

SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar-Kattankulathur –603203

DEPARTMENT OF AGRICULTURAL ENGINEERING

QUESTION BANK



VII SEMESTER

PAG505 POST HARVESTING TECHNOLOGY OF SEEDS

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UNIT – I: SEED PROCESSING AND CLEANING EQUIPMENTS

Seed Processing – Introduction, Principles – Equipment and their Functions – Scalper, Debearder, Scarifier, Huller, Seed Extractors (Brinjal, Tomato, Chilli), Sunflower Seed Sheller, Pulse Dehuller, Air Screen Seed Cleaner, Seed Grader, Indented Cylinder Grader, Grain Seed Scalper, Double Seed Cleaner – Adjustments for Efficiency – Specific Gravity Separator, Indented Cylinder, Velvet Roll, Spiral and Disc Separators, Colour Sorter, Delinting Machines, Seed Blending.

Q.No	Questions (Part-A)	BT Level	Competency
1	Define seed processing.	BT-1	Remembering
2	State the objectives of seed processing.	BT-1	Remembering
3	List the principles of seed processing.	BT-1	Remembering
4	What is a scalper?	BT-1	Remembering
5	Define a debearder.	BT-1	Remembering
6	What is scarification?	BT-1	Remembering
7	Define a seed huller.	BT-1	Remembering
8	What is an air-screen seed cleaner?	BT-1	Remembering
9	Define seed grading.	BT-1	Remembering
10	What is a specific gravity separator?	BT-1	Remembering
11	Explain the working principle of a brinjal, tomato or chilli seed extractor.	BT-2	Understanding
12	Explain the function of a sunflower seed sheller.	BT-2	Understanding
13	Describe the working principle of a pulse dehuller.	BT-2	Understanding
14	Explain the principle of an air-screen seed cleaner.	BT-2	Understanding
15	Distinguish between seed cleaning and seed grading.	BT-2	Understanding
16	Explain the working of an indented cylinder grader.	BT-2	Understanding
17	State the advantages of a double seed cleaner.	BT-2	Understanding
18	Explain the principle of a specific gravity separator.	BT-2	Understanding
19	Describe the working of a velvet roll separator.	BT-2	Understanding
20	Explain the working principle of a spiral separator.	BT-2	Understanding
21	State the function of a disc separator.	BT-2	Understanding
22	Explain the importance of a colour sorter in seed processing.	BT-2	Understanding
23	State the advantages of seed delinting.	BT-2	Understanding
24	Explain the importance of seed blending.	BT-2	Understanding
25	Explain why proper machine adjustments are necessary for efficient seed processing.	BT-2	Understanding

Q.No	Questions (Part-B)	BT Level	Competency
1	Illustrate the complete seed processing sequence with a neat flow chart and explain the function of each processing operation.	BT-3	Applying
2	Explain the principles of seed processing and discuss how they are applied to improve seed quality and purity.	BT-3	Applying
3	Describe the construction, working principle and applications of a scalper, debearder and scarifier with neat sketches.	BT-3	Applying
4	Explain the construction, operation and maintenance of seed hullers used in seed processing.	BT-3	Applying
5	Compare the methods of seed extraction in brinjal, tomato and chilli, and recommend the suitable method for commercial seed production.	BT-4	Analyzing
6	Explain the construction, working principle and performance of a sunflower seed sheller and pulse dehuller.	BT-3	Applying
7	Describe the construction, working principle and adjustments of an air-screen seed cleaner with a neat diagram.	BT-3	Applying
8	Explain the construction and working of an indented cylinder grader. Analyze its role in seed grading efficiency.	BT-4	Analyzing
9	Explain the construction, working principle and advantages of a double seed cleaner in seed processing plants.	BT-3	Applying
10	Discuss the construction, working principle and applications of a specific gravity separator with suitable illustrations.	BT-3	Applying
11	Compare the working principles, advantages and limitations of indented cylinder, velvet roll, spiral and disc separators.	BT-4	Analyzing
12	Analyze the role of colour sorters in improving seed quality and explain their working principle.	BT-4	Analyzing
13	Explain the methods of seed delinting and discuss their advantages and limitations for different crops.	BT-3	Applying
14	Discuss the importance, methods and applications of seed blending in seed processing industries.	BT-3	Applying
15	Analyze the factors affecting the efficiency of seed processing equipment and suggest suitable machine adjustments for optimum performance.	BT-4	Analyzing
16	Compare air-screen seed cleaners and specific gravity separators based on principle, construction, operation and applications.	BT-4	Analyzing
17	Analyze the complete seed processing line for cereal, pulse and vegetable seeds, highlighting the equipment used at each stage.	BT-4	Analyzing
18	A seed processing plant is producing poor quality seed lots due to improper cleaning and grading. Analyze the possible causes and recommend suitable processing equipment and machine adjustments to improve seed quality.	BT-4	Analyzing

UNIT – II: SEED STORAGE AND DRYING

Seed storage- Storage methods and structures- MAP-Underground storage structures- Bamboo structures-sanitation Storage problems of recalcitrant seeds and their conservation-Seed drying methods – importance- factors-changes during storage- moisture equilibrium, safe seed moisture content- Methods to minimize the loss of seed vigour and viability

Part – A (2 Marks)

Q.No	Questions (Part-A)	BT Level	Competency
1	Define seed storage.	BT-1	Remembering
2	State the objectives of seed storage.	BT-1	Remembering
3	List the methods of seed storage.	BT-1	Remembering
4	What is Modified Atmosphere Packaging (MAP)?	BT-1	Remembering
5	What are underground seed storage structures?	BT-1	Remembering
6	Define bamboo storage structures.	BT-1	Remembering
7	What is meant by storage sanitation?	BT-1	Remembering
8	Define recalcitrant seeds.	BT-1	Remembering
9	What is seed drying?	BT-1	Remembering
10	Define seed moisture equilibrium.	BT-1	Remembering
11	Explain the importance of seed storage.	BT-2	Understanding
12	Explain the significance of Modified Atmosphere Packaging (MAP) in seed storage.	BT-2	Understanding
13	Describe the importance of storage sanitation.	BT-2	Understanding
14	Explain the problems associated with storing recalcitrant seeds.	BT-2	Understanding
15	State the importance of seed drying before storage.	BT-2	Understanding
16	Explain the factors affecting seed drying.	BT-2	Understanding
17	Describe the changes that occur in seeds during storage.	BT-2	Understanding
18	Explain the concept of moisture equilibrium in seeds.	BT-2	Understanding
19	What is safe seed moisture content? Explain its importance.	BT-2	Understanding
20	State the methods to minimize the loss of seed vigour and viability during storage.	BT-2	Understanding
21	Differentiate between orthodox and recalcitrant seeds.	BT-2	Understanding
22	Explain the need for proper storage structures in seed preservation.	BT-2	Understanding
23	Describe the advantages of bamboo storage structures.	BT-2	Understanding
24	Explain why seed moisture should be maintained at safe levels during storage.	BT-2	Understanding
25	State the factors affecting seed longevity during storage.	BT-2	Understanding

Part – B (16 Marks)

Q.No	Questions (Part-B)	BT Level	Competency
1	Explain the principles and objectives of seed storage. Discuss different seed storage methods with suitable illustrations.	BT-3	Applying
2	Describe the different types of seed storage structures and analyze their advantages and limitations.	BT-4	Analyzing
3	Explain the construction, working and applications of underground and bamboo seed storage structures.	BT-3	Applying
4	Discuss the principle, advantages and applications of Modified Atmosphere Packaging (MAP) in seed storage.	BT-3	Applying
5	Analyze the importance of sanitation practices in seed storage and explain the measures to prevent storage losses.	BT-4	Analyzing
6	Explain the characteristics of recalcitrant seeds and discuss the problems associated with their storage and conservation.	BT-4	Analyzing
7	Describe the different methods of seed drying and explain their suitability for different seed types.	BT-3	Applying
8	Explain the importance of seed drying and analyze the factors affecting drying efficiency.	BT-4	Analyzing
9	Discuss the physical, physiological and biochemical changes that occur during seed storage.	BT-4	Analyzing
10	Explain the concept of moisture equilibrium and safe seed moisture content with suitable examples.	BT-3	Applying
11	Analyze the relationship between seed moisture content, temperature and storage life of seeds.	BT-4	Analyzing
12	Explain the methods used to minimize the loss of seed vigour and viability during storage.	BT-3	Applying
13	Compare orthodox and recalcitrant seeds with reference to their storage behaviour and conservation methods.	BT-4	Analyzing
14	Analyze the factors affecting seed longevity during storage and suggest suitable management practices.	BT-4	Analyzing
15	A seed storage facility experiences rapid deterioration in seed quality. Analyze the possible causes and recommend suitable corrective measures.	BT-4	Analyzing
16	Explain the role of storage structures, drying methods and sanitation in maintaining seed quality during storage.	BT-3	Applying
17	Compare different seed drying methods based on principle, efficiency, advantages and limitations.	BT-4	Analyzing
18	Discuss the integrated approaches for maintaining seed vigour and viability during long-term storage under commercial conditions.	BT-4	Analyzing

UNIT – III: SEED CERTIFICATION AND INSPECTION

Seed Certification- history, concept, objectives- agency/organization, NSCA-legal status, phases of seed certification- Certification Standards - crop standards, seed standards; Seed certification programmes. Field Inspection -genetic purity evaluation (grow-out tests); post harvest inspection seed sampling, testing, labelling, tagging

Part – A (2 Marks)

1	Define seed certification.	BT-1	Remembering
2	State the objectives of seed certification.	BT-1	Remembering
3	Briefly explain the history of seed certification in India.	BT-1	Remembering
4	What is the concept of seed certification?	BT-1	Remembering
5	Expand NSCA.	BT-1	Remembering
6	What is the legal status of the National Seed Certification Authority (NSCA)?	BT-1	Remembering
7	List the phases of seed certification.	BT-1	Remembering
8	Define crop standards.	BT-1	Remembering
9	What are seed standards?	BT-1	Remembering
10	What is a seed certification programme?	BT-1	Remembering
11	Explain the importance of seed certification.	BT-2	Understanding
12	Distinguish between crop standards and seed standards.	BT-2	Understanding
13	Explain the role of seed certification agencies.	BT-2	Understanding
14	Describe the purpose of field inspection.	BT-2	Understanding
15	Explain the importance of genetic purity evaluation.	BT-2	Understanding
16	What is a grow-out test? Explain its significance.	BT-2	Understanding
17	Describe the purpose of post-harvest inspection.	BT-2	Understanding

18	Explain the importance of seed sampling.	BT-2	Understanding
19	State the objectives of seed testing.	BT-2	Understanding
20	Explain the importance of seed labelling.	BT-2	Understanding
21	What is seed tagging? State its purpose.	BT-2	Understanding
22	Explain the significance of certification standards in seed production.	BT-2	Understanding
23	Describe the role of field inspection in maintaining genetic purity.	BT-2	Understanding
24	Explain the relationship between seed testing and seed certification.	BT-2	Understanding
25	State the information provided on a certified seed label.	BT-2	Understanding

Part – B (16 Marks)

Q.No	Questions (Part-B)	BT Level	Competency
1	Explain the history, concept and objectives of seed certification in India.	BT-3	Applying
2	Describe the organization, functions and legal status of the National Seed Certification Authority (NSCA).	BT-3	Applying
3	Explain the different phases of seed certification with a neat flow chart.	BT-3	Applying
4	Discuss the crop standards and seed standards used in seed certification programmes.	BT-3	Applying
5	Analyze the importance of seed certification in maintaining seed quality and genetic purity.	BT-4	Analyzing
6	Explain the organization and implementation of seed certification programmes in India.	BT-3	Applying
7	Describe the procedures followed during field inspection in certified seed production.	BT-3	Applying
8	Explain the methods of genetic purity evaluation and discuss the significance of grow-out tests.	BT-4	Analyzing
9	Discuss the objectives, procedures and importance of post-harvest inspection.	BT-3	Applying
10	Explain the methods of seed sampling and their role in quality assurance.	BT-3	Applying
11	Analyze the importance of seed testing in seed certification programmes.	BT-4	Analyzing
12	Explain the procedures for seed labelling and tagging, and discuss their importance in certified seed marketing.	BT-3	Applying

13	Compare crop standards and seed standards with suitable examples.	BT-4	Analyzing
14	Analyze the role of field inspection and grow-out tests in maintaining varietal purity.	BT-4	Analyzing
15	A certified seed lot fails to meet prescribed standards during inspection. Analyze the possible causes and recommend corrective measures.	BT-4	Analyzing
16	Explain the integrated process of seed certification from field inspection to seed tagging with a neat flow chart.	BT-3	Applying
17	Analyze the role of certification agencies, seed testing laboratories and field inspectors in ensuring quality seed production.	BT-4	Analyzing
18	Evaluate the effectiveness of the seed certification system in India and suggest measures for improving the certification process.	BT-4	Analyzing

UNIT – IV: SEED TREATMENT AND PACKAGING

Seed treatments-methods, formulations and equipments, slurry seed treater, mist o mastic seed treater - Seed priming: physiological and biochemical basis, types of priming technology, film coating and pelleting, seed tapes, seed mats, seed colouring,biopriming-Packaging: principles, practices and materials; bagging and labelling.

Part – A (2 Marks)

Q.No	Questions (Part-A)	BT Level	Competency
1	Define seed treatment.	BT-1	Remembering
2	State the objectives of seed treatment.	BT-1	Remembering
3	List the methods of seed treatment.	BT-1	Remembering
4	What are seed treatment formulations?	BT-1	Remembering
5	Define slurry seed treater.	BT-1	Remembering
6	What is a mist-o-matic seed treater?	BT-1	Remembering
7	Define seed priming.	BT-1	Remembering
8	List the types of seed priming.	BT-1	Remembering
9	What is film coating?	BT-1	Remembering
10	Define seed pelleting.	BT-1	Remembering
11	Explain the importance of seed treatment.	BT-2	Understanding
12	Explain the advantages of seed priming.	BT-2	Understanding
13	Describe the physiological basis of seed priming.	BT-2	Understanding
14	Explain the biochemical changes during seed priming.	BT-2	Understanding
15	Differentiate between film coating and seed pelleting.	BT-2	Understanding
16	What are seed tapes? State their advantages.	BT-2	Understanding
17	Explain the purpose of seed mats.	BT-2	Understanding
18	State the importance of seed colouring.	BT-2	Understanding
19	Define biopriming and mention its benefits.	BT-2	Understanding

20	Explain the principles of seed packaging.	BT-2	Understanding
21	List the commonly used seed packaging materials.	BT-2	Understanding
22	Explain the importance of proper seed packaging.	BT-2	Understanding
23	State the purpose of bagging in seed packaging.	BT-2	Understanding
24	Explain the importance of seed labelling.	BT-2	Understanding
25	State the information provided on a seed package label.	BT-2	Understanding

Part – B (16 Marks)

Q.No	Questions (Part-B)	BT Level	Competency
1	Explain the objectives, methods and formulations of seed treatment with suitable examples.	BT-3	Applying
2	Describe the construction, working principle and applications of slurry and mist-o-matic seed treaters.	BT-3	Applying
3	Explain the physiological and biochemical basis of seed priming and discuss its importance in improving seed performance.	BT-3	Applying
4	Describe the different types of seed priming technologies and compare their advantages and limitations.	BT-4	Analyzing
5	Explain the principles, methods and applications of film coating and seed pelleting.	BT-3	Applying
6	Compare film coating and seed pelleting based on process, materials, advantages and applications.	BT-4	Analyzing
7	Explain the preparation, advantages and applications of seed tapes and seed mats.	BT-3	Applying
8	Analyze the importance of seed colouring and bioprimering in enhancing seed quality and crop establishment.	BT-4	Analyzing
9	Discuss the role of bioprimering in sustainable agriculture and disease management.	BT-4	Analyzing
10	Explain the principles and practices of seed packaging with suitable examples.	BT-3	Applying
11	Describe the different packaging materials used for seed storage and analyze their suitability for various seed types.	BT-4	Analyzing
12	Explain the procedures involved in seed bagging and labelling, and discuss their importance in seed marketing.	BT-3	Applying
13	Analyze the factors affecting the selection of seed packaging materials for maintaining seed quality.	BT-4	Analyzing
14	Compare conventional seed treatment methods with modern seed enhancement technologies.	BT-4	Analyzing
15	A seed company plans to market high-quality vegetable seeds with improved germination and shelf life. Analyze and recommend suitable seed treatment, priming and packaging techniques.	BT-4	Analyzing
16	Explain the integrated process of seed treatment, priming, packaging and labelling for commercial seed production.	BT-3	Applying
17	Analyze the role of seed treatment and packaging in improving	BT-4	Analyzing

	seed quality, vigour and marketability.		
18	Evaluate different seed enhancement technologies and recommend the most suitable method for commercial seed production.	BT-4	Analyzing

UNIT – V: SEED LAWS AND LEGISLATION

Salient features of national seed policies, role of various sectors/agencies in efficient seed marketing-quality control and assurance programme-Responsibilities of seed companies and dealers under Seed Act-EXIM policies for seed trade-NSC, SSC- seed bank

Part – A (2 Marks)

Q.No	Questions (Part-A)	BT Level	Competency
1	Define Seed Policy.	BT-1	Remembering
2	State the objectives of the National Seed Policy.	BT-1	Remembering
3	List the salient features of the National Seed Policy.	BT-1	Remembering
4	Expand NSC and SSC.	BT-1	Remembering
5	What is meant by seed marketing?	BT-1	Remembering
6	Define quality control in seed production.	BT-1	Remembering
7	What is quality assurance in seed production?	BT-1	Remembering
8	State the responsibilities of seed companies under the Seed Act.	BT-1	Remembering
9	What are the responsibilities of seed dealers under the Seed Act?	BT-1	Remembering
10	Define seed bank.	BT-1	Remembering
11	Explain the role of public and private sectors in seed marketing.	BT-2	Understanding
12	Describe the role of various agencies in seed quality control.	BT-2	Understanding
13	Explain the importance of quality assurance programmes in seed production.	BT-2	Understanding
14	State the importance of the Seed Act in seed quality regulation.	BT-2	Understanding
15	Explain the role of seed companies in maintaining seed quality.	BT-2	Understanding
16	Describe the functions of the National Seeds Corporation (NSC).	BT-2	Understanding
17	Explain the role of State Seeds Corporations (SSC).	BT-2	Understanding
18	What are EXIM policies for seed trade? Explain their importance.	BT-2	Understanding
19	Explain the significance of seed banks in seed conservation.	BT-2	Understanding
20	Differentiate between quality control and quality assurance.	BT-2	Understanding
21	Explain the objectives of seed marketing.	BT-2	Understanding
22	State the importance of seed legislation in India.	BT-2	Understanding
23	Explain the role of seed dealers in certified seed distribution.	BT-2	Understanding
24	Describe the importance of seed certification in seed	BT-2	Understanding

	marketing.		
25	Explain the role of seed laws in protecting farmers and consumers.	BT-2	Understanding

Part – B (16 Marks)

Q.No	Questions (Part-B)	BT Level	Competency
1	Explain the salient features and objectives of the National Seed Policy with suitable examples.	BT-3	Applying
2	Discuss the role of public, private and cooperative sectors in efficient seed marketing in India.	BT-3	Applying
3	Explain the quality control and quality assurance programmes adopted in the Indian seed industry.	BT-3	Applying
4	Analyze the importance of quality control and quality assurance in maintaining seed standards.	BT-4	Analyzing
5	Explain the responsibilities of seed companies under the Seed Act with suitable examples.	BT-3	Applying
6	Discuss the responsibilities and legal obligations of seed dealers under the Seed Act.	BT-3	Applying
7	Explain the EXIM policies governing seed trade in India and discuss their impact on the seed industry.	BT-3	Applying
8	Analyze the role of EXIM policies in promoting international seed trade while maintaining seed quality.	BT-4	Analyzing
9	Describe the organization, objectives and functions of the National Seeds Corporation (NSC).	BT-3	Applying
10	Explain the organization and functions of the State Seeds Corporation (SSC) in seed production and distribution.	BT-3	Applying
11	Compare the roles and functions of NSC and SSC in seed production, processing and marketing.	BT-4	Analyzing
12	Explain the concept, objectives and importance of seed banks in germplasm conservation.	BT-3	Applying
13	Analyze the role of seed banks in ensuring seed security and biodiversity conservation.	BT-4	Analyzing
14	Compare the roles of various agencies involved in seed quality regulation and marketing in India.	BT-4	Analyzing
15	A seed company receives complaints regarding poor seed quality and improper labelling. Analyze the possible violations of the Seed Act and recommend corrective measures.	BT-4	Analyzing
16	Explain the integrated role of seed laws, quality assurance and seed certification in ensuring quality seed supply to farmers.	BT-3	Applying
17	Analyze the effectiveness of the Indian seed legislation in regulating seed production, marketing and export.	BT-4	Analyzing
18	Evaluate the contribution of National Seed Policy, NSC, SSC and Seed Banks towards the development of the Indian seed sector.	BT-4	Analyzing