**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

Karigari Bhavan(5th Floor), Plot-B/7, Action Area-III

New Town, Kolkata-700160

**Name and contact details of individual dealing with the submission**

**Name: SUPARNA KUMAR ROYCHOWDHURY**

**Position in the organisation:Chairman, Board of Studies and Skilling**

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**List of documents submitted in support of the Qualifications File**

1. Curriculum and Course Content
2. Assessment strategy

**SUMMARY**

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| **Qualification Title** | Repairing and Servicing of Agriculture Machineries including Diesel Pump Set | | | |
| **Qualification Code** |  | | | |
| **Nature and purpose of the qualification** | Short term Certificate Course  To become self-employed i.e. entrepreneurs or wage employed under 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** | Service Assistant (Agriculture Machineries) | | | |
| **Licensing requirements** | NA | | | |
| **Level of the qualification in the NSQF** | Level 3 | | | |
| **Anticipated volume of training/learning required to complete the qualification** | 650 hours | | | |
| **Entry requirements and/or recommendations** | Class VIII pass | | | |
| **Progression from the qualification** | Service Assistant (Agriculture Machineries) -----Jr Service Technician (Agriculture Machineries)-----Service Technician (Agriculture Machineries) | | | |
| **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 (Next Feb 2021) | | | |
| **Formal structure of the qualification**  After completion of course the passed out trainee can work as an Service Assistant (Agriculture Machineries) and after two years of field experience the passed out trainee can work as a Jr Service Technician (Agriculture Machineries) and after that with appropriate experience, the person can work as a Service Technician (Agriculture Machineries). | | | | |
| Title of component and identification code. | | Mandatory/ Optional | Estimated size (learning hours) | Level |
| Apply safe working Practices | | Mandatory | 25 | 3 |
| Understand different types of maintenance along with its advantages and use. | | Mandatory | 25 | 3 |
| Understand different components, different faults, their cause & repair minor faults concern with Tillage machineries | | Mandatory | 25 | 3 |
| Understand different components, different faults, their cause & repair minor faults concern with Seeding machineries | | Mandatory | 25 | 3 |
| Understand different components, different faults, their cause & repair minor faults concern with Harvesting machineries | | Mandatory | 25 | 3 |
| Understand different components, different faults, their cause & repair minor faults concern with Threshing machineries | | Mandatory | 25 | 3 |
| Understand classification of IC engines used in agriculture along with description and function of basic parts of an IC engine. | | Mandatory | 15 | 3 |
| Know different systems of an IC engine such as engine system, fuel system, cooling system, lubricating system, inlet & exhaust system with the help of flow charts | | Mandatory | 35 | 3 |
| Study different component and systems of Tractor and repair minor faults | | Mandatory | 130 | 3 |
| Study different component and systems of Power Tiller and repair minor faults | | Mandatory | 20 | 3 |
| Study different component and systems of Plant Protection Equipment and repair minor faults | | Mandatory | 50 | 3 |
| Study different component and systems of Irrigation Equipment and repair minor faults | | Mandatory | 100 | 3 |
| Study different component and systems of electric motor used in Pump Set for Agricultural use and repair minor faults | | Mandatory | 25 | 3 |
| Understand principles of pump set, their components, common faults and dismantling different parts. | | Mandatory | 30 | 3 |
| Perform rough estimation and costing of repair work | | Mandatory | 20 | 3 |
| Understand and practice soft skills | | Mandatory | 25 | 3 |
| Demonstrate knowledge of concept and principles of basic arithmetic and financial calculation, and apply knowledge of specific area to perform practical operations. | | Mandatory | 25 | 3 |
| Explain time management, entrepreneurship and manage/organize related task in day to day work for personal & social growth. | | Mandatory | 25 | 3 |

| **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 Tillage, Seeding, Harvesting, Threshing machineries and Tiller, Plant Protection equipments.**  **II. Practical**  **Institutional component of Practical training of the course is to impart relevant basic technical skills to perform repair and servicing of Tillage, Seeding, Harvesting, Threshing machineries and Tiller, Plant Protection equipments along with Diesel pump set.**  **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**  **Mandatory**  **Mandatory**  **Mandatory** | **100**  **450**  **100** | **3**  **3**  **3**  **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. Industry Validation

**SECTION 1**

**ASSESSMENT**

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| **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 includeDiploma 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. |

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**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 traineeon 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/recordsubmitted by trainee to supervisor/ Competent of authority in the event of accident or sickness of any staff, including accident details according to site accident/injuryprocedures  (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 |
| 1. Understand different types of maintenance along with its advantages and use. | (2.1) Trainee will be asked to define different basic terms regarding maintenance.  (2.2) Assessor will note whether the trainee can demonstrate the characteristics and use of each types of maintenance.  (2.3) Assessor will note whether the trainee can demonstrate the advantages of preventive maintenance |
| 1. Understand different components, different faults, their cause & repair minor faults concern with Tillage machineries | (3.1) Trainee will be asked to state the definition of Tillage, types and necessity of Tillage.  (3.2) Assessor will note whether Trainee be able to demonstrate functions and types of implements for primary and secondary tillage operations.  (3.3) Trainee will be asked to demonstrate Constructional parts and working of Mouldboard plough, Disk Plough, Cultivators, Disk Harrow, Bund former.  (3.4) Assessor will note whether the trainee can adjust the alignment, take care and safety precautions  (3.5) Trainee will be asked to demonstrate common faults and remedies regarding tillage implement. |
| 1. Understand different components, different faults, their cause & repair minor faults concern with Seeding machineries | (4.1) Assessor will note whether the trainee can demonstratedifferent methods of sowing such as drilling, dibbling, planting etc.  (4.2) Trainee will be asked to demonstrate different implements used for sowing /planting and transplanting  (4.3) Assessor will note whether the trainee can demonstrate constructions and working principle of seed-drill, planters and seed cum fertilizer drill.  (4.4) Trainee will be asked to demonstrate common faults and remedies regarding seeding machineries.  (4.5) Assessor will observe whether the trainee is able to adjust the alignment, take care and safety precautions regarding seeding machineries. |
| 1. Understand different components, different faults, their cause & repair minor faults concern with Harvesting machineries | (5.1) Assessor will observe whether the trainee is able to demonstrate different types of Conventional and mechanized harvesting Tools and Machines such as Sickle, Reaper, Harvester, etc.  (5.2) Assessor will observe whether the trainee will be able to describe construction and working principle of Power Tiller operated Vertical Conveyor Reaper.  (5.3) Trainee will be asked to demonstrate common faults and remedies regarding seeding machineries.  (4.5) Assessor will observe whether the trainee is able to adjust the alignment, take care and safety precautions regarding seeding machineries. |
| 1. Understand different components, different faults, their cause & repair minor faults concern with Threshing machineries | (6.1) Assessor will observe whether the trainee is able to demonstrate different types of Threshing Machinery such as manual and power operated.  (6.2) Assessor will observe whether the trainee will be able to describe construction and working principle of hand and paddle threshers, power threshers as well as Combine Harvester.  (6.3) Trainee will be asked to demonstrate common faults and remedies regarding manually operated and machine operated threshing machineries.  (6.4) Assessor will observe whether the trainee is able to adjust the alignment, take care and safety precautions regarding threshing machineries. |
| 1. Understand classification of IC engines used in agriculture along with description and function of basic parts of an IC engine. | (7.1) Assessor will observe whether the trainee is able to demonstrate different types of IC engine.  (7.2) Trainee will be able to describe the characteristics, application of 2stroke and 4stroke engine.  (7.3) Trainee will be able to describe different parts of an IC engine and the function of each.  (7.4) Assessor will rate the trainee on his ability to demonstrate the advantages and disadvantages of 2stroke and 4stroke engine. |
| 1. Know different systems of an IC engine such as engine system, fuel system, cooling system, lubricating system, inlet & exhaust system with the help of flow charts | (8.1) Assessor will rate the trainee on his ability to describe flow chart, method by which it can be read.  (8.2) Assessor will rate the trainee on his ability to describe components and function of different systems concerned with engine such as engine system, fuel system, cooling system, lubricating system, inlet & exhaust system with the help of flow chart.  (8.3)Assessor will observe whether the trainee is able todismantle the engine, clean different parts, detect the fault, rectify and refit.  (8.4) Assessor will ask the trainee to identify differentparts such as couplings, pipes, glands, gaskets etc.  (8.5) Assessor will rate the trainee on his ability to identify defects and perform repairing of the same.  (8.6)Trainee will be asked to perform Alignment test for engine and its adjustment |
| 1. Study different component and systems of Tractor and repair minor faults | (9.1) Assessor will observe whether the trainee is able to state different makes and models of Tractor  (9.2) Assessor will ask the trainee to describe different components and systems of Tractor  (9.3) Assessor will rate the trainee on his ability to state tractor controls and matching implements |
| 1. Study different component and systems of Power Tiller and repair minor faults | (10.1) Assessor will rate the trainee on his ability to state Different makes and models of Power Tiller.  (10.2) Trainee will be asked to demonstrate different components and systems of Power Tiller  (10.3) Trainee will be asked to state power tiller controls and matching implements |
| 1. Study different component and systems of Plant Protection Equipment and repair minor faults | ( 11.1) Assessor will rate the trainee on his ability to demonstrate Plant Protection Equipment  (11.2) Trainee will be asked to describe use and application of Agricultural Chemicals  (11.3) Assessor will rate the trainee on his ability to demonstrate types of sprayers & their uses, construction and function |
| 1. Study different component and systems of Irrigation Equipment and repair minor faults | (12.1) Assessor will rate the trainee on his ability to state Importance of irrigation and methods of Irrigation.  (12.2) Trainee will be asked to state types of pumps, principles of operation, their constructional details and application.  (12.3) Trainee will be asked to demonstrate estimation of head, discharge and power requirement.  (12.4) Trainee will be asked to demonstrate Sprinkler irrigation system and equipment, importance and utility  (12.5) Trainee will be asked to demonstrate Drip irrigation system and equipment, importance and utility  (12.6) Trainee will be asked to demonstrate pipe fitting techniques and field layouts |
| 1. Study different component and systems of electric motor used in Pump Set for Agricultural use and repair minor faults | (13.1) Trainee will be asked to demonstrate types of electric motors used in pump sets, tube wells, threshers etc.  (13.2) Trainee will be asked to demonstrate the selection method of electric motors.  (13.3) Assessor will rate the trainee on his ability to demonstrate about care, maintenance and installation of electric motors.  (13.4) Trainee will be asked to demonstrateelectric motor trouble shooting, periodic servicing and off-season storage  (13.5) Assessor will rate the trainee on his ability toinstal electric motor, check the circuit, starter fitting and setting.  (13.6) Trainee will be asked to demonstrate safety, precautions in handling electrical appliances & motors. |
| 1. Understand principles of pump set, their components, common faults and dismantling different parts. | (14.1) Trainee will be asked to demonstrate general ideas on pumps along with common faults concerned with pumps.  (14.2) Assessor will rate the trainee on his ability to dismantling and reassembly of the parts to make a complete pump set.  (14.3) Trainee will be asked to perform Alignment test for and its adjustment. |
| 1. Perform rough estimation and costing of repair work | (15.1) Trainee will be asked to demonstrate on costing for different parts, their costs, Brand names of parts, costs etc.,  (15.2) Trainee will be asked to demonstrate on Market survey.  (15.3) Assessor will rate the trainee on his ability to prepare of an estimate for a repair work-overhauling of an engine etc |
| 1. Understand and practice soft skills | (16.1) 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 |
| 1. Demonstrate knowledge of concept and principles of basic arithmetic and financial calculation, and apply knowledge of specific area to perform practical operations. | (17.1) Apply basic arithmetic calculations for arriving dimensional parameters as per drawing.  (17.2) Apply basic financial calculation to understand cost of materials & labour and basic concepts of profit/loss,  (17.3) Engage in basic banking transactions as customer |
| 1. Explain time management, entrepreneurship and manage/organize related task in day to day work for personal & social growth. | (18.1) Ascertain appropriate time for the assigned task.  (18.2) Execute the assigned task within time frame.  (18.3) Manage own work within specified time.  (18.4) Explain importance & factors affect the development of entrepreneurship.  (18.5) 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**   1. **Means of Formative Assessment (Total marks allotted- 350)** 2. Assignments for each module of Theory component 3. Assignments for each module of Employability Skills component 4. Continuous evaluation of each module of Practical 5. **Means of Summative Assessment(Total marks allotted- 650)** 6. Written test for Theory component 7. Written test for Employability Skills component 8. Practical Test & Vivavoce forPractical 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   1. Minimum Marks to pass Theory component– 60% 2. Minimum Marks to pass Employability Skills component– 60% 3. Minimum Marks to pass practical component– 70% 4. Minimum attendance required to appear in the final examination- 75% | | |

**SECTION 2**

**EVIDENCE OF LEVEL**

**OPTION A**

| **Title/Name of qualification/component: Asst. House Wireman 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 repair or maintain different components of agricultural machinery such as crop production machinery, engine tractor and power tiller, plant protection and irrigation equipment along with electric motor. | Job holder will understand and comply with safety practices while undertaking works in minor repairing. The nature of work involved is repetitive and routine. | Level 3 |
| Professional knowledge | Job holder will be able to   * Understand fundamental crop production machinery, engine tractor and power tiller, plant protection and irrigation equipment along with electric motorrelated theories, * Identify different components of crop production machinery, engine tractor and power tiller, plant protection and irrigation equipment along with electric motor. * Identify different components of IC engine and electric motor. * Use different tools & equipment * Understand basic principles for IC engine & electric motor | Job holder will understand the basic concepts, facts, principles and processes in relation with working of machineries involved in activities of Agriculture. It is also expected that the job holder will be able to comprehend repairing practice. | Level 4 |
| Professional skill | The user/individual will know and understand how to:   * assess trouble shooting related IC engine and Electric motor * dismantling/overhauling engine or motor * decide whether worn out parts may be repaired * lubricating movable parts * Replace un-repairable parts * Reassembling all components of IC engine and electric motors | The job holder will demonstrate use of various tools and materials used to repair or maintain machine parts. He/ she will be also able to demonstrate proper process for replacement of parts of machineries. The range of application of practical skill is narrow and repetitive. | Level 3 |
| Core skill | The job holder will be able to   * read at least two languages, preferably in the local language of the siteand basic English * read and interpret safety sign boards, signage, tags etc. provided atworkplace * speak in at least one language, preferably in one of the local languages of thesite * 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 working at soft floor * Preventing loss of human life by use of appropriate safety rules. * Distinguishing between petrol and diesel engines * Identify hand tools * Identifying different types of agri machines and singlehandedly make servicing of them. | The job holder will demonstrate use of various tools and materials, repairing of different types of Agri equipments and machineries including Diesel pump set. The range of application of practical skill is narrow and repetitive. | Level 3 |

**SECTION 3**

**EVIDENCE OF NEED**

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| **What evidence is there that the qualification is needed?**  In modern India the economy depends still now on agriculture vastly. Due to urbanisation, space for agriculture reduces day by day. To compensate the space reduction and increased demand due to mammoth growth in population newer technologies have been introduced in a rapid way. Agricultural machineries are becoming an essential part of agriculture. There is immense scope for engaging a huge number of such machineries. To maintain the performance of such machineries demand for maintenance personnel is desperately needed.  There is scarcity of skilled Technician for repairing agricultural machineries in the country |
| **What is the estimated uptake of this qualification and what is the basis of this estimate?**  There has been significant opportunities for the particular course as the course is operational for more than 10 years |
| **What steps were taken to ensure that the qualification doesnot 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**

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| **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 for Jr Service Technician in Agriculture Machineries. Thereafter, he becomes eligible to work as an independent Service Technician on Agriculture Machineries. 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.  Service Assistant (Agriculture Machineries)  Jr Service Technician (Agriculture Machineries)  Service Technician (Agriculture Machineries) |