

Roll No. ....

Question Booklet Number

O. M. R. Serial No.

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## **M. Sc. (Ag.) Genetics and Plant Breeding (Third Semester) EXAMINATION, 2021-22**

### **MAINTENANCE BREEDING, CONCEPT OF VARIETY RELEASE AND SEED PRODUCTION**

Paper Code				
GP	5	0	1	5

Questions Booklet  
Series

**B**

Time : 1:30 Hours ]

[ Maximum Marks : 100

#### **Instructions to the Examinee :**

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 60 questions. Examinee is required to answer any 50 questions in the OMR Answer-Sheet provided and not in the question booklet. If more than 50 questions are attempted by student, then the first attempted 50 questions will be considered for evaluation. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.

#### **परीक्षार्थियों के लिए निर्देश :**

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 60 प्रश्न हैं। परीक्षार्थी को किन्हीं 50 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। यदि छात्र द्वारा 50 से अधिक प्रश्नों को हल किया जाता है तो प्रारम्भिक हल किये हुए 50 उत्तरों को ही मूल्यांकन हेतु सम्मिलित किया जाएगा। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।

(Remaining instructions on the last page)

(शेष निर्देश अन्तिम पृष्ठ पर)

***(Only for Rough Work)***

1. *Argemone maxicana* L. is an objectionable weed in :
  - (A) Wheat
  - (B) Rice
  - (C) Cotton
  - (D) Rapeseed-Mustard
2. Seed certification requires :
  - (A) An improved variety
  - (B) Physical purity
  - (C) Genetic purity
  - (D) All of the above
3. Which male and female ratio is maintained in Bajra for hybrid seed production ?
  - (A) 1 : 2
  - (B) 2 : 4
  - (C) 4 : 6
  - (D) 3 : 6
4. The line which is used to restore fertility in cytoplasmic male sterile line is called :
  - (A) A line
  - (B) B line
  - (C) R line
  - (D) None of the above
5. Removal of off-type plants from the field is called :
  - (A) Detasseling
  - (B) Roguing
  - (C) Clipping
  - (D) Skipping
6. In which of the following crops rope pulling is done for good seed setting in hybrids ?
  - (A) Maize
  - (B) Sorghum
  - (C) Sunflower
  - (D) Rice
7. DUS testing refers to evaluation of varieties in terms of :
  - (A) Distinctness
  - (B) Uniformity
  - (C) Stability
  - (D) All of the above

8. Minikit trials are conducted on :
  - (A) Farmer's Field
  - (B) State Govt. Farms
  - (C) Agricultural Universities
  - (D) All of the above
9. A seed which is developed by the technique of genetic engineering is known as :
  - (A) Orthodox seed
  - (B) Transgenic seed
  - (C) Hybrid seed
  - (D) Registered seed
10. Certification is not required for :
  - (A) Breeder seed
  - (B) Foundation seed
  - (C) Certified seed
  - (D) All of the above
11. In wheat, production of foundation seed needs an isolation distance of :
  - (A) 3 metres
  - (B) 5 metres
  - (C) 10 metres
  - (D) 20 metres
12. Breeder seed is the progeny of :
  - (A) Resistered seed
  - (B) Foundation seed
  - (C) Nucleus seed
  - (D) Certified seed
13. Notification of released varieties is done by :
  - (A) Ministry of Finance
  - (B) Ministry of Agriculture and Irrigation
  - (C) National Seeds Corporation
  - (D) All of the above
14. The headquarters of Project Directorate of Wheat is situated in :
  - (A) Kanpur
  - (B) Lucknow
  - (C) Karnal
  - (D) Hyderabad

15. Adaptive Research Trials are conducted in :
- (A) Research Centres
  - (B) State Government Farms
  - (C) Both (A) and (B)
  - (D) None of the above
16. Preliminary Yield Trials are also known as :
- (A) Station Trial
  - (B) Multilocation Trial
  - (C) Coordinated Trial
  - (D) All of the above
17. Role of border rows in hybrid seed production is :
- (A) Easy identification
  - (B) Additional pollen supply
  - (C) To prevent disease
  - (D) All of the above
18. Which form of chemicals is used to seed treatment ?
- (A) Dust
  - (B) Liquid
  - (C) Slurry
  - (D) All of the above
19. The safe moisture content storage of paddy seeds under ambient condition is :
- (A) 10%
  - (B) 13%
  - (C) 15%
  - (D) 20%
20. How much isolation distance is maintained in maize for foundation seed production ?
- (A) 3 m
  - (B) 150 m
  - (C) 200 m
  - (D) 400 m

21. The purpose of seed certification is :
- (A) To maintain a high quality seed
  - (B) To train seed producer
  - (C) To distribute seeds
  - (D) To transport seeds
22. Seed which contains more than one embryo is called :
- (A) Polyembryony
  - (B) Polypetalous
  - (C) Polyandrus
  - (D) Apomixis
23. Which changes occur during seed storage ?
- (A) Physical changes
  - (B) Nutritional changes
  - (C) Respiratory changes
  - (D) All of the above
24. Seed replacement rate is :
- (A) Maximum in hybrid seeds
  - (B) Minimum in cross-pollinated crops
  - (C) Maximum in self-pollinated crops
  - (D) None of the above
25. Which part of seed provides food reserves to germinating embryo ?
- (A) Seed coat
  - (B) Embryo
  - (C) Endosperm
  - (D) Hilum
26. The class of seed, which is generally used in seed multiplication chain is :
- (A) Truthful labelled seed
  - (B) PUSA seed
  - (C) Breeder seed
  - (D) Commercial seed
27. The formula for calculating the real value of seed is :
- (A)  $\text{Purity \%} \times \text{Moisture \%} / 100$
  - (B)  $\text{Purity \%} \times \text{Germination \%} / 100$
  - (C)  $\text{Purity \%} \times \text{Viability \%} / 100$
  - (D) All of the above

28. National Seed Research and Training Centre (NSRTC) is situated at :
- (A) Kanpur
  - (B) Lucknow
  - (C) Varanasi
  - (D) Meerut
29. Spoon method of seed sampling is used for :
- (A) Small seeded varieties
  - (B) Large seeded varieties
  - (C) Tubers
  - (D) Bulbs
30. Weight of 1000 seeds is known as :
- (A) Seed index
  - (B) Test weight
  - (C) Seed density
  - (D) Seed viability
31. Plants emerged in the seed plot from previous crops are referred to as :
- (A) Off type plants
  - (B) Male sterile plants
  - (C) Volunteer plants
  - (D) Male fertile plants
32. A line is also known as :
- (A) Male fertile line
  - (B) Male sterile line
  - (C) Restorer line
  - (D) Maintainer line
33. In pigeonpea, the production of certified seed requires an isolation distance of :
- (A) 25 m
  - (B) 50 m
  - (C) 100 m
  - (D) 200 m
34. Which one is dicotyledonous seed ?
- (A) *Triticum aestivum*
  - (B) *Zea mays*
  - (C) *Pisum sativum*
  - (D) *Oryza sativa*
35. Time isolation in hybrid maize seed production would be :
- (A) 5-10 days
  - (B) 20-25 days
  - (C) 50-60 days
  - (D) 10-15 days

36. In tetrazolium test, the colour of living tissues of seed changes to :
- (A) Yellow
  - (B) Pink
  - (C) Green
  - (D) Blue
37. Detasseling is done in :
- (A) Wheat
  - (B) Rice
  - (C) Maize
  - (D) Barley
38. For certification purpose, in majority of the crops the physical purity should be :
- (A) 95%
  - (B) 96%
  - (C) 97%
  - (D) 98%
39. Johnson grass is a noxious weed of :
- (A) Maize
  - (B) Jowar
  - (C) Bajra
  - (D) Wheat
40. When was first seed testing laboratory established in our country ?
- (A) 1961
  - (B) 1971
  - (C) 1981
  - (D) 1991
41. According to ISTA, how many seeds are required for germination test ?
- (A) 150
  - (B) 200
  - (C) 300
  - (D) 400
42. The main responsibility of foundation seed production is :
- (A) Registered growers
  - (B) SSCA
  - (C) NSC
  - (D) All of the above



43. Which seed is distributed to the farmers for commercial cultivation ?
- (A) Nucleus seed  
(B) Breeder seed  
(C) Foundation seed  
(D) Certified seed
44. How much genetic purity is found in breeder seed ?
- (A) 90%  
(B) 99.9%  
(C) 100%  
(D) 85%
45. The colour of tag used for breeder seed is :
- (A) Red  
(B) Yellow  
(C) White  
(D) Blue
46. Indian Seeds Act passed in :
- (A) 1966  
(B) 1970  
(C) 2000  
(D) 2004
47. Which is the cause of seed deterioration ?
- (A) Genetic changes  
(B) Reduced enzyme activities  
(C) Accumulation of toxic substances  
(D) All of the above
48. The test required for granting protection of a new variety under PPV is :
- (A) VCU  
(B) DUS  
(C) GOT  
(D) All of the above
49. Certified seed is produced from :
- (A) Nucleus seed  
(B) Breeder seed  
(C) Foundation seed  
(D) Truthful seed

50. Sequence of 3-generation system of seed in India is :
- (A) Foundation-Labelled-Certified
  - (B) Certified-Breeder-Foundation
  - (C) Breeder-Foundation-Certified
  - (D) Breeder-Certified-Foundation
51. Certification is not required for :
- (A) Nucleus seed
  - (B) Breeder seed
  - (C) Certified seed
  - (D) Both (A) and (B)
52. Breeder seed is the progeny of :
- (A) Nucleus seed
  - (B) Foundation seed
  - (C) Registered seed
  - (D) Certified seed
53. Improved seed includes :
- (A) Nucleus seed
  - (B) Breeder seed
  - (C) Foundation seed
  - (D) All of the above
54. Seeds, which are viable for a period of 3-15 years are known as :
- (A) Microbiotic seed
  - (B) Mesobiotic seed
  - (C) Macrobiotic seed
  - (D) None of the above
55. The most important factors influencing the life span of seeds under storage are :
- (A) Rainfall and R. H.
  - (B) Climate and temperature
  - (C) Temperature and R. H.
  - (D) Seed size and moisture content
56. International Seed Testing Association was established on :
- (A) 10 July, 1924
  - (B) 12 February, 1942
  - (C) 12 July, 1925
  - (D) 10 July, 1914

57. Which of the following enzymes catalyses the tetrazolium staining reaction ?
- (A) Peroxidase
  - (B) Amylase
  - (C) Dehydrogenase
  - (D) All of the above
58. Most critical factors of seed germination are :
- (A) Oxygen and light
  - (B) Moisture and temperature
  - (C) Moisture and light
  - (D) Temperature and light
59. The percentage impurity is also referred to as :
- (A) Seed index
  - (B) Breakage
  - (C) Dockage
  - (D) Test weight
60. Which of the following tests is used to test genetic purity ?
- (A) Viability test
  - (B) Germination test
  - (C) Grow-out test
  - (D) Tetrazolium test

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the most correct/appropriate answer and mark the same in the OMR Answer-Sheet as per the direction :

**Example :**

**Question :**

Q. 1 (A) ☒ (B) (C) (D)

Q. 2 (A) (B) ☒ (C) (D)

Q. 3 (A) ☒ (B) (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.
6. All answers are to be given on OMR Answer sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.
7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.
8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.
9. There will be no negative marking.
10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.
11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.
12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

**Impt. :** On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर—A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से एक सबसे सही अथवा सबसे उपयुक्त उत्तर छोटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

उदाहरण :

प्रश्न :

प्रश्न 1 (A) ☒ (B) (C) (D)

प्रश्न 2 (A) (B) ☒ (C) (D)

प्रश्न 3 (A) ☒ (B) (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।
8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।
9. निगेटिव मार्किंग नहीं है।
10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।
12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

**महत्वपूर्ण :** प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।