.
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "SSC/1402". Minimum accepted score is 80%.
5	Experience	Min. 5 years industry experience and minimum 2 years' experience as Trained or untrained for same Job Role/ Trade



Annexure: Assessment Criteria

Assessment Criteria	
Job Role	Iron & Steel – Fitter: Electrical Assembly
Qualification Pack	ISC/Q1001
Sector Skill Council	Indian Iron & Steel Sector Skill Council

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below)
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on these criteria.
5	To pass the Qualification Pack , every trainee should score a minimum of 60% in every NOS.
6	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

Assessment outcome	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
ISC/N1001: Prepare for assembling operation	PC1. Understand assembly blueprints, engineering drawings and other specifications to identify the sequence of activities required to assemble the machine	150	10	5	5
	PC2. Read and interpret engineering drawings to ensure correct limits, tolerance and fits of equipment components		10	5	5
	PC3. Report and rectify cases of inappropriate information in design documents as per organizational procedures		7	3	4
	PC4. Identify tools and equipment required to perform the assembling of Components		5	2	3
	PC5. Collect tools required during the assembling process		4	0	4
	PC6. Ensure that tools match the desired specifications		5	2	3



Assessment outcome	Assessment criteria	Total marks	Marks allocation		
			Out of	Theory	Skills practical
	PC7. Ensure tools and equipment required for assembly are free from physical damage and ready for operation		5	2	3
	PC8. Report damaged / defective components of equipment as per the escalation matrix		8	2	6
	PC9. Ensure the calibration status of all measuring equipment and instruments		8	2	6
	PC10. Prepare the foundation base as per the job requirements i.e. cleaning using hand files, scraper etc.		10	4	6
	PC11. Use braces, jacks, clamps, ropes or bolt straps to hold parts in position		5	2	3
	PC12. Collect work pieces/ components to be assembled		4	2	2
	PC13. Ensure that each material is in the correct quantity		4	2	2
	PC14. Ensure, by visual inspection, that work pieces are of desired quality (free of rust, type of metal, etc.)		8	2	6
	PC15. Ensure that paint, grease, rust, or other contaminants are removed from work pieces		4	2	2
	PC16. Smoothen out the metal work piece prior to assembling		8	2	6
	PC17. Ensure that no delays are caused as a result of improper preparation and failure to identify problems		4	2	2
	PC18. Ensure housekeeping and safety in work area		4	0	4
	PC19. Ensure that the exhaust systems are used to maintain the concentration levels of various particulate matters remain within limits		4	0	4



Assessment outcome	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC20. Ensure use of mask during grinding to avoid inhaling the dust		4	0	4
	PC21. Ensure that the loose and torn clothes are not worn during working hours		4	0	4
	PC22. Ensure using hoist or forklift for lifting heavy materials to avoid physical injury		5	2	3
	PC23. Adhere to all other safety norms (like wearing shoes, gloves, safety goggles etc)		5	2	3
	PC24. Ensure that unpermitted materials such as fuels, paints etc are removed from the work area		5	2	3
	PC25. Comply with health, safety, environment guidelines, regulations etc in accordance with organizational SOP		5	2	3
	PC26. Identify any potential health hazards or dangers and escalate to supervisor as per organizational SOP		5	2	3
ISC/N1002: Assemble the electrical components	NOS Total Marks	Total	150	51	99
	PC1. Ensure all tools and equipment required during assembly are ready for operation	150	8	2	6
	PC2. Ensure the calibration status of all measuring equipment and instruments		8	4	4
	PC3. Prepare control cables, electrical components like MCB's, Contactors, Relays etc. as per drawing requirement		20	5	15
	PC4. Lift and move components using handling equipment such as hoist or crane or manual methods		8	2	6
	PC5. Use file, chisel and grind parts to align or level the components to be assembled as per the design/manufacturers' specifications		10	0	10



Assessment outcome	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC6. Demonstrate use of machinery such as insulation testers, multi meters, etc knife to cut or bore holes in the structure		10	0	10
	PC7. Demonstrate use of tools such as saws, cutting torches, pipe thread or benders to cut, thread or bend parts as per the specifications		14	4	10
	PC8. Fasten mechanical components/ subassemblies together using screws, bolts, and collars using hand/ power tools		11	4	7
	PC9. Set and adjust linkages, tensions and clearances of assembled components to specifications using fixed gauges and hand tools		11	4	7
	PC10. Use of wires, stripers, crimping tools and other insulated tools		5	2	3
	PC11. Ensure housekeeping and safety in work area		5	2	3
	PC12. Ensure that the exhaust systems are used to maintain the concentration levels of various particulate matters remain within limits		5	2	3
	PC13. Ensure use of mask during grinding to avoid inhaling the dust		5	2	3
	PC14. Ensure that the loose and torn clothes are not worn during working hours		5	2	3
	PC15. Ensure using hoist or forklift for lifting heavy materials to avoid physical injury		5	2	3
	PC16. Adhere to all other safety norms (like wearing electrical safety shoes, gloves, safety goggles etc.)		5	2	3
	PC17. Comply with health, safety, environment guidelines, regulations etc. in accordance with organizational SOP		5	2	3



Assessment outcome	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
ISC/N1003: Perform post - assembly activities	PC18. Identify any potential health hazards or dangers and escalate to supervisor as per organizational SOP	Total 100	5	2	3
	PC 19. Ensure use of insulated hand gloves and electrical safety shoes		5	2	3
	NOS Total Marks		150	45	150
	PC1. Connect the hydraulic, electrical and other components of the machine/electrical panels		10	3	7
	PC2. Add lubricants and coolants into moving parts as per specifications		10	3	7
	PC3. Carry out functional test of assembled machine/electrical panels to ensure it performs as per desired performance criteria		10	3	7
	PC4. Identify and rectify the problem areas during the functional tests		10	3	7
	PC5. Check the panel interlock and protection logic		10	3	7
	PC6. Dispose-off waste material as per waste disposal procedures laid down by the company		5	2	3
	PC7. Carry out disposal of waste material safely		4	2	2
	PC8. Ensure housekeeping and safety in work area		4	0	4
	PC9. Ensure that the exhaust systems are used to maintain the concentration levels of various particulate matters remain within limits		4	0	4
	PC10. Ensure that the loose and torn clothes are not worn during working hours		4	0	4
	PC11. Ensure using hoist or forklift for lifting heavy materials to avoid physical injury		4	0	4
	PC12. Adhere to all other safety norms (like wearing electrical shoes, gloves, safety goggles etc.)		4	0	4



Assessment outcome	Assessment criteria	Total marks	Marks allocation		
			Out of	Theory	Skills practical
	PC13. Remove unpermitted materials such as fuels, paints etc. from the work area		6	2	4
	PC14. Comply with health, safety, environment guidelines, regulations etc. in accordance with organizational SOP		5	2	3
	PC15. Identify any potential health hazards or dangers and escalate to supervisor as per organizational SOP		5	2	3
	NOS Total Marks	Total	100	27	73
ISC/N1004: Carry out housekeeping	PC1. Inspect the area while taking into account various surfaces	50	2	1	1
	PC2. Identify the material requirements for cleaning the areas inspected, by considering risk, time, efficiency and type of stain		2	1	1
	PC3. Ensure that the cleaning equipment is in proper working condition		2	1	1
	PC4. Select the suitable alternatives for cleaning the areas in case the appropriate equipment and materials are not available and inform the appropriate person		2	1	1
	PC5. Plan the sequence for cleaning the area to avoid re-soiling clean areas and surfaces		2	1	1
	PC6. Inform the affected people about the cleaning activity		2	1	1
	PC7. Display the appropriate signage for the work being conducted		2	1	1
	PC8. Ensure that there is adequate ventilation for the work being carried out		3	1	2
	PC9. Wear the personal protective equipment required for the cleaning method and materials being used		3	1	2
	PC10. Use the correct cleaning method for the work area, type of soiling and		2	1	1



Assessment outcome	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	surface				
	PC11. Carry out cleaning activity without disturbing others		2	1	1
	PC12. Deal with accidental damage, if any, caused while carrying out the work		2	1	1
	PC13. Report to the appropriate person any difficulties in carrying out your work		2	1	1
	PC14. Identify and report to the appropriate person any additional cleaning required that is outside one's responsibility or skill		2	1	1
	PC15. Ensure that there is no oily substance on the floor to avoid slippage		2	1	1
	PC16. Ensure that no scrap material is lying around		2	1	1
	PC17. Maintain and store housekeeping equipment and supplies		4	1	3
	PC18. Follow workplace procedures to deal with any accidental damage caused during the cleaning process		4	1	3
	PC19. Ensure that, on completion of the work, the area is left clean and dry and meets requirements		2	1	1
	PC20. Return the equipment, materials and personal protective equipment that were used to the right places making sure they are clean, safe and securely stored		2	1	1
	PC21. Dispose the waste garnered from the activity in an appropriate manner		2	1	1
	PC22. Dispose of used and un-used solutions according to manufacturer's instructions, and clean		2	1	1



Assessment outcome	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
ISC/N1005: Carry out reporting and documentation	the equipment thoroughly				
	NOS Total Marks	Total	50	22	28
	PC1. Report data/problems/incidents as applicable in a timely manner	50	5	2	3
	PC2. Report to the appropriate authority as laid down by the company		5	2	3
	PC3. Follow reporting procedures as prescribed by the company		5	2	3
	PC4. Identify documentation to be completed relating to one's role		5	2	3
	PC5. Record details accurately in appropriate format		5	2	3
	PC6. Complete all documentation within stipulated time according to company procedure		5	2	3
	PC7. Ensure that the final document meets with the requirements of the persons who requested it or make any amendments accordingly		5	2	3
	PC8. Make sure documents are available to all appropriate authorities to inspect		5	2	3
	PC9. Respond to requests for information in an appropriate manner whilst following organizational procedures		5	2	3
	PC10. Inform the appropriate authority of requests for information received		5	2	3
ISC/N1006: Carry out quality checks	NOS Total Marks	Total	50	20	30
	PC1. Ensure that total range of checks are regularly and consistently performed	150	8	3	5
	PC2. Use appropriate measuring instruments, equipment, tools, accessories etc. as required		8	3	5



Assessment outcome	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC3. Identify non-conformities to quality assurance standards		10	5	5
	PC4. Identify potential causes of non-conformities to quality assurance standards		16	6	10
	PC5. Identify impact on final product due to non-conformance to company standards		16	6	10
	PC6. Evaluating the need for action to ensure that problems do not recur		14	6	8
	PC7. Suggest corrective action to address problem		14	6	8
	PC8. Review effectiveness of corrective action		10	5	5
	PC9. Interpret the results of the operator level quality check correctly		10	5	5
	PC10. Inform any non-conformity to the appropriate authority within the stipulated time		5	2	3
	PC11. Record of results of action taken		10	5	5
	PC12. Record adjustments not covered by established procedures for future reference		10	5	5
	PC13. Review effectiveness of action taken		10	5	5
	PC14. Follow reporting procedures where the cause of defect cannot be identified		9	6	3
	NOS Total Marks	Total	150	68	82
ISC/N1007: Carry out problem identification and escalation	PC1. Identify defects/indicators of problems	100	3	0	3
	PC2. Identify any wrong practices that may lead to problems		3	0	3



Assessment outcome	Assessment criteria	Total marks	Marks allocation		
			Out of	Theory	Skills practical
	PC3. Identify practices that may impact the final product quality		3	0	3
	PC4. Identify if the problem has occurred before		2	0	2
	PC5. Identify other operations that might be impacted by the problem		2	0	2
	PC6. Ensure that no delays are caused as a result of failure to escalate problems		3	0	3
	PC7. Take appropriate materials and sample to conduct tests		7	2	5
	PC8. Evaluate results to confirm suspected reasons for non-conformance (where required)		5	2	3
	PC9. Consider possible reasons for identification of problems		4	2	2
	PC10. Consider applicable corrections and formulate corrective action		5	2	3
	PC11. Formulate action in a timely manner		5	2	3
	PC12. Communicate problem/remedial action to appropriate parties		4	2	2
	PC13. Take corrective action in a timely manner		4	2	2
	PC14. Report/document problem and corrective action in an appropriate manner		4	2	2
	PC15. Monitor corrective action		5	2	3
	PC16. Evaluate implementation of corrective action taken to determine if the problem has been resolved		4	2	2
	PC17. Ensure that corrective action selected is viable and practical		5	2	3



Assessment outcome	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC18. Ensure that correct solution is identified to an identified problem		4	2	2
	PC19. Take corrective action for problems identified according to the company procedures		5	2	3
	PC20. Ensure that no delays are caused as a result of failure to take necessary action		5	2	3
	PC21. Escalate problem as per laid down escalation matrix		4	2	2
	PC22. Escalate the problem within stipulated time		4	2	2
	PC23. Escalate the problem in an appropriate manner		5	2	3
	PC24. Ensure that no delays are caused as a result of failure to escalate problems		5	2	3
	NOS Total Marks	Total	100	36	64
ISC/N0008: Use basic health and safety practices at the workplace	PC1. Use protective clothing/equipment for specific tasks and work conditions	150	9	4	5
	PC2. State the name and location of people responsible for health and safety in the workplace		6	1	5
	PC3. State the names and location of documents that refer to health and safety in the workplace		2	1	1
	PC4. Identify job-site hazardous work and state possible causes of risk or accident in the workplace		8	4	4
	PC5. Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role		6	1	5



Assessment outcome	Assessment criteria	Total marks	Marks allocation		
			Out of	Theory	Skills practical
	PC6. State location of general health and safety equipment in the workplace		6	1	5
	PC7. Inspect for faults, set up and safely use steps and ladders in general use		6	1	5
	PC8. Work safely in and around trenches, elevated places and confined areas		6	1	5
	PC9. Lift heavy objects safely using correct procedures		6	1	5
	PC10. Apply good housekeeping practices at all times		2	1	1
	PC11. Identify common hazard signs displayed in various areas		6	5	1
	PC12. Retrieve and/or point out documents that refer to health and safety in the workplace		5	1	4
	PC13. Use the various appropriate fire extinguishers on different types of fires correctly		9	4	5
	PC14. Demonstrate rescue techniques applied during fire hazard		8	4	4
	PC15. Demonstrate good housekeeping in order to prevent fire hazards		2	1	1
	PC16. Demonstrate the correct use of a fire extinguisher		6	1	5
	PC17. Demonstrate how to free a person from electrocution		6	1	5
	PC18. Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.		8	3	5
	PC19. Demonstrate basic techniques of bandaging		6	1	5



Assessment outcome	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC20. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		7	2	5
	PC21. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments		6	1	5
	PC22. Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases		6	1	5
	PC23. Demonstrate the artificial respiration and the CPR Process		6	1	5
	PC24. Participate in emergency procedures		6	1	5
	PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible		4	1	3
	PC26. Demonstrate correct method to move injured people and others during an emergency		2	1	1
	NOS Total Marks	Total	150	45	105
ISC/N0009: Work effectively with others	PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	100	10	5	5
	PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt		10	5	5
	PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand		10	0	10



Assessment outcome	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC4. Display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible		10	5	5
	PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		10	5	5
	PC6. Display appropriate communication etiquette while working		10	0	10
	PC7. Display active listening skills while interacting with others at work		10	0	10
	PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		10	5	5
	PC9. Demonstrate responsible and disciplined behaviors at the workplace		15	5	10
	PC10. Escalate grievances and problems to		5	0	5
	NOS Total Marks	Total	100	30	70
	Grand Total	1000	1000	344	656
	Percentage Weightage:			50%	50%
	Minimum Pass% to qualify (aggregate):			60%	

Model Curriculum

Industrial Automation Technician

**SECTOR : INSTRUMENTATION AUTOMATION SURVEILLANCE &
COMMUNICATION**

SUB-SECTOR : INSTRUMENTATION & AUTOMATION

OCCUPATION : INSTALLATION & COMMISSIONING

REF ID : IAS/Q5601, V1.0

NSQF LEVEL : 4



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

INSTRUMENTATION AUTOMATION SURVEILLANCE & COMMUNICATION SECTOR SKILLS COUNCIL

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: '**Industrial Automation Technician**'
QP No. '**IAS/ Q 5601, V1.0 NSQF Level 4**'

Date of Issuance: **July 25th, 2018**

Valid up to: **July 24th, 2020**

* Valid up to the next review date of the Qualification Pack

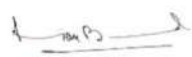

Authorised Signatory
(Instrumentation Automation Surveillance & Communication
Sector Skill Development Council)

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Industrial Automation Technician

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "Industrial Automation Technician", in the "Instrumentation Automation Surveillance & Communication Sector Skill Council" Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Industrial Automation Technician		
Qualification Pack Name & Reference ID	IAS/Q5601, v1.0		
Version No.	1.0	Version Update Date	17 th Oct. 2018
Pre-requisites to Training	ITI (Electrical, Electronics, Instrumentation) or 3 Years Diploma in (Electrical, Electronics, Instrumentation)		
Training Outcomes	After completing this programme, participants will be able to: • Identify client requirements of control panels. • Prepare installation and integration of control panel • Carryout installation of control panel • Carryout testing of control panel • Carryout integration of control panel with customer system • Carryout commissioning of control panel • Follow health and safety norms of the industry and the organization to ensure health and safety of self, others, asset and environment. • Work effectively in a team		

This course encompasses 3 out of 3 National Occupational Standards (NOS) of "Industrial Automation Technician" Qualification Pack issued by "Instrumentation Automation Surveillance & Communication Sector Skill Council".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	Introduction to Industrial Automation System and Basic Electricals and Electronics Theory Duration (hh:mm) 12:00 Practical Duration (hh:mm) 16:00 Corresponding NOS Code IAS/N5605	- Identify the components and technologies involved in a typical automation system. - Describe basic concepts of current, voltage, power factor & power, ohms law, kirchhoff's laws, line & neutral, single and three phase systems. - Identify basic electronic components viz diodes, triodes, transistors, resistors, capacitors, inductors, LEDs, thermistors etc. - Identify basic electrical components push buttons, indicating lamps, selector/key switches, limit switches, and proximity switches etc. - Identify transformers (CT/PT), voltmeter, ammeter, energy meter, terminal blocks & din rails - Describe basic concept of relays and contactors (NO/NC). - Describe the properties of shielded & unshielded cables, cable gauges & AWG sizes, IS standards for color codes & application. - Describe electrical circuits (series / parallel), star & delta connections, bus bars, line chokes & capacitors, ISA Symbols.	Laptop, white board, marker, projector, Model Control Panel with Instruments, Controllers, Devices, Sensors, Cables, Tool Set
2	Install and Commission Control Panel Theory Duration (hh:mm) 16:00 Practical Duration (hh:mm) 16:00 Corresponding NOS Code IAS/N5605	- Identify the inventory of components and sub systems received at customer location - Identify the wired / unwired control panel according to design - Carryout installation/positioning of control panel according to drawing and specifications. - Carryout cable routing and cable termination to control panel according to drawing and specification . - Carryout testing of earth quality. - Carryout connection of tested earth system to the control panel . - Carryout continuity check of all connections. - Carryout powering of control panel from correct power source (UPS or other source). - Carryout basic integrity test of the control panel for proper operation, without connecting to the customer system.	Laptop, white board, marker, projector, Model Control Panel with Instruments, Controllers, Devices, Sensors, Cables, Tool set

3	Integrating Control Panel with Customer Systems Under Guidance Theory Duration (hh:mm) 08:00 Practical Duration (hh:mm) 08:00 Corresponding NOS Code IAS/N5605	• Carryout integration with customer systems such as PLC, DCS, VFD, motor control panel, pump control panel etc. using drawing of the customer system. • Prepare plan for cable routing and related work. • Identify the shutdown requirement for the integration work in coordinate with the customer representative. • Carryout the required installation and connection to the customer system. • Demonstrate mounting of cable gland, cable end terminations and labeling etc. • Follow safety and quality standards of the industry and the organization. • Prepare report of integration work performed in a format specified by the commissioning engineer.	Laptop, white board, marker, projector, Model Control Panel with Instruments, Controllers, Devices, Sensors, Cables, Tool set, Meter sets.
4	Wiring Drawings of Control Panels Theory Duration (hh:mm) 08:00 Practical Duration (hh:mm) 16:00 Corresponding NOS Code IAS/N5605	• Demonstrate use of basic auto CAD commands. • Demonstrate editing auto CAD drawings of panel wiring. • Demonstrate creating of auto CAD drawings of panel wiring.	Laptop, white board, marker, projector, AutoCAD Software
5	Electrical Safety Theory Duration (hh:mm) 04:00 Practical Duration (hh:mm) 08:00 Corresponding NOS Code IAS/N5605	• Demonstrate correct use of rubber soled shoes, gloves and goggles. • Demonstrate the correct use of MCBs, ELCBs, fuses, SFUs • Demonstrate the correct use of earthing pit design, earthing plates & strips etc.	Laptop, white board, marker, projector, electrical safety accessories, electrical switchgear, conductivity meter, earth pit and its components
6	Tools & Equipment Theory Duration (hh:mm) 02:00 Practical Duration (hh:mm) 06:00 Corresponding NOS Code IAS/N5605	• Identify the appropriate tools and equipments viz multi-meter, tong-tester, pliers and wire stripper, power drill (drill bits), megger, shielded cable tools, LAN cable tools etc.	Laptop, white board, marker, projector, tool sets, meter sets, wires, cables, terminals, sockets, supporting infrastructure

7	Maintaining Control Panel Theory Duration (hh:mm) 04:00 Practical Duration (hh:mm) 08:00 Corresponding NOS Code IAS/N5605	• Carryout testing for continuity • Demonstrate the correct use of ferrules & cable lugs • Carryout checking the circuits • Carryout dressing the cables • Demonstrate the correct use of cable glands (single compression /double compression)	Laptop, white board, marker, projector, tool sets, meter sets, wires, cables, terminals, sockets, panels, cable tray, ferrules, cable glands, supporting infrastructure
8	Identifying Faulty Components Theory Duration (hh:mm) 08:00 Practical Duration (hh:mm) 12:00 Corresponding NOS Code IAS/N5605	• Carryout the testing of power supply, CT/PT, relays & contactors • Carryout testing of instrumentation (temperature/ RH sensors, flow meters, actuators) • Carryout testing of pushbuttons, indicating lamps & selector switches.	Laptop, white board, marker, projector, Tool sets, meter sets, wires, cables, terminals, sockets, supporting infrastructure
9	Assist in Commissioning of Control Panel Theory Duration (hh:mm) 08:00 Practical Duration (hh:mm) 12:00 Corresponding NOS Code IAS/N5605	• Demonstrate the use of appropriate tools to carry out commissioning. • Prepare user acceptance test sheet/report in the format agreed upon by the engineer and customer. • Demonstrate the use of control inputs from the panel or from the customer system • Prepare the specified observation sheet for display readings/control outputs. • Prepare the test report in the format agreed with the customer. • Prepare record of all settings, adjustments of the control panel and of the connected system to the extent relevant. • Prepare record of any connection or wiring changes to the supplied technical documents. • Create a backup of the software program running on the system, along with data, in the format specified	Laptop, white board, marker, projector

10	Health and Safety in Workplace Theory Duration (hh:mm) 04:00 Practical Duration (hh:mm) 08:00 Corresponding NOS Code IAS/N2003	• Illustrate the importance of safety and first aid. • Identify the components of a basic first aid kit, safety tools, equipments. • Administer basic first aid at the time of emergency. • Demonstrate correct use of fire extinguishers at the time of emergency. • Follow the general safety procedures as defined by the organization • Follow electrical safety measures while operating electrical tools and RF equipment • Illustrate practices for maintaining safe and secure workplace • Participate in safety drills at workplace	Laptop, white board, marker, projector, Fire Drill accessories, First Aid kit, Protective Gear, ESD accessories
11	Work Effectively With Teams Theory Duration (hh:mm) 08:00 Practical Duration (hh:mm) 08:00 Corresponding NOS Code IAS/N2105	• Coordinate effectively with team members to achieve work objectives • Communicate effectively with the team. • Demonstrate active listening skills while communicating	Laptop, white board, marker, projector, MS Office / Open office software, email, Printer
	Total Duration Theory Duration 82:00 Practical Duration 118:00	Unique Equipment Required: • Laptop, white board, marker, projector, • Model Control Panel with Instruments, Controllers, Devices Sensors, switches, indicators, pushbuttons etc. • Electrical safety accessories, Electrical switchgear, Conductivity meter, Earth pit and its components • Tool sets, Meter sets, Wires, Cables, Terminals, Sockets, Panels, Cable tray, Ferrules, Cable Glands, Supporting infrastructure • Fire Drill accessories, First Aid kit, Protective Gear, ESD accessories • AUTOCAD Software, MS Office / Open office software, email, Printer	

Grand Total Course Duration: 200 Hours, 00 Minutes

Recommended OJT Hours : 20 Hours, 00Minutes

(This Syllabus curriculum has been approved by Instrumentation Automation Surveillance & Communication Sector Skill Council of India)

Sr. No.	Area	Details
1	Description	Industrial Automation Technician is employed by System Integrators who develop control systems for industries using OEM C&I products and other bought out components. The Technician assembles and wires these in control panels; programs, tests, installs and integrates with customer systems, under guidance of the Installation Engineer. The Technician assists the Engineer in Commissioning and powering up the panel at the customer site.
2	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.
3	Minimum Educational Qualification	ITI, Preferably Diploma in (Electrical, Electronics, Instrumentation)
4a	Domain Certification	Certified for Job Role: "Industrial Automation Technician" mapped to QP: " <u>IAS/Q5601, V1.0</u> ". Minimum accepted score is 80%
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q0102". Minimum accepted score is 80%.
5	Experience	For candidates with ITI qualification, relevant experience of 3 Years. For candidates with Diploma qualification, relevant experience of 1 Year.

Assessment Criteria

Assessment Criteria	
Job Role	Industrial Automation Technician
Qualification Pack	IAS/Q5601, V1.0
Sector Skill Council	Instrumentation Automation Surveillance & Communication

Guidelines for Assessment Criteria

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

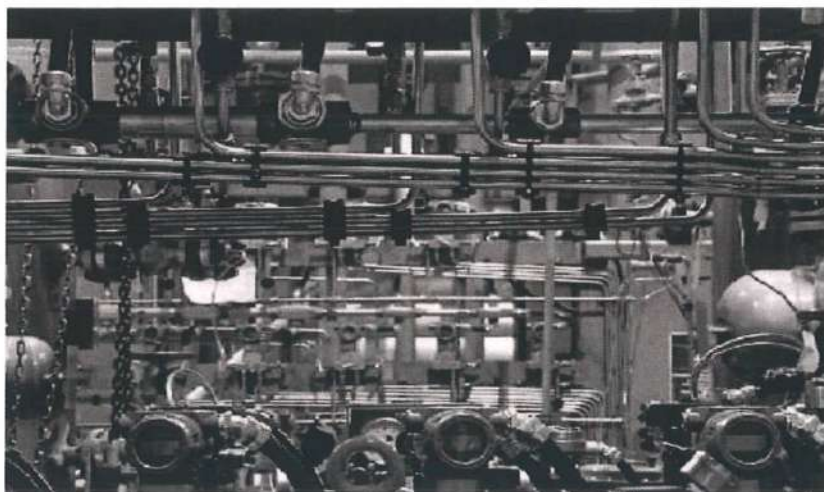
Compulsory NOS			Marks Allocation		
Assessment Outcomes	Assessment Criteria for Outcomes		Out of	Theory	Skills Practical
1.IAS/N5605 Install And Commission Control Panel	PC1. identify accurately the work requirements and delivery time schedule from authorized sources		4	1	3
	PC2. carry out micro-level planning for installation and commissioning activities		4	1	3
	PC3. clarify doubts by referring to design, drawing, job instructions and work manuals before going to the site		4	1	3
	PC4. identify tools and tackles required at the site		4	1	3
	PC5. ensure availability of control panel and tools required for installation at the site before visiting the site		4	1	3
	PC6. ensure adequacy of working space, access and maintenance facilities at the site and ensure panel fixing is proper		4	1	3
	PC7. inspect and determine any transit damage of goods and equipment		4	1	3
	PC8. prepare transit damage report accurately in the presence of customer representative and proceed as per organization SOP		4	1	3
	PC9. ensure required tools are available to carry out the installation		4	1	3
	PC10.prepare a physical verification of the equipment and accessories that are available at site as per the check list		4	1	3
	PC11.ensure that all the devices in the panel are dust free		4	1	3
	PC12.check the internal panel wiring and ensure that it is in accordance with the design drawing		4	1	3
	PC13.check insulation of internal panel wiring and devices within the panel		4	1	3
	PC14.check if batteries and chargers have been assembled in accordance with manufactures recommended procedures		4	1	3
	PC15.verify the electrical conductor's sizes and capacity for installation according to specifications		4	1	3
	PC16. ensure that panel is positioned as prescribed, following safety norms		4	1	3
	PC17.inspect the connection to socket outlets, switches and protective conductors		4	1	3
	PC18.verify and / or perform settings of various components/sub-systems of the control panels supplied as per design and customer requirements		4	1	3
	PC19.ensure that fuses, switches and other protective devices are labelled correctly		4	1	3
	PC20.prepare ground and earth the panels		4	1	3
	PC21.check for various voltage levels on charged panel, danger and warning notices, if necessary		4	2	2

	PC22. follow company approved standard procedures in erection and commissioning process		4	2	2
	PC23. use the wiring diagram to validate the accuracy of the installation to meet the specifications		4	2	2
	PC24. ensure that applicable local electrical codes and standards are used		4	2	2
	PC25. ensure that no installation damage has occurred, if there is damage to the panel while installing, prepare report and proceed as per organization SOP to rectify the damage		4	2	2
	PC26. determine the process for testing the control panel and identify requirements for connections to the customer system, by referring to the organization SOP for panel testing and instruction therein		4	2	2
	PC27. ensure cable ends, glands and terminators are properly processed		4	2	2
	PC28. ensure end to end continuity of all the cables		4	2	2
	PC29. ensure control panel is grounded properly		4	2	2
	PC30. ensure continuity of all the fuses		4	2	2
	PC31. test MCB functioning to ensure it is according to panel design		4	2	2
	PC32. check the electrical load of the control panel and verify that it is within the specification		4	2	2
	PC33. check control systems interlocks, record any faults and create rectification list		4	2	2
	PC34. check each digital control point by comparing the command at the control panel and status of the devices that it controls		4	2	2
	PC35. perform continuity check, insulation resistance, functions of all devices after completion of installation of all devices		4	2	2
	PC36. check the functional testing information to be carried out in accompaniment with client and record and document the same		4	2	2
	PC37. prepare work site test report and document for future use		4	2	2
	PC38. interact with commissioning engineer in order to understand customer system integration requirements and work schedule		4	2	2
	PC39. check the design/ drawing of the customer system to extract relevant information for integration		4	2	2
	PC40. check the location of the customer system and plan for cable routing and related work, ensuring safety and efficiency		4	2	2
	PC41. check with customer's engineer or authorized person for planned integration work and ensure availability of the system		4	2	2
	PC42. check shutdown requirement for the integration work then coordinate with the customer representative and ensure availability		3	2	1

	PC43. perform the required installation and or connection to the customer system , preferably in the presence of a customer representative		3	2	1
	PC44. ensure that cable gland mounting , cable end terminations and labelling are properly done		3	2	1
	PC45. check the cleanliness of customer system and ensure that the work area is free from any packing material or debris etc.		3	2	1
	PC46. prepare a report of integration work performed in a format specified by the commissioning engineer		3	2	1
	PC47. rectify any identified errors and retest to verify correct operation, if the fault persists, report to the engineer and seek guidance		3	2	1
	PC48. check that the required tools are available to carry out the commissioning process		3	1	2
	PC49. prepare the user acceptance test performance sheet in the format agreed upon by the engineer and customer		3	1	2
	PC50. apply the control inputs from the panel or from the customer system and record resultant readings and control outputs in the specified observation sheet		3	1	2
	PC51. achieve set productivity targets consistently		3	1	2
	PC52. maintain record of damaged components as received, damaged during installation and damaged during testing		3	1	2
	PC53. ensure compliance with health and safety guidelines and rules		3	1	2
	Total		200	80	120
2. IAS/N2105 Work effectively with Teams	PC1. Know and understand the team objectives and goals		3	1	2
	PC2. Know team members by name. Greet them appropriately and respond to their greetings.		2	1	1
	PC3. Know the roles and responsibilities of team members Ensure others know about you and your role in the team		2	1	1
	PC4. Learn about the culture and preferences of team members – especially if they belong to other organizations or nationalities		5	1	4
	PC5. Follow organization's policies and procedures for working with team members within and outside the organization – especially relating to privacy, confidentiality and security.		2	1	1
	PC6. Create an environment of trust and mutual respect		3	1	2
	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.		2	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		3	1	2

	PC9. Communicate professionally and follow organization protocols. Do not overload the team members with unnecessary and unsolicited information		4	1	3
	PC10. Share important information with the team timely.		3	1	2
	PC11. Respond to communications promptly.		3	1	2
	PC12. Perform own role and produce output in time other team members to consume		3	1	2
	PC13. Receive inputs from others and work upon it per role requirement		2	1	1
	PC14. Make adjustments within the permissible rules so that work flows smoothly.		2	1	1
	PC15. Help team members to perform their role effectively and provide any clarifications and support they need		2	1	1
	PC16. Share tools and common resources fairly, taking cognizance of others' needs and schedules		2	1	1
	PC17. Resolve any contentious issues amicably, involving the team lead or the supervisor if needed		2	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.		2	1	1
	PC19. Think positively and make constructive suggestions to meet the goals		2	1	1
	PC20. Accept and give suggestions with open mind		2	1	1
	PC21. Take initiatives and volunteer to contribute		2	1	1
	PC22. Help team members with facts and figures to arrive at workable decisions		2	1	1
	PC23. Accept decisions professionally and support these, even if these do not match your suggestions and personal views		4	1	3
	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.		4	1	3
	PC25. Take initiative to correct the situation if something seems to be going wrong.		2	1	1
	PC26. Seek help or escalate if the situation demands		2	1	1
	PC27. Follow organization's and statutory guidelines about making references or comments to social customs or preferences		2	1	1
	PC28. Refrain from making any comments to hurt sentiments		2	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.		2	1	1
		PC30. Seek information and clarifications from others if you do not understand any customs.		2	1
		Total	75	30	45

3.IAS/N2003 Health and Safety in Workplace	PC1. Comply with general safety procedures followed in the company		3	2	1
	PC2. Follow standard safety procedures while handling an equipment, hazardous material or tool		2	1	1
	PC3. Remove finger rings or any other metal objects likely to interfere with the work before working on the unit		4	2	2
	PC4. Use of safety materials such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, etc.		4	1	3
	PC5. Escalate about any hazardous materials or things found in the premises		4	1	3
	PC6. Report about any breach of safety procedure in the company		3	1	2
	PC7. Ensure zero accidents at work		5	2	3
	PC8. Avoid damage of components due to negligence in ESD procedures		4	1	3
	PC9. Participate regularly in fire drills or other safety related workshops organized by the company		5	2	3
	PC10. Ensure no loss for company due to safety negligence		4	1	3
	PC11. Maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials		4	2	2
	PC12. Participate in company organized health sessions such as yoga, physiotherapy or games		4	2	2
	PC13. Handle heavy and hazardous materials with care and using appropriate tools and handling equipment such as trolleys, jacks and ladders		4	2	2
	Total		50	20	30



Industrial Automation Technician

QP Code: IAS/Q5601

NSQF Level: 4

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/Q5601: Industrial Automation Technician

Brief Job Description

The Industrial Automation Technician is responsible for installation of control panels, integrating it with customers system and assisting the engineer in commissioning and powering up at customer site.

Personal Attributes

This job requires the individual to be organized, does logical thinking, and pays attention to details and has ability to work for long hours at customer sites in a team environment and under deadlines

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. IAS/N5605: Install and Commission Control Panel
2. IAS/N9001: Work effectively with teams
3. IAS/N9002: Health and safety in workplace

Qualification Pack (QP) Parameters

Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Primary Occupation	Installation & Commissioning
Secondary Occupation	
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL
Minimum Educational Qualification & Experience	I.T.I (Electrical, Electronics, Instrumentation) OR Diploma (Electrical, Electronics, Instrumentation)
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years

Last Reviewed On	02/05/2019
Next Review Date	01/05/2023
NSQC Approval Date	22/08/2019
Version	1.0

IAS/N5605: Install and Commission Control Panel

Description

This OS unit is about performing installation and integration of control panels at the project site with the customer system and providing assistance to the industrial automation engineer for commissioning of the system and powering up.

Scope

This unit/ task covers the following: Prepare for installation and integration of control panel Install control panel Test control panel Integrate control panel with customer system Achieve productivity, quality and safety standards as per company's norms

Elements and Performance Criteria

Prepare for installation and integration of control panel

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

- PC1.** identify accurately the work requirements and delivery time schedule from authorized sources
- PC2.** carry out micro-level planning for installation and commissioning activities
- PC3.** clarify doubts by referring to design, drawing, job instructions and work manuals before going to the site
- PC4.** identify tools and tackles required at the site
- PC5.** ensure availability of control panel and tools required for installation at the site before visiting the site

Install control panel

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

- PC6.** ensure adequacy of working space, access and maintenance facilities at the site and ensure panel fixing is proper
- PC7.** inspect and determine any transit damage of goods and equipment
- PC8.** prepare transit damage report accurately in the presence of customer representative and proceed as per organization SOP
- PC9.** ensure required tools are available to carry out the installation
- PC10.** prepare a physical verification of the equipment and accessories that are available at site as per the check list
- PC11.** ensure that all the devices in the panel are dust free
- PC12.** check the internal panel wiring and ensure that it is in accordance with the design drawing
- PC13.** check insulation of internal panel wiring and devices within the panel
- PC14.** check if batteries and chargers have been assembled in accordance with manufactures recommended procedures
- PC15.** verify the electrical conductors sizes and capacity for installation according to specifications
- PC16.** ensure that panel is positioned as prescribed, following safety norms
- PC17.** inspect the connection to socket outlets, switches and protective conductors

PC18. verify and / or perform settings of various components/sub-systems of the control panels supplied as per design and customer requirements

PC19. ensure that fuses, switches and other protective devices are labeled correctly

PC20. prepare ground and earth the panels

PC21. check for various voltage levels on charged panel, danger and warning notices, if necessary

PC22. follow company approved standard procedures in erection and commissioning process

PC23. use the wiring diagram to validate the accuracy of the installation to meet the specifications

PC24. ensure that applicable local electrical codes and standards are used

PC25. ensure that no installation damage has occurred, if there is damage to the panel while installing, prepare report and proceed as per organization SOP to rectify the damage

Test control panel

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

PC26. determine the process for testing the control panel and identify requirements for connections to the customer system, by referring to the organization SOP for panel testing and instruction therein

PC27. ensure cable ends, glands and terminators are properly processed

PC28. ensure end to end continuity of all the cables

PC29. ensure control panel is grounded properly

PC30. ensure continuity of all the fuses

PC31. test MCB functioning to ensure it is according to panel design

PC32. check the electrical load of the control panel and verify that it is within the specification

PC33. check control systems interlocks, record any faults and create rectification list

PC34. check each digital control point by comparing the command at the control panel and status of the devices that it controls

PC35. perform continuity check, insulation resistance, functions of all devices after completion of installation of all devices

PC36. check the functional testing information to be carried out in accompaniment with client and record and document the same

PC37. prepare work site test report and document for future use

Integrate control panel with customer system

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

PC38. interact with commissioning engineer in order to understand customer system integration requirements and work schedule

PC39. check the design/ drawing of the customer system to extract relevant information for integration

PC40. check the location of the customer system and plan for cable routing and related work, ensuring safety and efficiency

PC41. check with customers engineer or authorized person for planned integration work and ensure availability of the system

PC42. check shutdown requirement for the integration work then coordinate with the customer representative and ensure availability

PC43. perform the required installation and or connection to the customer system , preferably in the presence of a customer representative

- PC44.** ensure that cable gland mounting , cable end terminations and labelling are properly done
- PC45.** check the cleanliness of customer system and ensure that the work area is free from any packing material or debris etc.
- PC46.** prepare a report of integration work performed in a format specified by the commissioning engineer
- PC47.** rectify any identified errors and retest to verify correct operation, if the fault persists, report to the engineer and seek guidance
- PC48.** check that the required tools are available to carry out the commissioning process
- PC49.** prepare the user acceptance test performance sheet in the format agreed upon by the engineer and customer
- PC50.** apply the control inputs from the panel or from the customer system and record resultant readings and control outputs in the specified observation sheet *Achieve productivity, quality and safety standards as per company's norms* To be competent, the user/individual on the job must be able to:
- PC51.** achieve set productivity targets consistently
- PC52.** maintain record of damaged components as received, damaged during installation and damaged during testing
- PC53.** ensure compliance with health and safety guidelines and rules

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** hierarchy and reporting structure
- KU2.** organisation code of conduct
- KU3.** documentation policy of the organisation
- KU4.** quality and standards systems followed in the organisation
- KU5.** organisation business, locations, products, services and clients
- KU6.** organisation website, contact personnel and related details
- KU7.** organisation partners, their products and services
- KU8.** organisation sales and after-sales policies
- KU9.** engineering drawings, CAD drawings of mechanical, electro-mechanical, pneumatic and hydraulic systems
- KU10.** drawings of control panels, wiring diagrams, cable lay out, assembly instructions
- KU11.** control and instrumentation components and systems and use of related manuals
- KU12.** standard symbols, color codes, signs and warning signals
- KU13.** standards, practices and tools for wiring and assembly, including tags, ferrules cable glands, crimping
- KU14.** general principles of wiring and assembly, including cabling open and concealed
- KU15.** uses and features of motors, generators, starters and their controls
- KU16.** safety norms in handling electrical/ electronic components and electrostatic discharge
- KU17.** customer safety requirements and other applicable safety standards
- KU18.** fundamentals of electricity and magnetism such as ohms law, difference between AC and DC, series and parallel connections.

- KU19.** use and importance of protective gear such as helmets, goggles, gloves, rubber shoes etc
- KU20.** selection and maintenance of various tools used during wiring , assembly, installation and testing
- KU21.** use of tools and instruments of the trade-hand tools, drill machine, grouting crimping, soldering, filing, megger, multimeter, tong tester, power meter, pneumatic tools, hydraulic tools, micrometer, vernier caliper, measuring tape etc
- KU22.** purpose, use and features of LAN, Fiber optic, Wi-Fi connections and cables frequency occurring errors, causes, troubleshooting
- KU23.** bill of materials/bill of quantities, project plan schedule
- KU24.** use of appropriate formats, check lists and documentation
- KU25.** email, internet, computer operation, MS word, excel, data, backup, printing **Generic Skills**

(GS)

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

- GS1.** compose e-mails, letters and other official documents
- GS2.** write schedules and timelines
- GS3.** write test reports
- GS4.** read drawings, job sheets and work orders
- GS5.** read user requirements accurately
- GS6.** read technical specifications, drawings, manuals, instructions accurately
- GS7.** read standards and regulatory compliance documents accurately
- GS8.** read schedules and timelines accurately
- GS9.** discuss task lists, schedules, and work items with co-workers
- GS10.** inform progress made to customers, vendors and partners on an ongoing basis
- GS11.** communicate with customers without using jargon, slang or acronyms
- GS12.** report issues and problems to the engineer in clear terms
- GS13.** make logical decisions pertaining to the concerned area of work, resolving conflicting demands that arise with respect to customer and company, take logical decision and inform the engineer
- GS14.** plan the execution of the work and activities so that it can be finished on time and meet targets
- GS15.** make alternative plans and work-arounds in the interest of the project while meeting quality and safety needs, when faced with challenges
- GS16.** support customers when they need help
- GS17.** take actions that contribute to customer delight and create positive impression of the organization
- GS18.** take steps to handle customer situations effectively to manage customer relationships positively
- GS19.** identify linkages between building positive customer relationship and rapport, and business growth
- GS20.** think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS21.** identify immediate or temporary solutions to resolve delays
- GS22.** analyze errors to avoid repetition in future
- GS23.** improve work process and share experience

GS24. use the existing information to optimize solutions

GS25. analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, and showcase how to use it as a guide to thought and action in various work contexts

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation and integration of control panel</i>	5	15	-	-
PC1. identify accurately the work requirements and delivery time schedule from authorized sources	1	3	-	-
PC2. carry out micro-level planning for installation and commissioning activities	1	3	-	-
PC3. clarify doubts by referring to design, drawing, job instructions and work manuals before going to the site	1	3	-	-
PC4. identify tools and tackles required at the site	1	3	-	-
PC5. ensure availability of control panel and tools required for installation at the site before visiting the site	1	3	-	-
<i>Install control panel</i>	25	55	-	-
PC6. ensure adequacy of working space, access and maintenance facilities at the site and ensure panel fixing is proper	1	3	-	-
PC7. inspect and determine any transit damage of goods and equipment	1	3	-	-
PC8. prepare transit damage report accurately in the presence of customer representative and proceed as per organization SOP	1	3	-	-
PC9. ensure required tools are available to carry out the installation	1	3	-	-
PC10. prepare a physical verification of the equipment and accessories that are available at site as per the check list	1	3	-	-
PC11. ensure that all the devices in the panel are dust free	1	3	-	-
PC12. check the internal panel wiring and ensure that it is in accordance with the design drawing	1	3	-	-
PC13. check insulation of internal panel wiring and devices within the panel	1	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. check if batteries and chargers have been assembled in accordance with manufactures recommended procedures	1	3	-	-
PC15. verify the electrical conductors sizes and capacity for installation according to specifications	1	3	-	-
PC16. ensure that panel is positioned as prescribed, following safety norms	1	3	-	-
PC17. inspect the connection to socket outlets, switches and protective conductors	1	3	-	-
PC18. verify and / or perform settings of various components/sub-systems of the control panels supplied as per design and customer requirements	1	3	-	-
PC19. ensure that fuses, switches and other protective devices are labeled correctly	1	3	-	-
PC20. prepare ground and earth the panels	1	3	-	-
PC21. check for various voltage levels on charged panel, danger and warning notices, if necessary	2	2	-	-
PC22. follow company approved standard procedures in erection and commissioning process	2	2	-	-
PC23. use the wiring diagram to validate the accuracy of the installation to meet the specifications	2	2	-	-
PC24. ensure that applicable local electrical codes and standards are used	2	2	-	-
PC25. ensure that no installation damage has occurred, if there is damage to the panel while installing, prepare report and proceed as per organization SOP to rectify the damage	2	2	-	-
<i>Test control panel</i>	24	24	-	-

PC26. determine the process for testing the control panel and identify requirements for connections to the customer system, by referring to the organization SOP for panel testing and instruction therein	2	2	-	-
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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC27. ensure cable ends, glands and terminators are properly processed	2	2	-	-
PC28. ensure end to end continuity of all the cables	2	2	-	-
PC29. ensure control panel is grounded properly	2	2	-	-
PC30. ensure continuity of all the fuses	2	2	-	-
PC31. test MCB functioning to ensure it is according to panel design	2	2	-	-
PC32. check the electrical load of the control panel and verify that it is within the specification	2	2	-	-
PC33. check control systems interlocks, record any faults and create rectification list	2	2	-	-
PC34. check each digital control point by comparing the command at the control panel and status of the devices that it controls	2	2	-	-
PC35. perform continuity check, insulation resistance, functions of all devices after completion of installation of all devices	2	2	-	-
PC36. check the functional testing information to be carried out in accompaniment with client and record and document the same	2	2	-	-
PC37. prepare work site test report and document for future use	2	2	-	-
<i>Integrate control panel with customer system</i>	23	20	-	-
PC38. interact with commissioning engineer in order to understand customer system integration requirements and work schedule	2	2	-	-

PC39. check the design/ drawing of the customer system to extract relevant information for integration	2	2	-	-
PC40. check the location of the customer system and plan for cable routing and related work, ensuring safety and efficiency	2	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC41. check with customers engineer or authorized person for planned integration work and ensure availability of the system	2	2	-	-
PC42. check shutdown requirement for the integration work then coordinate with the customer representative and ensure availability	2	1	-	-
PC43. perform the required installation and or connection to the customer system , preferably in the presence of a customer representative	2	1	-	-
PC44. ensure that cable gland mounting , cable end terminations and labelling are properly done	2	1	-	-
PC45. check the cleanliness of customer system and ensure that the work area is free from any packing material or debris etc.	2	1	-	-
PC46. prepare a report of integration work performed in a format specified by the commissioning engineer	2	1	-	-
PC47. rectify any identified errors and retest to verify correct operation, if the fault persists, report to the engineer and seek guidance	2	1	-	-
PC48. check that the required tools are available to carry out the commissioning process	1	2	-	-
PC49. prepare the user acceptance test performance sheet in the format agreed upon by the engineer and customer	1	2	-	-
PC50. apply the control inputs from the panel or from the customer system and record resultant readings and control outputs in the specified observation sheet	1	2	-	-

Achieve productivity, quality and safety standards as per company's norms	3	6	-	-
PC51. achieve set productivity targets consistently	1	2	-	-
PC52. maintain record of damaged components as received, damaged during installation and damaged during testing	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC53. ensure compliance with health and safety guidelines and rules	1	2	-	-
NOS Total	80	120	-	-

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N5605
NOS Name	Install and Commission Control Panel
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Primary Occupation	Installation & Commissioning
Secondary Occupation	
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	02/05/2019
Next Review Date	01/05/2023
NSQC Clearance Date	22/08/2019

IAS/N9001: 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

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

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

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	-	-
PC11. respond to communications promptly.	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<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	-	-

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	-	-

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N9001
NOS Name	Work effectively with teams
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Primary Occupation	Generic
Secondary Occupation	
NSQF Level	4
Credits	TBD

Version	1.0
Last Reviewed Date	02/05/2019
Next Review Date	01/05/2023
NSQC Clearance Date	22/08/2019

IAS/N9002: Health and safety in workplace

Description

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

Scope

This unit/ task cover the following: Follow standard safety procedures of the company Maintain good health and posture

Elements and Performance Criteria

Follow standard safety procedures of the company and safety

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

- PC1.** comply with general safety procedures followed in the company
- PC2.** Follow standard safety procedures while handling an equipment, hazardous material or tool
- PC3.** remove finger rings or any other metal objects which may interfere with the work before working on the unit
- 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.** participate regularly 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.** company's policies on: incentives, delivery standards, and personnel management
- KU2.** company occupational safety and health policy followed
- 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.** 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.** understand real needs of the customer and suggest most appropriate solution
- GS12.** support customers when they need help
- GS13.** 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
- GS14.** use the existing information to arrive at actionable decision points
- GS15.** use the existing information for improving the customer satisfaction
- GS16.** use the existing information to optimize solution and company business
- GS17.** analyze problems and identify causes and possible solutions
- GS18.** apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action
- GS19.** anticipate problems, risks and opportunities and utilize these for mitigation and business optimization

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Follow standard safety procedures of the company and safety</i>	14	24	-	-
PC1. comply with general safety procedures followed in the company	2	1	-	-
PC2. Follow standard safety procedures while handling an equipment, hazardous material or tool	1	1	-	-
PC3. remove finger rings or any other metal objects which may interfere with the work before working on the unit	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. participate regularly 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	-	-

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	-	-

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N9002
NOS Name	Health and safety in workplace
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Primary Occupation	Generic
Secondary Occupation	
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	02/05/2019
Next Review Date	01/05/2023
NSQC Clearance Date	22/08/2019

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/N5605.Install and Commission Control Panel	80	120	-	-	200	62
IAS/N9001.Work effectively with teams	30	45	-	-	75	23
IAS/N9002.Health and safety in workplace	20	30	-	-	50	15
Total	130	195	-	-	325	100