Model Curriculum

Assistant Electrician

(NSQF Level – 3)

SECTOR:	**CONSTRUCTION**
SUB-SECTOR:	**REAL ESTATE AND INFRASTRUCTURE CONSTRUCTION**
OCCUPATION:	**CONSTRUCTION ELECTRICAL WORKS**
REF. ID:	**CON/Q0602**
NSQF LEVEL:	**3**

Skill India

N·S·D·C National Skill Development Corporation
Transforming the skill landscape

Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

CONSTRUCTION SECTOR SKILLS COUNCIL

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: 'Assistant Electrician' QP No. 'CON/Q 0602 NSQF Level 3'

Date of Issuance: December 31st, 2015

Valid up to: March 23rd, 2017

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

Authorised Signatory
(Construction Skill Development Council)

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Assistant Electrician

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "Assistant Electrician", in the "construction" Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	**Assistant Electrician**		
Qualification Pack Name & Reference ID.			
Version No.	1.0	**Version Update Date**	23–03 – 2015
Pre-requisites to Training	Minimum qualification – 10th Class		
Training Outcomes	**After completing this programme, participants will be able to:** • **Select and use hand, power tools and electrical devices relevant to construction electrical works: -** Recognising, differentiating and using electrical tools and devices appropriately in basic electrical operations • **Install temporary lighting arrangement at construction sites: -** Selection and use of light units, accessories, fixtures and tools for installing and maintaining lighting arrangements used for construction work • **Install LV electrical wiring at permanent structures: -**Identification, selection and handling of electrical fixtures, tools and materials and use them in house wiring activity. Basic electrical tests which are performed to inspect wiring • **Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site: -** Selection and use of electrical fixtures, components and tools to assemble and maintain temporary electrical panels required for construction works • **Work effectively in a team to deliver desired results at the workplace**: - Organised working procedure within a team at site • **Plan and organize work to meet expected outcomes: -** Prioritizing activities and organising resources to meet desired outcome • **Work according to personal health, safety and environment protocol at construction site: -** Importance of Health & Safety aspects & measures to be followed while working		

This course encompasses 7 out of 7 National Occupational Standards (NOS) of "Assistant Electrician" Qualification Pack issued by "Construction Skill Development Council of India".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	**Introduction to the job role - (Lecture/ description by concerned trainer)** **Theory Duration** (hh:mm) 14:00 **Practical Duration** (hh:mm) 00:00 **Corresponding NOS Code**	• Role description/ functions of the job role • Expected personal attributes from the job role • Brief description about course content, mode of learning and duration of course • Future possible progression and career development provisions on completion of the course • Electrical principles like ohm's law, ampere's law, electromagnetic field and its effects • principle of electrical current flow, fundamental terms like resistance, temperature, c/s of conductor and their relations • basic concept LV of single phase and three phase connections and their uses as per electrical voltage load • basic concept of AC and DC current generation • introduction to series, parallel and combination circuits • How to read and interpret wiring diagrams with basic symbols, manufacturer's guidelines, electrical specifications to determine use of power tools, electrical devices, measuring devices etc.	<u>infrastructural requirements</u> 1. Classroom having sitting capacity of 30 trainees 2. Blackboard 3. LCD monitor 32'' 4. Laptop
2	**Select and use hand, power tools and electrical devices relevant to construction electrical works** **Theory Duration** (hh:mm) 15:00 **Practical Duration** (hh:mm) 36:00 **Corresponding NOS Code** CON/N0602	<u>Theory: -</u> • Type of electrical hand and power tools pliers, crimping tools, electrical drill machines, cutting machines etc. and their applications such as cutting, drilling, stripping and splicing wires etc. • Type of electrical measuring tools and devices such as voltage tester, earth tester, mutimeter, digital ammeter etc. and their respective use to trace out malfunctions in electrical circuits/ connections like power interruption/ continuity, power leakage, earth leakage • Type of electrical devices like starters, relays and circuit breakers, their power ratings, working principles and use in circuits • How to read and interpret wiring symbols, SLDs, manufacturer's guidelines, electrical specifications to determine use of power tools, electrical devices, measuring devices etc.	<u>Hand Tools</u> 5. Pliers 6. Screw Drivers (set) 7. Crimping tools 8. Wire strippers 9. Neon tester <u>Measuring devices</u> 10. Ammeter 11. Voltmeter 12. Wattmeter 13. Ohmmeter 14. Digital Multimeter 15. Megger 16. Tong tester <u>Measuring Instruments</u> 17. Measuring tape 18. Spirit level 19. Marking tools <u>Power tools</u>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		• Knowledge about features of switches, fuses, resistors and various circuit protecting devices and their use in electrical circuits and connections • Knowledge about basic principle of electrical current flow, fundamental terms like voltage, resistance, temperature, cross section of conductors their units, relations and method of measurement using relevant measuring tools and their influence electrical circuits • Knowledge about ampere's law, Ohm's law, electromagnetic field and their factual relation with electrical tests • How to maintain/ store electrical tools and devices <u>Demonstration/ Practical: -</u> • Selection and use of hand and power tools for tightening electrical fixtures, electrical termination at power outlets • Selection of electrical devices such as starters, circuit breakers for installing them to circuits as per power rating • Selection of PPEs for general and electrical safety • Use of measuring instruments and hand/ power tools for measuring, cutting, bending, threading conduits/ cables • Use of wire stripping and joining tools to strip, joining/ splicing tools • Use of electrical devices to carry out basic inspections on electrical circuits like checking voltage, current flow, voltage drop, leakage through conductor etc. • Maintain/ upkeep electrical tools, devices post using as per manufacturer's guidelines	20. Drilling machine 21. Cutting machine 22. Chasing machine <u>Materials and fixtures</u> 23. Electrical distribution board 24. Electrical socket (set) 25. Tungsten bulb/ CFL/FSL bulb 26. Halogen lamp 27. wall socket 28. Simple switchboard 29. Mains breaker switch 30. Earth Leakage Circuit Breaker (ELCB) 31. Miniature Circuit Breaker (MCB) <u>PPEs & Safety Equipment</u> 32. Helmet 33. Face shield 34. Safety goggles 35. Safety shoes 36. Safety belt 37. Insulated rubber gloves 38. Ear plugs 39. Particle masks 40. Reflective jackets 41. Safety message boards 42. Fire extinguishers 43. Sand buckets <u>infrastructural requirements</u> 44. Classroom having sitting capacity of 30 trainees 45. Blackboard 46. LCD monitor 32'' 47. Laptop
3	**Install temporary lighting arrangement at construction sites** **Theory Duration** (hh:mm) 20:00 **Practical Duration** (hh:mm) 64:00	<u>Theory: -</u> • Safety norms applicable in construction sites and electrical works and use of specific PPEs • Types of cables based on insulation, phase and their use as per power rating • Types of conduits and fixtures such as switches, sockets, their selection method and respective uses in electrical works • Types of safety equipment commonly used for protection of LV wiring circuits and their area of application	<u>Consumables: -</u> 1. Single phase electrical cables of standard wire gauges 2. Conduits/ casings 3. Electrical diagram (consisting only basic wiring symbols) 4. PVC insulation tape <u>Measuring devices</u> 5. Digital Multimeter 6. Tong tester 7. Megger <u>Hand tools: -</u>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Corresponding NOS Code CON/N0603	• Standard/ safe practice of cable laying at construction sites such as through underground conduits, through poles • Types of lights units, their wattage and respective use in construction sites • Standard practices of fixing lights and their respective accessories such as ground clearance to be maintained, selection of location avoiding external damaging effects etc. • Joining of cable in 'straight through joint' method • Method of electrical termination at power outlets using appropriate fixtures • Type of faults associated with lighting arrangements • Standard procedure of shifting and installing lights and its accessories among different work locations • Type of tests to be undertaken in lighting units and its accessories such as voltage test, leakage test, power interruption/ continuity test etc. • Methods of trace out short circuits, power interruptions/ continuity using appropriate electrical devices • standard conditions for storing and stacking electrical units, materials, fixtures, tools and devices • safe procedure of erection and dismantling of temporary scaffolding, ladders or working platforms <u>Demonstration/ Practical: -</u> • Demonstrate and understand the principles of resistance • Explain series and parallel circuits • Visual checking to be carried out to electrical fixtures and materials related to lighting units to ascertain their usability as per specified acceptance criteria • Reading of electrical wiring symbols for single and three phase circuits, specifications to obtain required information for a given electrical circuit • Reading of electrical and general safety	8. Pliers 9. Screw Drivers (set) 10. Crimping tools 11. Wire strippers 12. Neon tester <u>Materials and fixtures</u> 13. Lighting units (Bulbs, Halogen sets etc.) 14. Lighting fixtures (holders, buckets, clamps, brackets etc.) 15. Circuit Breakers (MCB) 16. Power source 17. Sockets 18. Switches <u>PPEs & safety equipment's</u> 19. Helmet 20. Safety shoes 21. Safety belt 22. Insulated rubber gloves 23. Ear plugs 24. Reflective jackets 25. Safety message boards 26. Fire extinguishers 27. Sand buckets <u>infrastructural requirements</u> 28. Classroom having sitting capacity of 30 trainees 29. Blackboard 30. LCD monitor 32'' 31. Laptop

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		norms and guidelines and its implementation in electrical works • Assessment of risk involved in installation of lighting arrangements and its accessories at construction sites • Selection of cables, lights and electrical fixtures depending upon electrical load requirement • Selection of PPEs for general and electrical safety • Use of hand and power tools to fix cables, light units and its accessories • Practice of cable laying using conduits, casings and its necessity at construction sites • Joining of cable in 'straight through joint' method and use of PVC insulation tapes at broken insulation, joints as per applicability • Determination of live/ dead electrical circuits by using appropriate tools and devices • Determination of voltage, current at power outlets by using appropriate tools and devices • Method of tagging electrical cables, underground electrical conduits by standard method • Determination of power rating of electrical fixtures to be used for repairing to the electrical arrangement • Repairing of electrical lighting arrangements by undertaking tests, replacement of electrical fixtures/ materials • Methods of trace out short circuits, power interruptions/ continuity using appropriate electrical devices • Electrical principles like ohm's law, ampere's law, electromagnetic field and its effects	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
4	**Install LV electrical wiring at permanent structures** **Theory Duration** (hh:mm) 20:00 **Practical Duration** (hh:mm) 82:00 **Corresponding NOS Code** CON/N0604	Theory: - • Safety norms applicable in construction sites and electrical works and use of specific PPEs • Type of electrical hazards associated with domestic wiring work, consequence of faulty/ improper wiring works and standard safety control measures • Types of safety equipment commonly used for protection of domestic wiring circuits and their area of application • Type of electrical materials and fixtures such as conduits, raceways, brackets etc., used for domestic wiring works and their required acceptance criteria for using • Standard conduit laying and fixing procedure through brick and concrete structures • Standard practices of cable/ wire laying through conduits and tests to be done to ensure there is no breakage/ leakage from the wire • Concept of electrical earthing procedure in domestic wiring and its importance • Material, tools and equipment used for electrical earthing works • Concept of test to be performed in domestic electrical wiring works using appropriate measuring devices Demonstration/ Practical: - • Visual checking to be carried out to electrical fixtures and materials related to domestic wiring such as conduits, raceways, wires to ascertain their usability as per specified acceptance criteria • Use of measuring instruments and cutting tools such as measuring tapes, markers, cutters to cut and bend conduits • Use of hand and power tools for cutting drilling works for proper fixing of conduits and raceways • Laying electrical wires through conduits and raceways • Selection and use general and electrical safety gears	Consumables: - 1. Single phase electrical cables of standard wire gauges 2. Conduits/ casings/ raceways 3. Electrical diagram (consisting only basic wiring symbols) 4. PVC insulation tape Measuring devices 5. Digital Multimeter 6. Tong tester 7. Megger Hand tools: - 8. Pliers 9. Screw Drivers (set) 10. Crimping tools 11. Wire strippers 12. Neon tester 13. Hacksaw Power Tools: - 14. Cutting machine 15. Drill machine Measuring Instruments: - 16. Measuring tapes 17. Markers Materials and fixtures 18. Electrical earthing pole 19. GI earthing wires PPEs & safety equipment's 20. Helmet 21. Safety shoes 22. Safety belt 23. Insulated rubber gloves 24. Ear plugs 25. Reflective jackets 26. Safety message boards 27. Fire extinguishers 28. Sand buckets infrastructural requirements 29. Classroom having sitting capacity of 30 trainees 30. Blackboard 31. LCD monitor 32'' 32. Laptop

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		• Practice electrical tests like voltage drop, continuity of current flow and resistance in insulations • Practice handling and storing electrical fixtures and materials used for domestic wiring • practice of placing electrical earthing pipes and plates in to the ground • Select and use PPEs as per electrical work requirement	
5	**Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site** **Theory Duration** (hh:mm) 22:00 **Practical Duration** (hh:mm) 72:00 **Corresponding NOS Code** CON/N0605	Theory: - • Concept of safety norms applicable in construction sites and electrical works and use of specific PPEs • Concept of electrical earthing procedure in temporary panels and its importance • Specification and details of material, tools and equipment used for electrical earthing works • Safety norms applicable in construction sites and electrical works and use of specific PPEs • Types of conduits and fixtures such as switches, sockets, MCBs, wire their selection method based upon power rating and respective uses in electrical works • Method of connection temporary panel/ Distribution boards (DB) with main power outlet • Selection and use of general and electrical PPEs • Method of electrical termination at power outlets using appropriate fixtures • Type of faults associated with temporary electrical panels/ DBs and its accessories • Standard procedure of shifting and installing DBs among different work locations • Type of tests to be undertaken in temporary panels/ DBs and its accessories such as voltage test, leakage test, power interruption/ continuity test etc. • Methods of trace out short circuits, power interruptions/ continuity using	Consumables: - 1. Single phase electrical cables of standard wire gauges (assorted) 2. Temporary power switchboards (PVC/ Wooden) 3. Electrical diagram (consisting only basic wiring symbols) 4. PVC insulation tape Measuring devices 5. Digital Multimeter 6. Tong tester 7. Megger Hand tools: - 8. Pliers 9. Screw Drivers (set) 10. Crimping tools 11. Wire strippers 12. Neon tester 13. Hacksaw Power Tools: - 14. Cutting Machine 15. Drill machine Measuring Instruments: - 16. Measuring tapes 17. Markers Materials and fixtures 18. Power sockets 19. Power switches 20. MCBs 21. Plugs & tops 22. Fuses 23. Screws and nuts 24. Electrical earthing pole

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		appropriate electrical devices • standard conditions for storing and stacking electrical units, materials, fixtures, tools and devices <u>Demonstration/ Practical: -</u> • Visual checking to be carried out to electrical fixtures and materials such as cabinet/ frame, switches, sockets, circuit breakers, wires to be used for assembling temporary panel/ distribution board (DB) to ascertain their usability as per specified acceptance criteria • Selection and use of general and electrical safety gears • Determining power rating of fixtures to be used in panel/ DB • Installing electrical fixtures such as switches, sockets etc. to the panel/ DB as per their provision • Carry out connection electrical fixtures by wires within the panel/DB • Selection of cable- single/ three phase for connecting the panel to the main power source • Practice of electrical earthing of panel/DB • Connecting panel/ DB to main power source Method of termination at power source • Practice of electrical tests to be carried out to inspect proper function of panel/DB using appropriate devices • Repairing and replacement of faulty parts with respect to technical specification and power rating of the same • Preparation of reports, documents regarding repairing/ maintenance at specified formats	25. GI earthing wires <u>PPEs & safety equipment's</u> 26. Helmet 27. Safety shoes 28. Safety belt 29. Insulated rubber gloves 30. Ear plugs 31. Reflective jackets 32. Safety message boards 33. Fire extinguishers 34. Sand buckets <u>infrastructural requirements</u> 35. Classroom having sitting capacity of 30 trainees 36. Blackboard 37. LCD monitor 32'' 38. Laptop
6	**Work effectively in a team to deliver desired results at the workplace** **Theory Duration** (hh:mm) 06:00	<u>Theory: -</u> • Method of oral and written communication skills with co-workers, trade seniors while handling and carrying out visual checks on materials, electrical fixtures, lights, tools and devices • Reading and interpretation of electrical works formats, permits, protocols,	<u>infrastructural requirements</u> 1. Classroom having sitting capacity of 30 trainees 2. Blackboard 3. LCD monitor 32'' 4. Laptop

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Practical Duration (hh:mm) 10:00 **Corresponding NOS Code** CON/N8001	checklists • How to interpret scope of electrical activities, material/ tools handling by adhering to instructions or consulting with seniors • Method of providing instruction to subordinates or reporting to seniors clearly and promptly • Seek necessary support and complete assigned tasks within stipulated time duration • Keep good relation and maintain well behavior with co-workers Demonstration/ Practical: - • The skills will be developed and practiced while carrying out following trade related activities in a predictable and familiar working condition • Selection of materials, tools or devices for defined purpose under • Handling electrical material, fixtures and device • Carrying out conduit laying and cable laying • Carrying out assembling of temporary panel/ distribution board • Undertaking electrical tests by using measuring devices • Selection and handing over of desired/ appropriate tools/ materials while assisting trade senior	
7	**Plan and organize work to meet expected outcomes** **Theory Duration** (hh:mm) 05:00 **Practical Duration** (hh:mm) 10:00 **Corresponding NOS Code** CON/N8002	Theory: - • To plan electrical activities within defined scope of work • Basic concept of productivity, sequence of working and implementation of safety and organizational norms while working • Upkeep, storing and stacking methods of tools, materials used for domain specific works • Requisition of resources, reporting for requirement of resources orally and in written to concerned authority Demonstration/ Practical: -	infrastructural requirements 5. Classroom having sitting capacity of 30 trainees 6. Blackboard 7. LCD monitor 32'' 8. Laptop

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		• The skills will be developed and practiced while carrying out following trade related activities in a predictable and familiar working condition • Selection of materials, tools or devices for defined purpose in an optimum manner • Handling electrical tools, material, fixtures and device • Prioritize all works/ activities • Planning conduit laying and cable laying as per scope • Carrying out assembling of temporary panel/ distribution board • Optimum use of resources while performing task • Adherence to stipulated timelines • for completion of electrical • activities/ tasks	
8	**Work according to personal health, safety and environment protocol at construction site** **Theory Duration** (hh:mm) 08:00 **Practical Duration** (hh:mm) 16:00 **Corresponding NOS Code** CON/N9001	Theory: - • Types of hazards involved in construction sites • Types of hazards involved in electrical works • Emergency safety control measures and actions to be taken under emergency situation • Concept of: First Aid process Use of fire extinguisher Classification of fires and fire extinguisher Safety drills Types and use of PPEs as per general and electrical safety norms • Reporting procedure to the concerned authority in emergency situations • Standard procedure of handling, storing and stacking material, electrical fixtures and accessories • What is safe disposal of waste, type of waste and their disposal • Type of electrical protective devices, their power ratings and area of application • basic ergonomic principles as per applicability	PPEs & safety equipment's 9. Helmet 10. Safety shoes 11. Safety belt 12. Insulated rubber gloves 13. Ear plugs 14. Reflective jackets 15. Safety message boards 16. Fire extinguishers 17. Sand buckets infrastructural requirements 18. Classroom having sitting capacity of 30 trainees 19. Blackboard 20. LCD monitor 32'' 21. Laptop

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		Demonstration/ Practical: - • The skills will be developed and practiced while carrying out following trade related activities in a predictable and familiar working condition. • Selection of PPEs and use them appropriately as per working need of electrical operations, handling, storing, stacking and shifting of electrical fixtures, light units, tools and devices • Selection of PPEs and use them appropriately as per working need of cutting conduit, drilling in walls, termination at the main power source • Analysis of hazards involved to electrical circuits/ connections by external effects and taking necessary steps or informing to seniors • Identification of locations, situations/ circumstances, malpractices which can be hazardous for general or electrical works • Selection of fire extinguisher based on classification of fire, standard practice of storing & stacking firefighting equipment/ materials at work locations • Disposal of waste materials as per their nature and effects on weather	
	Total Duration: **Theory Duration 110:00** **Practical Duration 290:00**	**Unique Equipment Required:** screw drivers (set), wire cutters, Crimping tools, wire strippers, pliers, neon tester, hammers, hacksaws, chisels, spanners (set), wrenches, measuring tape, spirit level, plumb-bob, mason's line, ammeter, voltmeter, wattmeter, ohmmeter, digital multimeter, megger, tong tester, drilling machine, hand cutting machine, power source, source of water, electrical diagram (consisting only basic wiring symbols), electrical distribution board, electrical socket (set), tungsten bulb/ cfl/fsl bulb, halogen lamp, simple switchboard, mains breaker switch, earth leakage circuit breaker (elcb), miniature circuit breaker (mcb), cables, wires, sockets, switches, conduits (flexible and rigid), raceways, screws, nuts & bolts, lighting fixtures (holders, buckets, clamps, brackets etc.), PVC insulation tape, helmet, safety shoes, safety belt, cotton hand gloves, insulated rubber gloves, goggles, reflective jackets, safety message boards, fire extinguishers, sand buckets, message board displaying do's and don'ts at construction sites, aluminum/ GI ladder, classroom having sitting capacity of 30 trainees, blackboard, LCD monitor 32'', Laptop	

Grand Total Course Duration: 400 Hours 00 Minutes

(This syllabus/ curriculum has been approved by Construction Skill Development Council of India)

Trainer Prerequisites for Job role: "Assistant Electrician" mapped to Qualification Pack:"CON/Q0602"

Sr. No.	Area	Details
1	**Job Description**	To provide training to the trainees aspirant to become an Asst. Electrician to support civil construction activities in construction sector
2	**Personal Attributes**	Person in this job role should have sound practical and theoretical knowledge about electrical works needed to support construction activities with good interpersonal skill, communication skill of explaining and demonstrating domain subject matters. Individual should have hand on experience in field of electrical works and be familiar to the environment of construction project sites. Additionally he/ she should have observation skills to find out specific need and area of improvement of trainees and awareness of trade safety practices.
3	**Minimum Educational Qualifications**	Class 10th
4a	**Domain Certification**	Certified for Job Role: "Construction Electrician - LV" mapped to QP: "CON/N0603". Minimum accepted % as per respective SSC guidelines is 70%.
4b	**Platform Certification**	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "SSC/Q1402". Minimum accepted % as per respective SSC guidelines is 70%.
5	**Experience**	i. Technical Degree holder with minimum Five years of Field & Two years of teaching experience (At least one year each at workers and Engineers level) or, ii. In case of a Diploma Holder Ten years of field & five years of teaching experience (Three years at worker level and two years at Engineers level) having Total experience to 15 yrs. or, iii. In case of specific to trades than should have qualified the Minimum Level- 4 and have Fifteen years of field experience and Three years of Teaching experience or, iv. Graduate or Intermediate should possess at least Level – 4 Certificate and have 12 years of field experience and two years of trade teaching experience

Annexure: Assessment Criteria

Assessment Criteria for <<Job Role>>	
Job Role	Assistant Electrician
Qualification Pack	CON/Q0602
Sector Skill Council	Construction Skill Development Council of India

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 knowledge part will be based on knowledge bank of questions created by Assessment Bodies subject to approval by SSC
3	Individual assessment agencies will create unique question papers for knowledge/theory part for assessment of candidates as per assessment criteria given below
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on assessment criteria.
5	The passing percentage for each QP will be 50%. To pass the Qualification Pack, every trainee should score a minimum of 50% individually in each NOS.
6	The Assessor shall check the final outcome of the practices while evaluating the steps performed to achieve the final outcome
7	The trainee shall be provided with a chance to repeat the test to correct his procedures in case of improper performance, with a deduction of marks for each iteration.
8	After the certain number of iteration as decided by SSC the trainee is marked as fail, scoring zero marks for the procedure for the practical activity.
9	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 within the specified timeframe set by SSC.
10	Minimum duration of Assessment of each QP shall be of 4hrs/trainee.

			Marks Allocation		
Assessment outcomes	**Assessment Criteria for outcomes**	**Total Marks**	**Out Of**	**Theory**	**Skills Practical**
CON/N0602: Select and use hand, power tools and electrical devices relevant to construction electrical works	PC1. select and handle appropriate hand and power tools for establishing/ terminating electrical connections as per requirement	**100**	7	2	5
	PC2. select appropriate electrical measuring devices to examine electrical units for power interruptions/ continuity		3	1	2
	PC3. select appropriate tools and measuring devices to trace out short circuits/ faults and leakages in electrical wiring		10	3	7
	PC4. select electrical devices such as starters, circuit breakers, relays as per equipment/ wiring installation rating, current rating		3	1	2
	PC5. follow operating procedure and standards set by manufacturer while handling and using power tools and measuring devices		7	2	5
	PC6. perform basic checks on power tools prior to use		10	3	7
	PC7. use measuring instruments to measure size and dimension of wires, conduits as per electrical installation or maintenance work requirement		13	4	9
	PC8. use hand and power tools to cut, and bend wire and conduit as per electrical installation or maintenance work requirement		10	3	7
	PC9. use right tools to splice wires by stripping insulation from terminal leads and twisting wires together		7	2	5
	PC10. use appropriate hand and power tools to thread conduit ends, connect couplings, and fabricate and secure conduit support brackets		7	2	5
	PC11. use appropriate hand, power tools and diagnostic devices like digital ammeter, multimeter, tong tester, earth tester or similar devices to install, repair power connections		10	3	7
	PC12. maintain and upkeep of relevant tools and devices after use		7	2	5
	PC13. work safely as per standard practices, manufacturer's specifications and guidelines, electrical / organization safety norms while carrying out any electrical work		7	2	5
		Total	**100**	**30**	**70**
CON/N0603: Install temporary lighting arrangement at construction sites	PC1. check and select cable, conduits , lights, sockets, temporary power distribution panels at power source and other required fixtures and accessories as per manufacturer's guidelines and specification	**100**	7	2	5
	PC2. assist in /carry out laying of cables through ducts or conduits, underground or through poles (overhead) as per plans and instructions		7	2	5

			Marks Allocation		
Assessment outcomes	**Assessment Criteria for outcomes**	**Total Marks**	**Out Of**	**Theory**	**Skills Practical**
	PC3. select the type and wattage of lights considering illumination requirement at worksite and install them at secured positions		7	2	5
	PC4. fix lights and its accessories, brackets, bulkheads with screws and bolts or by other standard means, pull wires through conduit leading to connection boxes, temporary panels/ distribution boards or other temporary electrical terminals		7	2	5
	PC5. extend/ join LV electrical cable using straight through joints, splicing them together and secure joints by applying PVC insulation tapes, caps or by other safe method as and when necessary		7	2	5
	PC6. carry out termination of LV cables selecting the right method as per standard practice		7	2	5
	PC7. work safely as per electrical safety guidelines provided by manufacturer, standard safety practice or organizational safety norms while establishing or disconnecting live electrical connections		3	1	2
	PC8. upkeep of all relevant key electrical tools and fixtures		3	1	2
	PC9. tag embedded, exposed electrical lines and other key equipment appropriately		3	1	2
	PC10. repair and replace light arrangements as per instruction or requirement		7	2	5
	PC11. replace burned out bulbs, light units and ballast in light fixtures as needed		7	2	5
	PC12. carry out relevant tests to trace out power interruptions/ continuity at lighting arrangements		10	3	7
	PC13. replace damaged cable, other relevant parts as and when necessary		7	2	5
	PC14. shift light at various locations during construction activity as per requirement		7	2	5
	PC15. replace faulty circuit breakers, fuses, switches, electrical and electronic components and wire as per requirement		10	3	7
	PC16. perform preventive maintenance on diesel generators at site provided for temporary lighting (if any) at scheduled intervals as per direction of concerned authority		3	1	2
		Total	**100**	**30**	**70**

			Marks Allocation		
Assessment outcomes	**Assessment Criteria for outcomes**	**Total Marks**	**Out Of**	**Theory**	**Skills Practical**
CON/N0604: Install LV electrical wiring at permanent structures	PC1. identify and select house wiring components (such as wires, flexible and rigid conduits, PVC raceways, wooden battens, clamps etc.) according to their specification / size	**100**	7	2	5
	PC2. read and interpret single phase LV wiring diagram		10	3	7
	PC3. carry out necessary linear measurement to cut, bend, join conduits and cables and use them as per requirement or instruction		7	2	5
	PC4. lay conduit through RCC structures (slabs, beams, walls) or through chased wall (brick wall) surface as per instruction		7	2	5
	PC5. lock conduit pipe in its location by means of clamp or other standard means as per instruction		7	2	5
	PC6. pull, push wires through conduits in order to expose them at desired locations as per requirement		7	2	5
	PC7. perform drilling, cutting work as and when necessary using appropriate hand and power tools		10	3	7
	PC8. handle and shift electrical fixtures, fittings as per instructions within workplace		7	2	5
	PC9. assist in fixing of electrical fixtures and fittings as per instruction		7	2	5
	PC10. carry out termination of cables safely as per instruction		7	2	5
	PC11. carry out necessary tests to electrical circuit during and post wiring activity using appropriate tools as per direction of electrician		10	3	7
	PC12. assist in carrying out electrical earthing work by installing earthing components as per instruction		10	3	7
	PC13. work safely according to manufacturer guidelines, specification, standard electrical safety practices or organizational safety and as per direction of superior authority		7	2	5
		Total	**100**	**30**	**70**
CON/N0605: Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site	PC1. read relevant SLDs, instructions, safety guidelines, manufacturer's specifications prior to assemble temporary panel/ distribution boards	**100**	10	3	7
	PC2. select and install required fixtures like power sockets, switches, wires, MCBs of appropriate specification as per circuit load requirement		10	3	7
	PC3. ensure tightness and safe working condition of wires, fixtures prior to connect the assembly with power source		3	1	2
	PC4. connect DB to main power cable and undertake standard tests to ensure its safe and desired working		7	2	5

			Marks Allocation		
Assessment outcomes	**Assessment Criteria for outcomes**	**Total Marks**	**Out Of**	**Theory**	**Skills Practical**
	PC5. place and secure the distribution board against water, fire and other external damaging agents		7	2	5
	PC6. carry out proper termination of cables as per standard practice while connecting to the sockets of the panel		7	2	5
	PC7. carry out earthing of the panels as per standard procedure		10	3	7
	PC8. work safely as per manufacturer's guidelines, specifications, standard electrical practices or organizational safety norms whichever applicable		3	1	2
	PC9. check and ensure necessary tagging, barricading near to the live/ active electrical distribution boards		3	1	2
	PC10. carry out visual inspection of the live/ active board regularly to ensure safe working condition of all components		3	1	2
	PC11. ensure that the live connections get discontinued after completion of daily construction works in order to minimize energy wastage and enhance working efficiency of electrical units		3	1	2
	PC12. respond promptly on failure/ damage or malfunctioning of panel or any of its component		7	2	5
	PC13. carry out necessary tests in order to determine root cause of failure		10	3	7
	PC14. report, notify concerned authorities prior to shut down, deactivate or repair the electrical unit		3	1	2
	PC15. replace, repair faulty components as per SLD, instruction, safety guideline, manufacturer's specification		7	2	5
	PC16. carry out necessary documentation, keep records relevant to maintenance/repairing of panels as per organizational norms		3	1	2
	PC17. isolate the panel safely and shift to another location as and when necessary		3	1	2
		Total	**100**	**30**	**70**
CON/N8001: Work effectively in a team to deliver desired results at the workplace	PC1. pass on work related information/ requirement clearly to the team members	100	7	2	5
	PC2. inform co-workers and superiors about any kind of deviations from work		7	2	5
	PC3. address the problems effectively and report if required to immediate supervisor appropriately		10	3	7
	PC4. receive instructions clearly from superiors and respond effectively on same		7	2	5
	PC5. communicate to team members/subordinates for appropriate work technique and method		10	3	7

			Marks Allocation		
Assessment outcomes	**Assessment Criteria for outcomes**	**Total Marks**	**Out Of**	**Theory**	**Skills Practical**
	PC6. seek clarification and advice as per requirement and applicability		7	2	5
	PC7. hand over the required material, tools tackles, equipment and work fronts timely to interfacing teams		27	8	19
	PC8. work together with co-workers in a synchronized manner		27	8	19
		Total	**100**	**30**	**70**
CON/N8002: Plan and organize work to meet expected outcomes	PC1. understand clearly the targets and timelines set by superiors	**100**	7	2	5
	PC2. plan activities as per schedule and sequence		7	2	5
	PC3. provide guidance to the subordinates to obtain desired outcome		10	3	7
	PC4. plan housekeeping activities prior to and post completion of work		7	2	5
	PC5. list and arrange required resources prior to commencement of work		10	3	7
	PC6. select and employ correct tools, tackles and equipment for completion of desired work		10	3	7
	PC7. complete the work with allocated resources		10	3	7
	PC8. engage allocated manpower in an appropriate manner		10	3	7
	PC9. use resources in an optimum manner to avoid any unnecessary wastage		10	3	7
	PC10. employ tools, tackles and equipment with care to avoid damage to the same		7	2	5
	PC11. organize work output, materials used, tools and tackles deployed,		7	2	5
	PC12. processes adopted to be in line with the specified standards and instructions		7	2	5
		Total	**100**	**30**	**70**
CON/N9001: Work according to personal health, safety and environment protocol at construction site	PC1. identify and report any hazards, risks or breaches in site safety to the appropriate authorities	**100**	7	2	5
	PC2. follow emergency and evacuation procedures in case of accidents, fires, natural calamities		7	2	5
	PC3. follow recommended safe practices in handling construction materials, including chemical and hazardous material whenever applicable		10	3	7
	PC4. participate in safety awareness programs like Tool Box Talks, safety demonstrations, mock drills, conducted at site		7	2	5
	PC5. identify near miss , unsafe condition and unsafe act		7	2	5

			Marks Allocation		
Assessment outcomes	**Assessment Criteria for outcomes**	**Total Marks**	**Out Of**	**Theory**	**Skills Practical**
	PC6. use appropriate Personal Protective Equipment (PPE) as per work requirements including: • Head Protection (Helmets) • Ear protection • Fall Protection • Foot Protection • Face and Eye Protection • Hand and Body Protection • Respiratory Protection (if required)		10	3	7
	PC7. handle all required tools, tackles , materials & equipment safely		7	2	5
	PC8. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines		7	2	5
	PC9. install and apply properly all safety equipment as instructed		13	4	9
	PC10. follow safety protocol and practices as laid down by site EHS department		13	4	9
	PC11. collect and deposit construction waste into identified containers before disposal, separate containers that may be needed for disposal of toxic or hazardous wastes		7	2	5
	PC12. apply ergonomic principles wherever required		7	2	5
		Total	**100**	**30**	**70**

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