NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of08March 2016

NSDA Reference
To be added by NSDA

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

Name and address of submitting body:

West Bengal State Council of Technical & Vocational Education and Skill Development
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List of documents submitted in support of the Qualifications File

1. Curriculum and Course Content
2. MoM with Industries/ Employers to establish need of the qualification
3. Assessment strategy

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SUMMARY

Qualification Title	Electrical House Wiring and Motor Winding
Qualification Code	STC-CON/NSQF-2017/802
Nature and purpose of the qualification	Short term Certificate Course To become self-employed i.e. entrepreneurs or wage employed under electrical contractors & MSME
Body/bodies which will award the qualification	West Bengal State Council of Technical & Vocational Education and Skill Development
Body which will accredit providers to offer courses leading to the qualification	Committee on Recognition under the West Bengal State Council of Technical & Vocational Education and Skill Development
Body/bodies which will carry out assessment of learners	Board of Examination under the West Bengal State Council of Technical & Vocational Education and Skill Development
Occupation(s) to which the qualification gives access	Asst. Electrician & Motor Winder
Licensing requirements	Works Man Permit License from Directorate of Electricity, Govt. of West Bengal on completion two year experience.(License to be obtained by trainee himself/herself)
Level of the qualification in the NSQF	Level 3
Anticipated volume of training/learning required to complete the qualification	650 hours (including 150 hours of Apprenticeship training at work sites)
Entry requirements and/or recommendations	Class VIII pass
Progression from the qualification	Assistant Electrician & Motor Winder➔ Electrician & Motor Winder➔ Senior Electrician & Motor Winder
Planned arrangements for the Recognition of Prior learning (RPL)	RPL will consist of four stages 1. Counselling- To inform, advise and guide the candidates regarding RPL 2. Pre-Assessment- To assess the current competencies of the candidates and identifying the gap between the full qualification and current competencies. 3. Orientation & Bridge Training- To train the candidates for bridging the gap. 4. Final assessment & Certification- To assess the candidate for full qualification and certify.
International comparability where known	N/A
Date of planned review of the qualification.	Every 3 years

Formal structure of the qualification

After completion of course the passed out trainee can work as an Assistant Electrician and Motor winder and after two years of field experience the passed out trainee can work as an Electrician and Motor winder and after that with appropriate experience, the person can work as a Senior Electrician and Motor winder.

Title of component and identification code.	Mandatory/ Optional	Estimated size (learning hours)	Level
I. Theory **Theory component of the course is to develop relevant basic technical information & knowledge about electrical house wiring and winding of small electrical motors and basic safety norms.**	**Mandatory**	**100**	**3**
II. Practical **(a) Institutional component of Practical training of the course is to impart relevant basic technical skills to perform house wiring and motor winding (small motors) by using various tools & instruments maintaining basic safety.**	**Mandatory**	**300**	**3**
(b) Apprenticeship component of Practical training of the course is to develop competency in the real job situation with special emphasis on basic safety and hazards in electrical domain.	**Mandatory**	**150**	**3**
III. Employability Skills **Employability Skills component of the course is to impart Soft skills which include Communication Skills, Behaviour, IT literacy, Entrepreneurship Skills, Safety, Hygiene etc.**	**Mandatory**	**100**	**3**
Total (I+II+III)		**650**	

1. Curriculum Document is attached in Annexure-1.
2. Assessment Strategy Component wise distribution of marks is given in the Annexure No. 2
3. MoM attached in Annexure-3
4. Industry Validation

SECTION 1
ASSESSMENT

Body/Bodies which will carry out assessment:

Board of Examination under West Bengal State Council of Technical & Vocational Education & Skill Development, constituted under the ACT XXVI of 2013 under Department of Technical Education, Training & Skill Development, Govt. of West Bengal

How will RPL assessment be managed and who will carry it out?

RPL will consist of four stages

1. Counselling- To inform, advise and guide the candidates regarding RPL
2. Pre-Assessment- To assess the current competencies of the candidates and identifying the gap between the full qualification and current competencies.
3. Orientation & Bridge Training- To train the candidates for bridging the gap.
4. Final assessment & Certification- To assess the candidate for full qualification and certify.
   RPL assessment will be managed by PBSSD (Paschim Banga Society for Skill Development) under Department of Technical Education, Training & Skill Development, Govt. of West Bengal.

Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.

Assessment will be carried out by Board of Examination under West Bengal State Council of Technical & Vocational Education & Skill Development, under Department of Technical Education, Training & Skill Development, Govt. of West Bengal.

The Council has all necessary infrastructure and pool of qualified Assessors/ Examiners to carry out such assessments. Presently the Council is conducting all examinations for all courses which include Diploma Courses, Vocational Courses in VIII+ level and X+2 level &other Short term Courses. Council also conducts all State Level Entrance tests like JEXPO for admission to Diploma Courses in Polytechnics, VOCLET for lateral entry to Diploma Courses in Polytechnics and CET (Common Entrance Test) for admission to NCVT courses in ITIs.

Please attach any documents giving further information about assessment and/or RPL.
Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

ASSESSMENT EVIDENCE

Complete a grid for each component as listed in "Formal structure of the qualification" in the Summary.

NOTE: this grid can be replaced by any part of the qualification documentation which shows the same information – ie Learning Outcomes to be assessed, assessment criteria and the means of assessment.

Title of Component:

Outcomes to be assessed	Assessment criteria for the outcome
1. Apply safe working Practices	(1.1) Assessor will note whether the trainee is maintaining procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements according to site policy. (1.2) Assessor can judge the trainee on his ability to recognize any unsafe situations according to site policy, and assess his report accordingly. (1.3) Assessor will note whether the trainee can identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures. (1.4) Assessor will ask the trainee to demonstrate safety alarms accurately. (1.5) Assessor will assess the report/record submitted by trainee to supervisor/ Competent of authority in the event of accident or sickness of any staff, including accident details according to site accident/injury procedures (1.6) Trainee will be asked to demonstrate Personal Productive Equipment (PPE) and use the same as per related working environment. (1.7) Trainee will be asked to demonstrate basic first aid & CPR and use them under different circumstances. (1.8) Trainee will be asked to identify different fire extinguishers and to use the same as per requirement in a mock drill
2. Make electrical wire joints & soldering	(2.1) Trainee will be able to make simple straight twist and rat-tail joints in single strand conductors / married and 'T' (Tee) joint in stranded conductors. (2.2) Trainee will be able to solder and de-solder the finished copper conductor joints with precaution. (2.3) Assessor will note whether the trainee is observing safety/ precaution during joints & soldering.
3. Analyze, demonstrate and test basic electrical connection	(3.1) Trainee will be able to identify types of wires, cables and verify their specifications. (3.2) Assessor will observe whether the trainee is able to verify the characteristics of series, parallel and its combination circuit. (3.3) Trainee will be asked to demonstrate the phase sequence of a 3 ø supply using a phase-sequence meter. (3.4) Trainee will be able to prepare / connect a lamp load in star and

	delta and determine relationship between line and phase values. (3.5) Trainee will be able to identify connect balanced and unbalanced loads in 3 phase star system and measure the power of 3 phase loads.
4. Plan and prepare Earthing installation	(4.1) Assessor will observe whether the trainee is able to install the pipe earthing / plate earthing and test it. (4.2) Trainee will be able to demonstrate how earth resistance can improve.
5. Assemble, install and test wiring system	(5.1) Assessor will observe whether the trainee is able to comply with safety rules when performing the wiring. (5.2) Trainee will be able to prepare and mount the energy meter board. (5.3) Trainee will be able to draw and wire up the consumers main board with ICDP switch and distribution fuse box in a house/building. (5.4) Assessor will rate the trainee on his ability to demonstrate the types of fuses, their ratings and applications and also to identify the parts of a MCB, ELCB and RCCB. (5.5) Trainee will be asked to estimate the requirement for metal conduit wiring (3 phase) and wire up. (5.6) Trainee will be asked to estimate the materials and wire up the lighting circuit for a tunnel – Metal circuit. (5.7) Trainee will be asked to estimate the materials and wire up a lighting circuit for a corridor in metal conduit. (5.8) Trainee will be asked to test a domestic wiring installation by using Megger.
6. Test and perform winding	(6.1) Assessor will rate the trainee on his ability to rewind a table fan and ceiling fan correctly. (6.2) Assessor will rate the trainee on his ability to draw winding diagram & rewind a single phase split type A.C. motor (Concentric coil winding).
7. Plan and execute electrical illumination system	(7.1) Trainee will be asked to assemble and connect a single twin tube F.L. (7.2) Trainee will be asked to connect the neon sign with the accessories and test it.
8. Understand and practice soft skills	(8.1) Assessor will rate the trainee on his ability to practice soft skills, including clear and concise communication, in day to day work with team and with higher authority
9. Perform winding for armature and single phase AC motors along concepts for three phase motors	(9.1)Trainee will be asked to measure Current, Voltage and Resistance of Single Phase and Three phase load. (9.2) Trainee will be able to verify the characteristics of series, parallel and its combination circuits. (9.3) Trainee will be able to identify the phase, neutral and earth in single and three phase supply. (9.4) Assessor will rate the trainee on his ability to strip old winding by using appropriate methods (9.5) Trainee will be able to insert coil in the armature and complete winding of armature (9.6) Trainee will be able to test armature winding by growler and use

	insulating paper and wooden/insulating stick as per slot of the core (9.7) Trainee will be able to prepare the winding coil as per size, no. of turns and coil pitch. (9.8) Trainee will be able to insert the coil and mark start/end point, including connection of the coil (9.9) Assessor will rate the trainee on his ability to test the continuity and winding insulation (9.10) Assessor will rate the trainee on his ability to assemble a motor and run the same
10. Demonstrate knowledge of concept and principles of basic arithmetic and financial calculation, and apply knowledge of specific area to perform practical operations.	(10.1) Apply basic arithmetic calculations for arriving dimensional parameters as per drawing. (10.2) Apply basic financial calculation to understand cost of materials & labour and basic concepts of profit/loss, (10.3) Engage in basic banking transactions as customer
11. Explain time management, entrepreneurship and manage/organize related task in day to day work for personal & social growth.	(11.1) Ascertain appropriate time for the assigned task. (11.2) Execute the assigned task within time frame. (11.3) Manage own work within specified time. (11.4) Explain importance & factors affect the development of entrepreneurship. (11.5) Identify service providers for developing entrepreneur/business establishment.

Means of assessment 1

There will be two types of Assessments viz. Formative and Summative. The Formative Assessment will be carried out continuously during the conduct of course and Summative Assessment will be carried out at the end of the course. Details are mentioned under means of Assessment-2. Written test, Practical examination/ Skill test & Viva voce

Means of assessment 2

I. Means of Formative Assessment (Total marks allotted- 350)

i) Assignments for each module of Theory component
ii) Assignments for each module of Employability Skills component
iii) Continuous evaluation of each module of Practical (including Apprenticeship component)

II. Means of Summative Assessment (Total marks allotted- 650)

i) Written test for Theory component
ii) Written test for Employability Skills component
iii) Practical Test & Viva voce for Practical Component.

Component wise distribution of marks is given in the Annexure 2

Pass/Fail

Pass/Fail

Passing criteria is based on marks obtained in Formative and Summative Assessment taken together as mentioned in Annexure No-1

i) Minimum Marks to pass Theory component– 60%
ii) Minimum Marks to pass Employability Skills component– 60%
iii) Minimum Marks to pass practical component including Apprenticeship component– 70%
iv) Minimum attendance required to appear in the final examination- 75%

SECTION 2
EVIDENCE OF LEVEL
OPTION A

Title/Name of qualification/component: Asst. Electrician and Motor Winder			**Level:** 3
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomes relates to the NSQF level descriptors**	**NSQF Level**
Process	Job holder will be able to install or repair basic household electrical circuits (single phase) and engage in winding of single phase AC motors while maintaining occupational health & safety parameters.	Job holder will understand and comply with safety practices while undertaking works in basic electrical wiring circuits (including testing and jointing/soldering) and winding of single phase AC motors. The nature of work involved is repetitive and routine.	Level 3
Professional knowledge	Job holder will be able to • Understand fundamental electrical theories, signs & symbols, wiring diagram and connections and earthing principles • Use different tools & equipments • Understand basic principles for setting and maintaining temporary lighting and other related electrical systems under LV connection • Understand armature winding & insulation of fan motor and of motor (upto 1 H.P.)	Job holder will understand the basic concepts, facts, principles and processes in relation with connection of basic house wiring circuits (both AC & DC). It is also expected that the job holder will be able to comprehend winding principles of AC motors.	Level 4
Professional skill	The user/individual will know and understand how to: • assess and decide whether safety tools/ gears (if any) are installed properly, check condition of materials and earthing • decide location to keep DBs and temporary panels, and initiate temporary shut down on malfunctioning of circuits/motors • decide whether workplace is safe for working and also relevant task is not creating hazardous condition • engage in making armature winding and insulation of fan	The job holder will demonstrate use of various tools and materials, different types of wiring circuits, DBs, etc. and also ensure proper earthing. He/ she will be also able to demonstrate proper winding practices for single phase AC motors. The range of application of practical skill is narrow and repetitive.	Level 3

Title/Name of qualification/component: Asst. Electrician and Motor Winder			**Level:** 3
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomes relates to the NSQF level descriptors**	**NSQF Level**
	motor and of motor (upto 1 H.P.)		
Core skill	The job holder will be able to • read at least two languages, preferably in the local language of the site and basic English • read and interpret safety sign boards, signage, tags etc. provided at workplace • speak in at least one language, preferably in one of the local languages of the site • listen and interpret instructions / communication by co-workers • listen and follow instructions given by supervisor • orally and effectively communicate with team members • engage in basic financial and banking transactions • Understand principles of time management and entrepreneurship	The job holder will be able to communicate clearly, both in writing and orally, with co-workers, supervisors and customers. He will be able to use basic arithmetic calculations for his work and use basic banking services both on professional and personal level.	Level 3
Responsibility	The job holder will work under the close supervision of supervisor and he will be responsible for • Understanding safety compliance while engaging in fixing of wiring circuits and armature windings • Preventing fire hazards and loss of human life by use of appropriate fire extinguishers / alarms • Distinguishing between series, parallel and combination circuits and taking action thereafter • Distinguishing between circuits for lighting load and power load • Identifying different types of motor windings and single-handedly engaging in work on windings	Job holder is required to carry out functions such as wiring, winding of motors, earthing, etc. In these activities job holder is doing the tasks independently, with supervision in certain risky jobs.	Level 3

OPTION B

Title/Name of qualification/component: Enter the title here			**Level:** Add level number
NSQF Domain	**Key requirements of the job role**	**How the job role relates to the NSQF level descriptors**	**NSQF Level**
Process			
Professional knowledge			
Professional skill			
Core skill			
Responsibility			

SECTION 3
EVIDENCE OF NEED

What evidence is there that the qualification is needed?

In line with the high economic growth rates, the demand for primary energy consumption as well as power has been growing in India post liberalisation. As per UN statistics the per capita electricity consumption stood at 704.2 kWh for 2008 and the per capita electricity consumption stood at 1000 kWh for 2012.
The total manpower in the power sector at the end of 11th plan was approximately 12.2 lakhs. The additional man power requirement during 12th Plan period is estimated to be 2.26 as per the Planning Commission's Working Group on Power

Thus there is a dearth of skilled man power in the sector. A large chunk is required for domestic house wiring and minor repair of appliances. Several Industries/ Employers/ Associations both in Govt. and Private sectors (CESC, WBSEDCL, PWD (Electrical), Large contractors firms) have also indicated that there is a requirement for persons having basic skills in House wiring and house hold motor winding like fans, water pump(single phase) motors etc. Further in the rural area and small urban town there is a huge opportunity for self employment of the skilled persons in this sector.

What is the estimated uptake of this qualification and what is the basis of this estimate?

The estimated uptake of the qualification in the state of West Bengal as on date is 15000. This estimate is based on the data received from user industries viz. CESC, WBSEDCL, PWD (Electrical), Large contractors firms etc.
Industries, Employers, Associations have validated need and estimated requirement of the qualification in a meeting organised by the Council. (Annexure-3)

What steps were taken to ensure that the qualification does not duplicate already existing or planned qualifications in the NSQF?

This qualification is being conducted under the West Bengal State Council of Technical & Vocational Education & Skill Development under Department of Technical Education, Training and Skill Development since the academic year 2005 in Vocational Training Centres spread all over West Bengal for class- VIII+ pass dropout youths. In the state of West Bengal the Council is affiliating and awarding body for this qualification. Thus there is no other existing or planned qualification (Short term courses) in the state aligned with NSQF.

What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated?

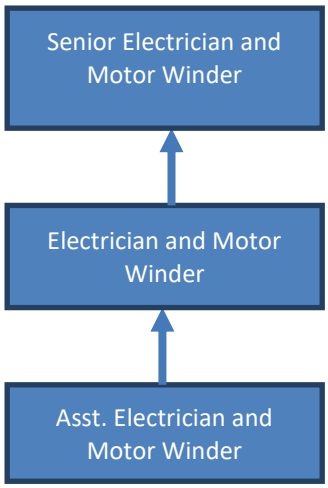
The council has three well defined sub-committees namely Board of Studies and Skilling, Board of Examination and Recognition Committee. These committees monitor and review the progress of all qualifications under its purview on a regular basis.
This qualification will be reviewed and revised at an interval of three years on the basis of the outcome of the trainees, placement and self employment data and feedback from concerned industries/employers.

Please attach any documents giving further information about any of the topics above.
Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

SECTION 4
EVIDENCE OF PROGRESSION

What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?

The trainee on completion of the course does not immediately qualify to work as an independent authority. The trainee has to gain at least 2 years of field experience, should be of 21 years of age or older and should necessarily an Indian citizen, when he will become eligible to apply for Works Man permit from Directorate of Electricity, Government of West Bengal. Thereafter, he becomes eligible to work as an independent Asst. Electrician and Motor Winder. From there, he can become either an employee of an organization or become self-employed. In case of employment under an employer, he can progress to various level-wise designations, based on either experience or on obtaining subsequent qualifications. This is as shown below.



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