

MODEL ANSWER PAPER
MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END THEORY EXAMINATION

B.Sc. (Hons.) Agriculture

| | | | | | |
|------------|------------|-------|---------------------------------|---------------|-----------|
| Semester | : IV (New) | Term | : II | Academic Year | : 2023-24 |
| Course No. | : GPB-243 | Title | : Principles of Seed Technology | | |
| Credits | : 3 (1+2) | | | | |
| Day & Date | : | Time | : | Total Marks | : 40 |

- Note:**
1. Solve **ANY EIGHT** questions from **SECTION 'A'**
 2. All questions from **SECTION 'B'** are compulsory
 3. All questions carry equal marks
 4. Draw neat diagrams wherever necessary

SECTION 'A'

Q. 1 Define Seed. Discuss different classes of seed.

Seed- A mature ovule consisting of an embryonic plant together with a store food, surrounded by protective coat. *(1 mark for correct definition)*

Classes of seed: 1. Nucleus seed 2. Breeder seed 3. Foundation seed 4. Registered seed 5. Certified seed; 6. Truthful seed *(Short explanation above points is necessary-3 marks)*

Q. 2 Describe important causes of genetic deterioration of variety

Causes for genetic deterioration of variety : 1. Developmental variations 2. Mechanical mixtures 3. Mutations 4. Natural crossing 5. Minor genetic variations 6. Selective influence of diseases 7. The technique of the plant breeder *(Short explanation above points is necessary 1 mark each; maximum 4 marks)*

Q. 3 Write about hybrid seed production of cotton on following points.

Description of hybrid seed production of Cotton on following points.

- a) **Land** - It should be free from volunteer plant and soil should be deep, fertile and well drained.
- b) **Isolation requirement**- 50 meters foundation and 30 meters certified seed production program.
- c) **Planting ratio and sowing** - The recommended planting ratio is that the area under female and male parent should be approximately 4:1 or 5:1. The row to row distance should be kept at 150 cm and plant to plant at 100 cm in female rows and 50 cm in male rows. Seed rate - Female -3.75 kg per hectare Male- 2.5 kg per hectare
- d) **Picking of hybrid seed** - Pick up the ripe and completely opened bolls along with carpels with threads on and collect in basket for second a second sorting. Crossed bolls collected in baskets should be sorted the second time to verify that they are the crossed bolls.

Q. 4 Explain the characteristics of quality seed in brief

Characters of good quality of seed : 1. Genetic purity 2. Physical purity 3. Seed germination and vigour 4. High germination percentages and vigour 5. Free from weed and other crop seeds 6. Seed health 7. Seed moisture etc., *(Short explanation above points is necessary; maximum 4 marks)*

Q. 5 Define seed treatment. Enlist benefits of seed treatment.

Seed treatment refers to the application of fungicide, insecticide or a combination of both to seed so as to disinfect and disinfest them from seed born or soil born pathogenic organism and storage insects. *(1 mark for correct definition)*

Benefits of seed treatment: 1. Prevention of spread of plant disease 2. Seed treatments protect seed from seed rot and seedling blight 3. Improve germination 4. Provide protection

from storage insect 5. Controlling soil insect (*Short description 1mark for each point; maximum 3 marks*)

Q. 6 Describe the factors affecting longevity of seed in storage.

Factors affecting longevity of seed in storage : 1. Kind/ variety of the seed 2. Initial seed quality 3. Moisture content 4. Relative humidity and temperature during storage 5. Provenance 6. Effect of fluctuating environmental conditions on viability 7. Special effect of extreme storage conditions on viability 8. oxygen pressure 9. Effect of storage conditions on the activity of organism associated with seeds in storage 10. Storage in transit 11. Other factors such as direct sunlight, effect of seed treatment, numbers of times and kind of fumigation (*Short explanation for above points is necessary; each point ½ mark; maximum 4 marks*)

Q. 7 Write about seed production of tomato on following points.

Seed production of tomato on following points.

- a) **Seed source-** obtain breeder and foundation seed from source approved by seed certification agency. **Seed rate-** 500 grams per hectare
- b) **Sowing of seeds in nursery-** seed may be sown on raised beds
- c) **Transplanting -** transplant 7.5 to 10 cm height seedling **Spacing-** 75x60 and 75x40 cm²
- d) **Harvesting and extraction seed-** fruit is harvested for seed much in the same way that is picked for market and extract seeds. (*Each point 1 mark*)

Q. 8 Define Seed Certification. Give the steps involved in seed certification.

Seed certification is a legally sanctioned system for quality control of seed multiplication and production

Steps involved in seed certification:

- 1) Receipt and scrutiny of the application.
- 2) Verification of seed source, class and other requirements.
- 3) Field inspection should be conducted to see that fields are up to the prescribed field standard.
- 4) Post-harvest inspection, including processing and packing.
- 5) Seed sampling and testing to confirm that the seeds are up to the prescribed seed standards.
- 6) Grant of certificate, tagging and sealing.

(*1 Mark for definition and ½ mark for each correct step maximum 3 marks*)

Q. 9 State the important powers of seed inspector

Powers of seed inspector

1. Inspect as frequently as may be required all places used for growing or storage of seed of notified variety
2. Satisfy himself that conditions of the certificates / tags are being observed
3. Procure sample of seed if any suspect and send for analysis.
4. Investigate complaints which may be made in written to him in respect of any contravention of the provision of act.
5. Maintain record of all inspections made and action taken by him.
6. When so authorized by State Government, to detain imported containers which he has reason to suspect.
7. Institute prosecution in respect of breaches of the act and rules.
8. Perform such duties as may be entrusted to him by the competent authority from time to time. (*Each point 1 mark; maximum 4 marks*)

Q. 10 Discuss factors affecting seed marketing

Factors affecting seed marketing: 1. Clear cut policy 2. Availability of well identified and

adopted varieties 3. Adequate production, storage and testing facilities 4. Official program 5. Demand forecast 6. Market intelligence 7. Transport and storage arrangements 8. Nature of product 9. Quality of control program 10. Publicity 11. Financial rewards

(Each point ½ mark; maximum 4 marks)

SECTION 'B'

Q. 11 Answer in one sentence (1mark each)

1) **What are volunteer plants?**

Ans: Plants growing from seed that remain in the field from previous crop.

2) **Enlist different types of isolation.**

Ans: Spatial, Temporal and Physical barrier

3) **What is the validity period of initial seed test report?**

Ans: Nine months

4) **What do you mean by seed processing?**

Ans: It refers to all the steps involved in the preparation of harvested seed for marketing; viz., handling, shelling, pre- conditioning, drying, cleaning, size grading, upgrading, treating and packaging.

Q. 12 Spell out following(1mark each)

1) **GOT** - Grow Out Test

2) **AOSCA** - Association of Official Seed Certification Agencies

3) **ISTA** - International Seed Testing Association

4) **MSSCL** – Maharashtra State Seed Corporation Limited


Signature of Course Teacher

Name: Dr. V.V.Ujjainkar

Associate Prof (CAS) Agril. Botany

College of Agriculture, Dr. PDKV, Akola

Mobile: 8087387133


Signature of University Head of the Department

Name: Dr. R.B.Ghorade

Head of Department (Agril. Botany)

Dr. PDKV, Akola

Mobile: 9850723706