

Model Curriculum

Seed Analysis In-charge

SECTOR: AGRICULTURE & ALLIED
SUB-SECTOR: AGRICULTURE INDUSTRIES
OCCUPATION: SEED PRODUCTION AND PROCESSING
REF ID: AGR/Q7103, V1.0
NSQF LEVEL: 5



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

AGRICULTURE SKILL COUNCIL OF INDIA

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/Qualification Pack: 'Seed Analysis In-charge' QP No. 'AGR/ Q7103 NSQF Level 5'

Date of Issuance: January 20th, 2016

Valid up to: March 31st, 2019

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



S. S. Anand
Authorised Signatory
(Agriculture Skill Council of India)

TABLE OF CONTENTS

| | |
|-----------------------------------------|-----------|
| 1. Curriculum | 04 |
| 2. Trainer Prerequisites | 10 |
| 3. Annexure: Assessment Criteria | 11 |

Seed Analysis In-charge

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Seed Analysis In-charge”, in the “Agriculture & Allied” Sector/Industry and aims at building the following key competencies amongst the learner

| | | | |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--|
| Program Name | Seed Analysis In-charge | | |
| Qualification Pack Name & Reference ID. ID | AGR/Q7103, v1.0 | | |
| Version No. | 1.0 | Version Update Date | |
| Pre-requisites to Training | Class 12, preferably | | |
| Training Outcomes | <p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Determine the quality of the seed and its suitability to planting • Familiarize with various important seed components which are essential to decide a seed as good quality seed • Undertake seed testing in a scientific manner • Use appropriate equipment for seed analysis/ testing to obtain a more realistic results • Recommend corrective measures to make the seed lot as standard after initial testing • Advise/ recommend various seed treatment after analysis to maintain quality in storage • Use special type of seed analysis procedure if needed to test any parameter to decide the seed quality • Understand the procedure involved in preparation of reagents, chemicals for various test/analysis. | | |

This course encompasses 6 out of 6 National Occupational Standards (NOS) of “Seed Analysis In-charge” Qualification Pack issued by “Agriculture Skill Council of India”.

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1 | <p>Introduction</p> <p>Theory Duration (hh:mm) 05:00</p> <p>Practical Duration (hh:mm) 00:00</p> <p>Corresponding NOS Code Bridge Module</p> | <ul style="list-style-type: none"> Understand General Discipline in the class room (Do's & Don'ts) Understand the importance of seed analysis in the production of good quality seed. Learn about various seed characteristics /parameter such as physical purity etc in deciding seed quality Understand various procedures involved in seed analysis. Know about the equipments used in the seed testing/ analysis Understand the Role of a Seed Analysis In-charge and the progression pathway | Laptop, white board, marker, projector |
| 2 | <p>Prepare and maintain work area and equipments for seed testing</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 15:00</p> <p>Corresponding NOS Code AGR /N7110</p> | <ul style="list-style-type: none"> Know about the equipments used in the seed testing/ analysis Familiarize with the preparation of equipments and reagents for seed analysis. Clean and maintain the equipments required for seed analysis. Check the working condition of all the equipments before commencing the analysis daily. Understand the methods of cleaning of glass wares with proper reagents to keep them aseptic for handling the seed Clean the laboratory floor with sanitizer to avoid infestation/infection from the accumulated dust. Organize placement of various sections such as physical purity, germination testing etc in a sequential manner Plan as to whether any seed lot needs immediate attention/testing as per the urgency in the production centre and plan priority testing for such lots. Check the availability of chemicals and other inputs required for testing at regular interval and place order to the supervisor to replenish the stock at the appropriate time. Verify as to whether any seed sample requires special test and if so | Laptop, white board, marker, projector, Audio-visual aids, Sanitizer, Glassware, tray |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | <p>Prepare for quality analysis and manage house-keeping for seed lab activities</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 25:00</p> <p>Corresponding NOS Code AGR/N7111</p> | <p>organize the testing as per the procedure.</p> <ul style="list-style-type: none"> Understand the procedures for checking any equipment and calibrate them to obtain more realistic results. Maintain record for calibration and organize calibration at the due date as per record. Maintain the equipment as per the instruction of the manufacturer and organize repair timely if any problem arise. Know about various reagents required for seed analysis and prepare such reagents using appropriate chemicals as per recommended dose. Maintain such reagents in a safe place to avoid physical and chemical damage. Place advance indent for the purchase of chemicals. Analyse the requirement of any new chemicals / reagents required for any new kind of seed or test required by the organization and indent for the same with authorities. Maintain sufficient quantity of distilled water for washing / cleaning, soaking the germination paper. Maintain proper record / entry for all the above activities. Familiarize with the procedure required for various types of seed analysis, recording the analysis report and maintain the left over seed sample in a guard store. | <p>Laptop, white board, marker, projector, Audio-visual aids, Manual for calibration, chemicals for testing of seed, seed moisture meter, Hot air oven, germination chamber, seed trier, magnifying glasses, forceps, scalper tray, microscope, germination paper</p> |
| 4 | <p>Carryout sampling and seed testing activities</p> <p>Theory Duration (hh:mm) 30:00</p> <p>Practical Duration (hh:mm) 40:00</p> <p>Corresponding NOS Code AGR/N7112</p> | <ul style="list-style-type: none"> Understand the procedure to receive the seed sample and make entry in the respective register. Check whether the seed sample is of appropriate quantity as per seed act rules and advise the source to send sufficient quantity if the sample is less than the required quantity. Verify the receipt which accompany the sample and understand whether the sample is for all tests or for any specific test. Make entry in the seed entry register and assign laboratory test number for each class of seed separately. Prepare seed analysis card giving | <p>Laptop, white board, marker, projector, Audio-visual aids, Poly bags to transfer the sample, seed entry register, moisture meter, hot air oven (for seed drying), seed grinding machine, magnifying glass, forceps, scalper, trays.</p> |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| | | <p>details about crop, variety, lot number, tests required without indicating the name of the producer.</p> <ul style="list-style-type: none"> • Pass on the seed sample in a sequential manner for analysis, eg. Physical purity, moisture, germination, seed health and any special test if required / requested. • Ensure entry of the analysis data in the respective column in the seed analysis card and check whether all tests have been completed as per the rules / procedure. • Enter the test results in the entry register and prepare the seed analysis report separately. • Verify whether all the entries in the SAR are as per the test result of analysis and communicate the same to the producer. • Make frequent inspection/checking while the seed is under analysis at various sections and ensure that appropriate procedure, equipment/ reagents are used. • Make special effect to check whether sufficient samples are used for various tests. • Ensure that germination is conducted with appropriate methods like between paper, or top of the paper etc. • Make surprise check whether germinations chambers are maintained at appropriate temperature as per the ISTA norms and samples are subjected to different temperature alternatively as per norms. • Ensure analysis of seedling into normal, abnormal seedling and dead seed is done scientifically as well as by experience and previous observation • Make appropriate seed treatment recommendation in the SAR in case of presence of any seed borne disease and drying in case the sample records higher seed moisture. • Ensure a guard sample for each lot of seed is maintained in air conditioned store for future reference if any. | |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | <p>Complete documentation and record keeping related to performing seed lab activities</p> <p>Theory Duration (hh:mm) 15:00</p> <p>Practical Duration (hh:mm) 15:00</p> <p>Corresponding NOS Code AGR/N7113</p> | <ul style="list-style-type: none"> Understand the procedure/ checkpoints while receiving the seed sample and entries to be made. Seed sample register: enter the details of quantity of seed received, date of receipts, lot number, crop variety, name of procedure, tests required. Give laboratory test numbers to each lot Seed analysis card: Accompanies the sample to various testing sections/analysts. Enter details of test by ticking appropriate column printed in the card Ensure entry of test/ analysis is result as below: moisture % ,purity % ,germination % , (normal seedlings, abnormal seedlings, hard seed, dead seed) seed borne disease % , (by number) insect damage % , date of test, any other special test is conducted. Seed analysis report: Enter all the above details in the seed analysis report, sign the report to authenticate the results. Dispatch register: Enter dispatch of seed analysis report to the producer. Guard sample register Maintain a register for the maintenance of guard sample along with all the details as in entry register. Mention about the rack number in which the sample is maintained. Stock ledger: For the various equipments, polythene bags, accessories like tray, so magnifying glasses etc, stock register for consumables: printed documents like SAR, polythene bags, chemicals , reagents | <p>Seed receipt register, lab testing card, seed analysis report, moisture testing register, analysis report despatch register, Guard sample register, stock ledger</p> |
| 6 | <p>Ensure safety hygiene and sanitation for seed processing</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm)</p> | <ul style="list-style-type: none"> Understand various risk involved while handling equipments and chemical in seed analysis. Use vacuum cleaner to clean the lab area to avoid accumulation of dust. Use gloves and goggles while treating the seed with chemical reagents. Read the instruction while handling equipments like seed grinder, hot air | <p>Laptop, white board, marker, projector, , Personal protective equipment Like: Helmet / head gear, safety gloves, Safety boots, First Aid Kit: Bandages, Adhesive bandages,</p> |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 15:00 Corresponding NOS Code AGR/N7114 | oven. <ul style="list-style-type: none"> • Use emergency switches in case of any fire as short circuit either in the analysis area or in the walk in germinators. • Use only recommended dosages of various chemicals while preparation of reagents. • Use overcoat while attending seed analysis to avoid spillage of chemicals or accumulation of fungal spores on the body • Attend regular cleaning of all equipments and clean them using sanitizers. • Maintain first aid box to treat any cuts while handling glass wares. • Dispose the rolled towel papers and the other waste daily. | Betadine Solution / ointment, Pain relief spray / ointment, Antiseptic liquid; Antidote, Phone directory, Search lights, fire extinguisher, Vacuum cleaner, dust pins, sanitizers |
| 7 | Manage and lead a team Theory Duration (hh:mm) 10:00 Practical Duration (hh:mm) 10:00 Corresponding NOS Code AGR/N4317 | <ul style="list-style-type: none"> • Guide the team of technical personal involved in seed testing. • Organise the daily schedule of seed analysis based on the requirement of the seed production. • Discuss with the co workers about the priority to be given for testing (eg. In case of equal samples of mustard and wheat, preference should be given to mustard testing as it is sown earlier than wheat) • Find out the need for upgrading the knowledge of the staff and organise. • Conduct periodic meetings with all staff to assess the progress (may be daily in case of peak season) and take appropriate steps provide audited support to improve the progress. • Frequently move from one to another section to know the progress and if any issues, solve them. • Share practical experience with co workers or any specific problem and advise them the measure to be taken to solve such problem if arise. • Keep record on the working performance of the individual staff and provide counselling to improve the performance. • Add new equipments books/ journals and pamphlets to strengthen the working of the laboratory. | Computer, Audio-visual aids, Projector |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 8 | Soft Skills/ Computer Literacy/ Financial Literacy/ Entrepreneurship Skills Theory Duration (hh:mm) 20:00 Practical Duration (hh:mm) 20:00 Corresponding NOS Code | <ul style="list-style-type: none"> • Basic Communication & Presentation Skills • Organizational Skills • Basic Computer Skills • Various types of documents and their uses- Birth certificate, 10th Certificate, Ration Card, Voter Id Card, Aadhar Card, PAN card, Driving License, Bank Pass Book etc • Various types of loan/credit available (relevant to the trainees' requirement) and the process to avail the same | Computer, Audio-visual aids, Projector |
| | Total Duration: Theory Duration (hh:mm) 110:00 Practical Duration (hh:mm) 140:00 | Unique Equipment Required: Laptop, white board, marker, projector, Audio-visual aids, Sanitizer, Glassware, tray, Manual for calibration, chemicals for testing of seed, seed moisture meter. Hot air oven, germination chamber, seed trier, magnifying glasses, forceps, scalper tray, microscope, germination paper, Poly bags to transfer the sample, seed entry register, moisture meter, hot air oven (for seed drying), seed grinding machine, magnifying glass, forceps, scalper, trays, Various registers, PPEs | |

Grand Total Course Duration: **250 Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by [Agriculture Skill Council of India](#))

Trainer Prerequisites for Job role: “Seed Analysis In-charge” mapped to Qualification Pack: “AGR/Q7103, v1.0”

| Sr. No. | Area | Details |
|---------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Description | Trainer is responsible for educating the trainees – Maintain work area and equipments for seed testing, Conduct sampling & seed testing activities, Documentation & Record keeping, Maintain Safety & Hygiene of the Seed lab, Manage the Lab team. |
| 2 | Personal Attributes | Trainer should be Subject Matter Expert. He/ she should have good communication, leadership, observation and practical oriented skills. |
| 3 | Minimum Educational Qualifications | B.Sc. (Agriculture) |
| 4a | Domain Certification | Certified for Job Role: “Seed Analysis In-charge” mapped to QP: “AGR/Q7103, v1.0”. Minimum accepted score is 80%. |
| 4b | Platform Certification | Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “SSC/Q1402”. Minimum accepted % as per respective SSC guidelines is 70%. |
| 5 | Experience | <ul style="list-style-type: none"> • B.Sc (Agri) with 5 years experience out of which at least 3 years experience in seed testing/ seed analysis • M.Sc (Agri) with 3 years experience – for Agronomy, genetics and plant breeding graduate out of which at least 2 years experience in seed analysis • 2 Years experience for Seed Technology Graduate |

Annexure: Assessment Criteria

| | |
|-----------------------------|--------------------------------|
| Assessment Criteria | |
| Job Role | Seed Analysis In-charge |
| Qualification Pack | AGR/Q7103, v1.0 |
| Sector Skill Council | Agriculture |

| Sr. No. | Guidelines for Assessment |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC. |
| 2 | The assessment for the theory part will be based on knowledge bank of questions created by the SSC. |
| 3 | Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre(as per assessment criteria below) |
| 4 | Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria |
| 5 | To pass the Qualification Pack, every trainee should score a minimum of 70% in aggregate |
| 6 | In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack |

| Assessable outcomes | Assessment criteria | Marks Allocation | | | |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------|-----------|------------------|
| | | Total Marks | Out Of | Theory | Skills Practical |
| 1. AGR/Q7110: Prepare and maintain work area and equipments for seed testing | PC1. clean and maintain the cleanliness of the work area using approved sanitizers and keep it free from dust, waste, and spillage | | 25 | 5 | 20 |
| | PC2. ensure that the work area is safe and hygienic for seed analysis | | 10 | 3 | 7 |
| | PC3. dispose waste materials as per defined SOPs and industry requirements | | 15 | 5 | 10 |
| | PC4. check the working and performance of all machineries and tools used for process such as weighing scale, microscope, germination chamber, oven, magnifier, seed blower, seed trier, sand sterilizer, moisture meter, etc. | | 15 | 5 | 10 |
| | PC5. clean the equipments and glass wares used with recommended sanitizers following specifications and organisation standards | | 15 | 5 | 10 |
| | PC6. attend minor repairs/faults of equipments, if required | | 5 | 2 | 3 |
| | PC7. organize glass wares and equipments for analysis | | 15 | 5 | 10 |
| | | | 100 | 30 | 70 |
| 2. AGR/Q7111: Prepare for quality analysis and manage housekeeping for seed lab activities | PC1. read and understand the instructions | | 2 | 1 | 1 |
| | PC2. read and understand the standard operating procedures (SOP) for calibration of each equipments | | 2 | 1 | 1 |
| | PC3. calibrate equipments like weighing scale, microscope, germination chamber etc. | | 5 | 1 | 4 |

| | | | | | |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---|-----|-----|
| | PC4. record the reading in the calibration register | | 2 | 0.5 | 1.5 |
| | PC5. handle and maintain tools (deadweights, calibrated measuring jars) and reagent (standard solutions) used for calibration of equipments following laboratory procedures and standards | | 3 | 1 | 2 |
| | PC6. maintain list of all equipments along with its calibration frequency | | 2 | 0.5 | 1.5 |
| | PC7. update the manager in advance on external calibration dates, follow up with external labs and ensure external calibration of equipments on time | | 3 | 1 | 2 |
| | PC8. maintain record/file on external calibration reports | | 2 | 0.5 | 1.5 |
| | PC9. check the working and performance of all equipments on regular basis | | 4 | 1 | 3 |
| | PC10. report any malfunction/repairs to the manager | | 3 | 1 | 2 |
| | PC11. inform the supplier/manufacture on the malfunction/repairs and get it repaired immediately | | 3 | 1 | 2 |
| | PC12. maintain list of all equipments along with the details of annual maintenance contract | | 3 | 1 | 2 |
| | PC13. follow up with the annual maintenance contractor and ensure maintenance of all equipments | | 4 | 1 | 3 |
| | PC14. record all details on lab equipment like performance, faults, repairs, annual maintenance etc in the equipment register and in ERP | | 4 | 1 | 3 |
| | PC15. read and understand the SOPs for preparing each reagent | | 2 | 0.5 | 1.5 |
| | PC16. weigh required chemicals and measure solvents in calibrated | | 4 | 1 | 3 |

| | | | | | |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---|-----|-----|
| | instruments and measuring jars | | | | |
| | PC17. mix solvents and chemicals and maintain required conditions following the procedure for preparing the reagents | | 5 | 1 | 4 |
| | PC18. prepare standards solutions for calibration of equipments | | 5 | 1 | 4 |
| | PC19. switch on the water distillation unit and prepare distilled water | | 4 | 1 | 3 |
| | PC20. ensure availability of distilled water and standard solutions all time | | 2 | 0.5 | 1.5 |
| | PC21. store the chemicals, solvents, acids, reagents etc following manufacturer's instructions (from the label) or following laboratory procedures and standards | | 2 | 0.5 | 1.5 |
| | PC22. maintain list of all chemicals, solvents, acids, reagents, glass wares, consumables, equipment spares etc used in the laboratory | | 3 | 1 | 2 |
| | PC23. check the inventory of lab chemicals, glass wares, consumables, equipment spares at regular intervals in the register and ERP and update lab technician on the inventory status | | 3 | 1 | 2 |
| | PC24. prepare purchase requisition for lab chemicals, glass wares, consumables, equipment spares with the approval of superiors, and process requisition | | 3 | 1 | 2 |
| | PC25. ensure and maintain inventory of all lab chemicals, glass wares, consumables, equipment spares etc | | 3 | 1 | 2 |
| | PC26. clean the glassware used for analysis with recommended detergents, disinfectants and sanitizers | | 3 | 1 | 2 |
| | PC27. clean and maintain equipments used following the maintenance | | 3 | 1 | 2 |

| | | | | | |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--|------------|-----------|-----------|
| | procedures for equipments | | | | |
| | PC28. read and understand the SOP and checklist for housekeeping | | 2 | 1 | 1 |
| | PC29. visit the laboratory at regular intervals and perform checks based on the housekeeping checklist | | 4 | 1 | 3 |
| | PC30. understand the suggested corrective action | | 2 | 1 | 1 |
| | PC31. ensure to implement the corrective action immediately | | 3 | 1 | 2 |
| | PC32. file the housekeeping checklist | | 2 | 1 | 1 |
| | PC33. maintain records on all documents related to the housekeeping activity | | 3 | 1 | 2 |
| | | | 100 | 30 | 70 |
| 3. AGR/Q7112: Carry out sampling and seed testing activities | PC1. read and understand the sampling instructions | | 2 | 0.5 | 1.5 |
| | PC2. receive the seed lot in the laboratory for analysis and testing | | 2 | 0.5 | 1.5 |
| | PC3. determine appropriate weight or amount of seed needed for analysis | | 4 | 1 | 3 |
| | PC4. use equipments such as hand lens, magnification light to divide seed samples into different types of seeds | | 2.5 | 0.5 | 2 |
| | PC5. ensure homogeneity of seed sample for analysis. If there is any evidence of heterogeneity in the sample drawn, discontinue the sampling | | 3 | 1 | 2 |
| | PC6. read and understand the standard operating procedures (sop) for analysis of each sample | | 2.5 | 0.5 | 2 |
| | PC7. carry out analysis in calibrated equipments following standard operating procedure | | 3 | 1 | 2 |

| | | | | | |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----|-----|-----|
| | PC8. store the samples properly and in good condition | | 2 | 0.5 | 1.5 |
| | PC9. after the sampling is complete, send the seeds for testing for purity and germination | | 2.5 | 0.5 | 2 |
| | PC10. conduct purity analysis of seed sample to determine different components of purity such as pure seeds, other crop seeds, weed seeds and inert matter | | 4 | 1 | 3 |
| | PC11. perform basic tests on physical parameters like colour, appearance, texture, weight, count etc on the seed samples | | 2.5 | 0.5 | 2 |
| | PC12. visually examine the seed sample/or with the aid of a hand lens and table lamp to check for inert matter, other crop seed, seed and other distinguishable varieties. | | 2.5 | 1 | 1.5 |
| | PC13. sort put pure seed from other materials | | 2.5 | 1 | 1.5 |
| | PC14. weigh pure seed and inert matter separately and calculate the percentage of both separately | | 2.5 | 1 | 1.5 |
| | PC15. perform basic chemical analysis like moisture content of seed sample (to estimate the moisture content of a given seed sample, use hot air oven method, by weighing the seeds and crushing the seeds) | | 4 | 1 | 3 |
| | PC16. set the oven to the desired temperature depending on the type of seed, and heat the seed sample in the oven for a defined number of hours, depending on the type of seed | | 2.5 | 1 | 1.5 |
| | PC17. remove the seed sample from the oven and cool in dessicators till the seed sample reaches the lab temperature | | 4 | 1 | 3 |

| | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|-----|
| PC18. check the weight of the cooled sample | 2.5 | 1 | 1.5 |
| PC19. determine the moisture content dividing the difference between the weight of final seed sample after drying and initial seed sample before drying by the initial seed weight before drying | 4 | 1 | 3 |
| PC20. carry out germination test to determine maximum germination potential of seed sample | 4 | 1 | 3 |
| PC21. draw seeds in batches randomly from the seed sample and place them on a moist substrate by spacing them uniformly | 4 | 1 | 3 |
| PC22. place on sheet of germination paper after wetting in water on a polythene sheet | 3 | 1 | 2 |
| PC23. place the batch of seeds under testing on the germination paper and cover the batch of seeds with one wet germination paper | 4 | 1 | 3 |
| PC24. roll the whole assembly along with the polythene sheet to form a towel, with a pair of rubber bands | 4 | 1 | 3 |
| PC25. place a label inside the polythene cover having details such as kind/variety/lot no,etc | 2.5 | 1 | 1.5 |
| PC26. incubate the seed sample under controlled conditions depending on the type of seed | 2.5 | 1 | 1.5 |
| PC27. make two observations for seed evaluation, take first and final counts after the completed of recommended incubation period | 2.5 | 1 | 1.5 |
| PC28. during first count, count only normal seeds and note down on analysis sheets, allow remaining seeds to be reincubated upto the day of the final count | 2.5 | 1 | 1.5 |
| PC29. during final count, count remaining normal seeds and add | 4 | 2 | 2 |

| | | | | | |
|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------|-----------|-----------|
| | to the first count. Also count the abnormal seeds, dead seeds, hard seeds and fresh ungerminated seeds and make a note on the analysis sheet | | | | |
| | PC30. calculate the percentage of normal seeds, abnormal seeds, hard seeds and fresh ungerminated seeds and report the final figure | | 3 | 1 | 2 |
| | PC31. set up and perform special seed tests (eg. chemical stain tests) to determine presence of pests, hollow seeds or seed damage, and to check overall seed quality | | 2.5 | 0.5 | 2 |
| | PC32. inform the person concerned in case of any discrepancies in the analysis result | | 2.5 | 0.5 | 2 |
| | PC33. record the results in the quality analysis register | | 2 | 1 | 1 |
| | PC34. clean and maintain equipments used, following maintenance procedures for equipments | | 2.5 | 0.5 | 2 |
| | | | 100 | 30 | 70 |
| 4. AGR/Q7113: Complete documentation and record keeping related to performing seed lab activities | PC1. document and maintain records of all seeds sampled such as place of sampling, sampling procedure, details of sample such as supplier information, batch number, receiving date, supplier quality document, supplier documents (P.O., invoice, certificate of analysis, etc.), condition of the transport vehicle, condition of seeds, as per company standards | | 10 | 6 | 4 |
| | PC2. document and maintain records of seed analysis such as parameters analyzed, method of analysis, storage of sample, equipments used for analysis, analysis results, certificate of | | 10 | 6 | 4 |

| | | | | | |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------|-----------|-----------|
| | analysis, etc. as per company standards | | | | |
| | PC3. maintain record of observations (if any) related to seeds | | 10 | 6 | 4 |
| | PC4. load the analysis details in ERP for future reference | | 10 | 6 | 4 |
| | PC5. verify the documents and track from unsampled seed stage to analysed seed stage, in case of quality concerns and for quality management system audits | | 10 | 6 | 4 |
| | PC6. document and maintain records on equipments used for analysis, condition of the equipment, control used for analysis, equipment parameter, equipment performance, time taken for analysis, etc. as per company standards | | 10 | 6 | 4 |
| | PC7. document and maintain records of equipment calibration such as date of calibration, procedure and method used for calibration, errors/variations observed, calibration readings, internal and external calibration reports, reagents/standards/tools used for calibration condition of the equipment, etc. as per company standards | | 10 | 6 | 4 |
| | PC8. maintain record of observations or deviations (if any) | | 10 | 6 | 4 |
| | PC9. load the details in ERP for future reference | | 10 | 6 | 4 |
| | PC10. verify the documents and track from analysis report to equipment used, in case of quality concerns and for quality management system audits | | 10 | 6 | 4 |
| | | | 100 | 60 | 40 |

| | | | | | |
|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|---|---|
| 5. AGR/Q7114: Ensure safety, hygiene and sanitation for seed testing | PC1. comply with safety and sanitation procedures and standards | | 8 | 3 | 5 |
| | PC2. ensure personal hygiene by use of gloves, hairnets, masks, ear plugs, goggles, shoes, etc. | | 8 | 2 | 6 |
| | PC3. ensure testing of seeds is carried out in a hygienic manner | | 8 | 2 | 6 |
| | PC4. use safety equipment such as fire extinguisher, first aid kit and eye-wash station when required | | 8 | 2 | 6 |
| | PC5. follow housekeeping practices by having designated area for materials/tools | | 8 | 3 | 5 |
| | PC6. attend training on hazard management to understand types of hazards such as physical, chemical and biological hazards and measures to control and prevent them | | 8 | 3 | 5 |
| | PC7. identify, document and report problems such as rodents and pests to management | | 10 | 2 | 8 |
| | PC8. conduct workplace checklist audits before and after work to ensure safety and hygiene | | 8 | 3 | 5 |
| | PC9. document and maintain records of raw material, packaging material, process and finished products | | 8 | 3 | 5 |
| | PC10. determine the quality of seeds using criteria such as appearance, size, weight, germination capacity, etc | | 8 | 3 | 5 |
| | PC11. store raw seeds, processed seeds, separately to prevent cross-contamination | | 8 | 2 | 6 |
| | PC12. label raw seeds and processed seeds and store them in designated storage areas according to standard operating procedures | | 10 | 2 | 8 |

| | | | 100 | 30 | 70 |
|-----------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------|-------------------|
| 6. AGR/N4317: Manage and lead a team | PC1. | ensure that the team is aware of the schedule and job expectations on a daily basis | 12 | 4 | 8 |
| | PC2. | involve the team in regular meetings to communicate information intended for them | 12 | 4 | 8 |
| | PC3. | ensure communication to the team on any changes in policies/ processes by the organization through required verbal/ written mechanisms | 12 | 4 | 8 |
| | PC4. | ensure participation of the team in various engagement initiatives organized by the organization | 12 | 4 | 8 |
| | PC5. | counsel and address issues among the team for any work related issues | 12 | 4 | 8 |
| | PC6. | support the manager in deployment of the team as per production schedule and the organizational norms and guidelines | 10 | 4 | 6 |
| | PC7. | ensure periodic training of the team and support the team by delivering trainings especially in the field of latest technology, machinery and equipment | 10 | 3 | 7 |
| | PC8. | share knowledge of processes, techniques and products with the team to enhance their skill levels | 10 | 4 | 6 |
| | PC9. | provide feedback to the manager pertaining to performance of the team | 10 | 4 | 6 |
| | | | 100 | 35 | 65 |
| Total | | 600 | 600 | 215 | 385 |
| <u>Percentage Weightage:</u> | | | | <u>36%</u> | <u>64%</u> |
| <u>Minimum Pass% to qualify (aggregate):</u> | | | | <u>70%</u> | |

