

11. Germplasm is also called
(A) Gene pool (B) Genetic resource
(C) Gene Bank (D) World collection
12. NBPGR is responsible for the introduction and maintenance of germplasm of
(A) Agricultural Crops
(B) Agricultural and horticultural crops
(C) Horticultural crops
(D) Agricultural, horticultural and forest plant species
13. The cultivated banana is a
(A) Diploid (B) Autotriploid
(C) Allotriploid (D) Allotetraploid
14. Genetic drift is also called
(A) Genetic erosion (B) Random drift
(C) Genetic slippage (D) Genetic loss
15. Which is the most correct about cells present in an embryo sac?
(A) Egg cell, two antipodal cells, a secondary nucleus and two synergids
(B) Egg cells, two synergids and a secondary nucleus
(C) A $2n$ secondary nucleus, one egg cell and three antipodal cells
(D) Three antipodal cells, two synergids, one egg cell and one $2n$ secondary nucleus
16. Which is the most common source of commercially used male sterility?
(A) Induced mutations
(B) Spontaneous mutations
(C) Genetic engineering
(D) Interspecific hybridization
17. In case a dihybrid crosses, how many types of gametes will be produced by F_1 ?
(A) 2 (B) 4
(C) 9 (D) 16
18. Crossing over occurs during
(A) Leptotene (B) Zygotene
(C) Pachytene (D) Diplotene
19. The number of single crosses in a full diallel is equal to
(A) $N(n-1)$ (B) $2n(n-1)$
(C) n^2 (D) $n(n-1)/2$
20. The terms genotype and phenotype were given by
(A) Bateson (B) Mendel
(C) Johannsen (D) Morgan

21. Self-pollination increases
(A) Homozygosity (B) Heterozygosity
(C) Heterogeneity (D) Homogeneity
22. Purity of existing pureline varieties can be maintained by following
(A) Pureline selection (B) Mass selection
(C) Pedigree selection (D) Recurrent selection
23. Pusa baisakhi is a variety of
(A) Cowpea (B) Frenchbean
(C) Mungbean (D) Urdbean
24. In case of barley, one chief character is
(A) Chapati making quality (B) Milling quality
(C) Baking quality (D) Malting quality
25. An off-season crop of wheat and barley may be grown at
(A) Wellington (Tamil Nadu)
(B) Kulu valley (Himachal Pradesh)
(C) Bikaner (Rajasthan)
(D) Jorhat (Assam)
26. HUW-234 is a variety of
(A) Pea (B) Rice
(C) Wheat (D) Pigeonpea
27. Leaf rust resistance in wheat (*Triticum aestivum*) has been transferred from
(A) *T. monococcum* (B) *Aegilops speltoides*
(C) *T. timopheevi* (D) All of above
28. Ratooning is practiced for cultivation of
(A) Maize (B) Mango
(C) Apple (D) Sugarcane
29. The chief weakness of Single Seed Descent (SSD) scheme is
(A) High demand on resources (B) Lack of opportunity for selection
(C) Plant loss (D) Loss of high yielding segregants
30. Referred as
(A) Extra chromosome (B) Additional chromosome
(C) Alien chromosome (D) Iso chromosome
31. In bulk method, the bulk populations are
(A) Space planted (B) Planted at commercial rates
(C) Densely planted (D) Also grown in off-season nurseries

32. Self-and often-cross pollinated crops show considerable extent of
(A) Inbreeding depression (B) Heterosis and additive variance
(C) Additive variance (D) Heterosis
33. Populations of cross-pollinated crop species are highly
(A) Heterozygous and heterogeneous
(B) Heterozygous and homogeneous
(C) Homozygous and heterogeneous
(D) Homozygous and homogeneous
34. The simplest form of progeny selection is
(A) Recurrent selection for gca (B) Mass selection
(C) Ear-to-row method (D) Simple recurrent selection
35. Selection for simply inherited traits is started from
(A) F₂ (B) F₃
(C) F₄ (D) F₅
36. In crop improvement programmes which is the most commonly used
(A) Intergeneric hybridization
(B) Interspecific hybridization
(C) Intervarietal hybridization
(D) Distant hybridization
37. Triticale was first produced by
(A) Karpechenko (B) Darwin
(C) Rimpau (D) Ladzinske
38. Somatic (2n) chromosome number in breadwheat is
(A) 14 (B) 28
(C) 42 (D) 56
39. ????
(A) Prevent selfing (B) Promote crossing
(C) Promote seed set (D) Prevent outcrossing
40. Sugarcane varieties are ordinarily developed through
(A) Mutation breeding (B) Intervarietal hybridization
(C) Interspecific hybridization (D) Intergeneric hybridization
41. Selfing reduces heterozygosity in each generation by the factor
(A) 1/8 (B) 1/4
(C) 1/3 (D) 1/2
42. Totipotency refers to
(A) Ability of somatic cells to develop into a whole plant
(B) Ability of dormant seed to produce seedling

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- (C) Ability of parthenocarpic seed to produce seedling
- (D) Ability of dormant seed to produce a whole plant

43. When a single cross hybrid is crossed with an open pollinated variety, it is termed as

- (A) Test cross
- (B) Top cross
- (C) Double top cross
- (D) Three-way cross

44. India is the second country after China to have developed hybrids in

- (A) Maize
- (B) Castor
- (C) Cotton
- (D) Rice

45. Varalaxmi is a

- (A) Inter hirsutum cotton hybrid
- (B) Inter arborium cotton hybrid
- (C) Inter specific cotton hybrid
- (D) O.P. cotton variety

46. In India, the crop in which a hybrid variety was first developed was

- (A) Cotton
- (B) Maize
- (C) *Sorghum*
- (D) Bajra

47. Transcription redress to

- (A) DNA synthesis
- (B) m-RNA synthesis
- (C) Protein synthesis
- (D) Cell division

48. The present single cross hybrid varieties of maize are produced by planting male and female inbreds in the ration of

- (A) 1:4
- (B) 2:2
- (C) 2:4
- (D) 2:6

49. Generally cereals are deficient in

- (A) Methionine
- (B) Proline
- (C) Lysine
- (D) Tryptophan

50. Groundnut (*Agachis hypogea L.*) us

- (A) Self pollinated
- (B) Cross pollinated
- (C) Often cross pollinated
- (D) Vegetatively propagate

51. Which male sterility system is the most general in its application?

- (A) Genetic
- (B) Polygenic traits
- (C) Cytoplasmic-genetic
- (D) Chemically induced

52. The backcross method of inbred improvement is used for the transfer of

- (A) Oligogenic traits
- (B) Polygenic traits
- (C) Disease resistance
- (D) Chemically induced

53. The concept of gene-for gene relationship between host and pathogen was proposed by

- (A) Van der Plank
- (B) Flor
- (C) Browning
- (D) Marshall

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54. Inability of plants to resist the attack of a given pathogen is referred as
(A) Resistance (B) Tolerance
(C) Susceptibility (D) Severity
55. The terms vertical and horizontal resistance were introduced by
(A) Van der Plank (B) Flor
(B) Browning (D) Marshall
56. Excessive cell division resulting in overgrowth of the diseased plant part is known as
(A) Hyperplasia (B) Hypertrophy
(C) Atrophy (D) Hypotrophy
57. The causal organism of leaf rust in wheat is
(A) *Puccinia striiformis* (B) *P. graminis pv. tritici*
(C) *P. recondite pv. tritici* (D) *P. graminis maydis*
58. Genetics of pathogenicity progresses due to discovery of new
(A) Genes for resistance (B) Hosts for pathogens
(C) Genes for virulence (D) Genes for resistance and for virulence
59. The gene cry 1Ac was isolated from
(A) *Bacillus thuringiensis* (B) *Agrobacterium tumefaciens*
(C) *Escherichia coli* (D) *Rhizobium sp.*
60. Which of the following cases of insect resistance is governed by polygenes?
(A) Cereal leaf beetle(wheat)
(B) Spotted alfalfa aphid
(C) Greenbug (wheat)
(D) Cereal leaf beetle and greenbug
61. Wheat variety C 306 is resistant to
(A) Saline soil (B) Acidic Soil
(C) Alkali soil (D) drought
62. Loose smut of wheat disease can be controlled by seed treatment with
(A) GA (B) Vitavax
(C) Thiram (D) Metalaxyl
63. The term mutation was introduced by
(A) Bateson (B) Gustafsson
(C) Muller (D) Hugo de Vries
64. Nullisomics produce gametes with
(A) $n+1$ (B) $n-1$
(C) n (D) $n+1-1$
65. recessive mutations can be earliest selected in
(A) M_1 generation (B) M_2 generation
(C) M_3 generation (D) M_4 generation

66. The frequency of spontaneous mutations is generally
(A) 10^{-4} (B) 10^{-5}
(C) 10^{-6} (D) 10^{-7}
67. Breadwheat has genomic constitution of
(A) ABC (B) ABD
(C) ADR (D) BDR
68. Genes suppressing homoeologous pairing in wheat have been located on chromosome
(A) 5A (B) 5B
(C) 5D (D) 2A
69. The largest number of mutant varieties have been developed in
(A) Cereal crops (B) Pulse crops
(C) Cash crops (D) Oilseed crops
70. The gigas mutant of *Oenothera lamarckiana* was on
(A) Allopolyploid (B) Autotetraploid
(C) Allotetraploid (D) Autotriploid
71. Which of the following is a popular wheat variety?
(A) Mansuri (B) Jaya
(C) PBW343 (D) Pusa Baisakhi
72. Wheat variety Sharbati Sonora is a gamma ray induced mutant of the cultivar
(A) NP 799 (B) Lerma Rojo
(C) K 68 (D) Sonora 64
73. The term central dogma refers to the flow of information in which of the following orders?
(A) DNA-RNA (B) DNA-RNA-Protein
(C) DNA-Protein-RNA (D) RNA-DNA-RNA
74. Which of the following is transition?
(A) A→T (B) A→C
(C) A→G (D) G→T
75. One gram of nitrogen is present in how many grams of protein?
(A) 3.25 (B) 6.25
(C) 8.25 (D) 9.25
76. Frame-shift mutations are produced by base
(A) Substitution (B) Deletion
(C) Addition (D) Deletion and addition
77. *Opaque 2 mutant* of maize possesses
(A) High proptein and high lysine
(B) High protein and high tryptophan

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- (C) High lysine and low tryptophan
- (D) High lysine and high tryptophan

78. The father of plant tissue culture is

- (A) E.C Cocking
- (B) P.R White
- (C) R.J. Gauseret
- (D) G. Haberlandt

79. Recalcitrant seeds

- (A) Can be dried at low temperature
- (B) Can be stored at low temperature
- (C) Cannot be dried
- (D) Cannot be dried and stored at low temperature

80. RAPD markers show

- (A) Co-dominance
- (B) Partial dominance
- (C) Over dominance
- (D) Complete dominance

81. In 3-line hybrid seed production male sterile line is referred as

- (A) A-line
- (B) B-line
- (C) C-line
- (D) R-line

82. The most commonly used vector for gene transfer in plant is

- (A) Ti plasmid
- (B) *Agrobacterium tumefaciens*
- (C) Ri plasmid
- (D) Cauliflower mosaic virus

83. An autotetraploid with all recessive alleles at a locus is known as

- (A) Quadriplex
- (B) Duplex
- (C) Simplex
- (D) Nulliplex

84. The frequency of crossing over is determined by

- (A) Parental genotype
- (B) Thickness of chromosomes
- (C) Length of chromosomes
- (D) Distance between genes

85. The first seed testing laboratory was established by

- (A) Nobbe
- (B) Mendel
- (C) Neergard
- (D) Harrington

86. DNA-dependent RNA polymerase binds to

- (A) Operator gene
- (B) Promoter gene
- (C) Regulator gene
- (D) Structural gene

87. Crop ideotype refers to

- (A) Ideal plant type
- (B) Model plant type
- (C) Both
- (D) Neither

88. Dee-gee-woo-gen is the source of dwarfing gene in

- (A) Pearl millet
- (B) *Sorghum*
- (C) Rice
- (D) Wheat

89. Drought resistance is associated with
(A) Morphological features (B) Physiological features
(C) Biochemical factors (D) All of the above
90. Under drought conditions, there is an increase in
(A) Abscisic acid content (B) Ethylene level
(C) Proline level (D) All of the above
91. Salinity tolerant variety of rice is
(A) IR 8 (B) IR 20
(C) Mohan (D) IR 36
92. In gametophytic system of self incompatibility, partial fertility will result from a cross between
(A) $S_1S_2 \times S_1S_2$ (B) $S_1S_2 \times S_1S_3$
(C) $S_1S_2 \times S_3S_4$ (D) None of the above
93. Both additive and non-additive gene action is involved in
(A) Simple recurrent selection
(B) Recurrent selection for gca
(C) Recurrent selection for sca
(D) Reciprocal recurrent selection
94. The population of F_1 hybrid is
(A) Homogeneous and homozygous
(B) Homogeneous and heterozygous
(C) Heterogeneous and homozygous
(D) Heterogeneous and heterozygous
95. When heterosis is estimated over the standard commercial check variety, it is called as
(A) Average heterosis (B) Heterobeltiosis
(C) Useful heterosis (D) Standard heterosis
96. The maximum varieties through mutation breeding in India have been developed by using
(A) X rays (B) Gamma rays
(C) UV light (D) EMS
97. Within a cell, the site of aerobic respiration is
(A) Ribosome (B) Golgi bodies
(C) Mitochondria (D) Endoplasmic reticulum
98. A true fruit develops only from
(A) Thalamus (B) Nucellus
(C) Ovary (D) Ovule
99. The stomata are shrunken in
(A) Hydrophytes (B) Mesophytes
(C) Xerophytes (D) Halophytes

100. Oxygen evolved during photosynthesis comes from
(A) Atmosphere (B) Carbon dioxide
(C) Water (D) Soil
101. Photosynthesis is measured by
(A) Photometer (B) Potometer
(C) Potentiometer (D) IRGA
102. The name bacteria was first given by
(A) Pasteur (B) Linnaeus
(C) Ehrenberg (D) Robert Koch
103. In green plants, photosynthesis takes place in
(A) Mitochondria (B) Ribosomes
(C) Nucleus (D) Chloroplasts
104. After fertilization, embryo develops from
(A) Ovary wall (B) Egg Cell
(C) Ovary (D) Synergids
105. Which one is a short day plant?
(A) Tomato (B) Pepper
(C) Soybean (D) Sunflower
106. Cleistogamy refers to
(A) Fertilization between distant plants
(B) Pollination within the unopened flower
(C) Fertilization between the flowers of the same plant
(D) Failure of fertilization upon pollination within the same plant
107. The physical basis of life is
(A) Cytoplasm (B) Protoplasm
(C) Nucleoplasm (D) Endoplasm
108. When phloem and cambium are present on both sides of xylem, the vascular bundle
(A) Collateral (B) Bicollateral
(C) Concentric (D) Radial
109. Krebs's cycle takes place in
(A) Chloroplast (B) Ribosome
(C) Endoplasmic reticulum (D) Mitochondria
110. The edible part of mango is
(A) Endocarp (B) Mesocarp
(C) Epicarp (D) Embryo
111. Which one of the following is a nitrogen fixing bacterium?
(A) Escherichia (B) Diplococcus
(C) Azotobacter (D) Tuberculosis

112. Which of the following is an essential macronutrient element?
(A) Sulphur (B) Iron
(C) Zinc (D) Copper
113. **ermplasm** can be obtained as a
(A) Gift or exchange
(B) Gift or purchase
(C) Gift or purchase through exchange
(D) Gift through exchange or purchase or collected through exploration
114. Gene bank is best maintained as
(A) DNA bank (B) Seed bank
(C) Field bank (D) Shoot tip bank
115. Golden rice is a rich source of
(A) Vitamin A (B) Vitamin B
(C) Vitamin K (D) Ascorbic acid
116. Tetrazolium test is used to determine
(A) Seed quality (B) Seed viability
(C) Seed germination (D) Seed purity
117. Green revolution has been most successful in
(A) Wheat and potato (B) Rice and barely
(C) Wheat and rice (D) Tea and coffee
118. Which crop is known as vegetable meat?
(A) Pea (B) Soybean
(C) Frenchbean (D) Cowpea
119. An example of heterozygous but homogeneous population is
(A) Pureline (B) Open pollinated variety
(C) Synthetic variety (D) Hybrid variety
120. What one of the following is not a sulphur containing amino acid ?
(A) Cystiin (B) Cystine
(C) Lysine (D) Methionin
121. What will be the order of damage caused by various organism ?
(A) Fungi >virus >bacteria >nematodes
(B)Fungi> bacteria >viruses.nematodes
(C)Bacteria >fungi >nematodes>viruses
(D)Fungi >virus >nematodes.>bacteria
122. Rust is a
(A)Soil borne disease
(B) Air borne disease
(C) Seed borne disease

- (D) Insect transmitted disease
123. (A)
(B) Mechanical mixtures
(C) Chromosomal aberrations and mutations
(D) All of above
124. Which of the following has highest genetic purity?
(A) Foundation seed (B) Nucleus seed
(C) Breeder seed (D) Certified seed
125. Which of the following pairs is not correctly matched?
(A) Onion-bulb (B) Garlic-clove
(C) Cauliflower-head (D) Sweet potato-tuber
126. Which of the following pairs is not correctly matched?
(A) Maize (B) Cotton
(C) Soybean (D) Mustard
127. Downy Mildew can be controlled by
(A) Butachlor (B) Metalaxyl
(C) Vitavax (D) Indosulfan
128. Progeny of a single plant obtained by asexual reproduction is
(A) Inbred (B) Pureline
(C) Strain (D) Clone
129. A common crop of natural autopolyploid is
(A) Potato (B) Cotton
(C) Mustard (D) Wheat
130. *Sorghum* is a
(A) Self-pollinated crop (B) Cross-pollinated crop
(C) Often cross-pollinated crop (D) None of the above
131. Bulk method can be used for
(A) Isolation of homozygous lines
(B) Mass selection for certain traits
(C) Natural selection to change composition of population
(D) All of the above
132. Which of the following does not belong to family *Gramineae* (*Poaceae*)
(A) Wheat (B) Rice

- (C) Buckwheat (D) Oat
133. Photosynthesis occurs more in
(A) Red light (B) Green light
(C) Orange light (D) Yellow light
134. Which one of the following is not correctly matched?
(A) Inhibitors-Kinetin (B) Auxin-Naphthalene acetic acid
(C) Cytokinins-Zeatin (D) Gibberellins-Gibberellic acid
135. Which of the following pairs is not correctly matched?
(A) Potato tuber moth-Grubs
(B) Rive weevil-Grubs and adults
(C) Pulse beetles-Grubs
(D) Lesser grain borer-Grubs and adults
136. Raising crops with least tillage operation is called
(A) Zero tillage (B) No tillage
(C) Minimum tillage (D) Heavy tillage
137. Which one of the following is relay cropping system?
(A) Maize-Mustard-Pearlmillet-Cowpea
(B) Maize-Potato-Wheat-Greengram
(C) Blackgram-Wheat-Greengram
(D) Pearknukket-Mustard-Greengram
138. Separation of alleles into different gametes during meiosis is known as
(A) Independent assortment (B) Segregation
(C) Recombination (D) Cytokinensis
139. Kalyan sona and Sonalika varieties of wheat were developed using introductions from CIMMYT through
(A) Acclimatization (B) Hybridization
(C) Selection (D) Mutation
140. The Government of India signed WTO agreement in
(A) 1981 (B) 1994
(C) 1995 (D) 1996
141. The genetic purity of the Breeder seed should be
(A) 100% (B) 99%

(C) 98%

(D) Above 95%

142. Non-traditional areas of rice cultivation include

- (A) Uttar Pradesh and Bihar
- (B) West Bengal and Orissa
- (C) Punjab and Haryana
- (D) Tamil Nadu and Andhra Pradesh

143. Epigel germination occurs when

- (A) Cotyledons emerge above the soil
- (B) Cotyledons remain below the soil
- (C) Cotyledons decay during germination
- (D) Cotyledons appear only when germinated on blotter paper

144. Which one is essential micronutrient element?

- (A) Nitrogen
- (B) Phosphorus
- (C) Potash
- (D) Iron

145. Capsule is a fruit of

- (A) Chickpea
- (B) Cotton
- (C) Brassica
- (D) Trapa

146. Given that the somatic chromosome number of *Triticum aestivum* is $2n=6x=42$ which one of the following pairs is correctly matched?

- (A) Monosome $\rightarrow 2n=40$
- (B) Trisome $\rightarrow 2n=42$
- (C) Tetrasome $\rightarrow 2n=44$
- (D) Nullisome $\rightarrow 2n=41$

147. Regulation of access to genetic resources is governed by

- (A) PPV & FR Act
- (B) Biodiversity Act
- (C) Seeds Act
- (D) Environment Protection Act

148. The plants bearing male and female flowers separately on the same are

- (A) Protogynous
- (B) Protoandrous
- (C) Dioecious
- (D) Monoecious

149. The Urea fertilizer contains

- (A) 16% nitrogen
- (B) 26% nitrogen
- (C) 36% nitrogen
- (D) 46% nitrogen

150. Square root of the variance is referred to as

- (A) Coefficient of variation
- (B) Standard error
- (C) Standard deviation
- (D) Range

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Cross matching type questions(nos. 151 to 160) Each sub-question carries ONE mark, Choose the correct answer(A,B,C,D,E) for each sub-question (i,ii,iii,iv,v) and enter your choice in the circle in the circle(by shading with a HB pencil) on the OMR-answer sheet. For each wrong answer 0.20mark will be deducted

151. (i) Pushkarnath (A)Rice Breeder
(ii)C T Patel (B) Potato Breeder
(iii)B.P. Patel (C) Cotton Breeder
(iv)K. Ramiah (D) Sugarcane Breeder
(v) T S Venkatraman (E) Wheat Breeder
152. (i) (A)
(ii) Indian Institute of Vegetable Research (B) Bangalore
(iii)Central Rice Research Institute (C) Kanpur
(iv) Indian Institute of Horticultural Research (D) Varanasi
(v) Indian Grassland and Fodder Research Institute (E)Cuttack
153. (i) Callus (A) Foreign DNA
(ii) Transgenic pants (B) Plant part used for regeneration
(III) Auxins (C) A mass of unorganized cells
(iv) Azadirachtin (D) Plant growth hormone
(v) Explant (E) Biopesticide
154. (i). Jumping genes (A) N.I Vavilov
(ii) Bar locus (B) 5 bromouracil
(iii) Alkaptonuria (C) Maize
(iv) Base analogue (D) Drosophila
(v) Centre of origin (E) Excretion of alkapton in urine
155. (i) Dr.Y.S Parmar uni.of horticulture and forestry (A)Raipur
(ii) Maharana pratap university of Agriculture and Technology (B)Pusa Bihar
(iii) Rajendra Agricultural university (C) Kanpur
(iv) C.S Azahad Univ.of Agriculture and technology (D) Udaipur
(v) Indira Gandhi Krishi Vishwa Vidhyalaya (E) Solan
156. (i) International Institute for Tropical Agriculture(IITA) (A) Philippines
(ii) Interanational Crop Res.Institute for Semiarid Tropical (B) Italy

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(ICRISAT)

- (iii) International Plant Genetic Resources Institute (IPGRI) (C) Peru
(iv) International Potato Centre (CIP) (D) India
(v) International Rice Research Institute (IRRI) (E) Nigeria

157. (i) Pure Line (A) One gene difference
(ii) Multilines (B) Manyfold effects of a gene
(iii) Isogenic lines (C) Narrow genetic base
(iv) Pleiotropy (D) Primitive cultivars
(v) Land races (E) Broad genetic base
158. (i) Jatropha (A) Asymbiotic N₂fixer
(ii) Azotobacter (B) Biofuel
(iii) Rhizobium (C) Gum
(iv) Tobacco Mosaic Virus (D) Symbiotic N₂fixer
159. (i) Apple scab disease (A) Puccinia recondite pv tritici
(ii) Leaf blight of sugarcane (B) Anabaena variabilis
(iii) Leaf rust of wheat (C) Agrobacterium tumefaciens
(iv) Natural genetic engineer (D) Venturia inaequalis
(v) N₂ fixing blue-green alga (E) Helminthosporium sacchari
160. (i) Rice (A) Flavr Savr
(ii) Maize (B) Kalyan Sona
(iii) Tomato (C) Bikaneri nerma
(iv) Wheat (D) Ganga Safed-1
(v) Cotton (E) Pusa Basmati-1

