प्रश्न-पत्र पूर्तिका एवं उसर पत्र के वेंसर सील/पोसिड्रडेन बैठ को खोलने पर औरवानीय यह सुनिश्चित कर लें कि उसके प्रश्न-पत्र पूर्तिका पर बड़ी गलती नहीं हो। इसमें कोई गलती हो तो वीडियो से दूसरा प्रश्न-पत्र प्राप्त कर लें। ऐसा न करने पर जिम्मेदार व्यक्ति को होगा।

The candidate should ensure that Question Paper Booklet No. of the Question Paper Booklet and Answer Sheet must be same after opening the Paper Seal / Polythene bag. In case they are different, a candidate must obtain another Question Paper. Candidate himself shall be responsible for ensuring this.

परीक्षाधिकार के लिए निदेश

1. सभी प्रश्नों के उत्तर रिटाइन! 
2. सभी प्रश्नों के अंक समान हैं। 
3. प्रश्नांक पत्र का बंकल एक ही उत्तर रिटाइन। 
4. एक से अधिक उत्तर देने की राज्य में प्रश्न के उत्तर को गलत माना जाएगा। 
5. प्रश्नांक पत्र के द्वारा संकेतित उत्तर दिए गए हैं, जिन्हें प्रश्नांक 1, 2, 3, 4 अनुसार किया गया है। अन्य तरह के उत्तर निष्कर्ष दर्ज किया नहीं जाएगा। 
6. ओएमआर पत्र सहित परीक्षा पूर्तिका के अर्थ रहा है। जब आपको परीक्षा पूर्तिका खोलने का कोई समय नहीं, तो उत्तर पत्र के अर्थ अथवा संकेत में उत्तर निर्देश देता है। 
7. प्रश्नांक पत्र के इस्तेमाल प्रश्न अंक का 1/3 कार्रवाई करेगी। गलत उत्तर से लागू अंक उत्तर अर्थ संकेतित था प्रश्न के अनुसार इच्छित उत्तर से ही। यदि उत्तर से संबंधित गलती या अवधारणाएं ज्ञात किए गए हैं तो उसके बाद निर्देश देता है। यदि उत्तर शहरी जगह नहीं हो तो उत्तर नहीं माना जाएगा। 
8. नेशनल पाँच अन्य विशेषताओं के प्रश्न पूर्तिका का परीक्षा रूप से प्रश्न पूर्तिका की जानकारी है। यदि कोई तलाशी ना की तो इसके बाद निर्देश देता है। यदि उत्तर शहरी जगह नहीं हो तो उत्तर नहीं माना जाएगा। 
9. कृपया अपना रोल नंबर अथवा ई.एम.ए उपर से अनुसरण करें। 
10. कस्टोलो अपने रोल नंबर और अनुसरण अथवा ई.एम.ए उपर से अनुसरण करें। 

INSTRUCTIONS FOR CANDIDATES

1. Answer all questions. 
2. All questions carry equal marks. 
3. Only one answer is to be given for each question. 
4. If more than one answers are marked, it would be treated as wrong answer. 
5. Each question has four alternative responses marked serially as 1, 2, 3, 4. You have to darken only one circle or bubble indicating the correct answer on the Answer Sheet using BLUE BALL POINT PEN. 
6. The OMR Answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars carefully with blue ball point pen only. 
7. 1/3 part of the mark(s) of each question will be deducted for each wrong answer. A wrong answer means an incorrect answer or more than one answers for any question. Leaving all the relevant circles or bubbles of any question blank will not be considered as wrong answer. 
8. Mobile Phone or any other electronic gadget in the examination hall is strictly prohibited. A candidate found with any such objectionable material with him/her will be strictly dealt as per rules. 
10. If there is any sort of ambiguity/mistake either of printing or factual nature then out of Hindi and English Version of the question, the English Version will be treated as standard. 

Warning: If a candidate is found copying or if any unauthorized material is found in his/her possession, F.I.R. would be lodged against him/her in the Police Station and he/she would liable to be prosecuted. Department may also debar him/her permanently from all future examinations.

Do not open this Test Booklet until you are asked to do so.
1. यूरल्स द्वारे उपयोग में लिए गये ड्रोसोफिला के 
C/B जीनपूर्व में 'C' का बिन्मध्य निरोधी होने 
का तालाब
(1) एक निरोधी जीन की उपस्थिति से है।
(2) /B खण्ड का प्रतिलोमन से है।
(3) / तथा B के बीच स्नूनता से है।
(4) / तथा B के बीच पक्षांतरणशील अवधि 
से है।

2. सूची-I को सूची-II से मेरा कराएँ तथा नीचे दिए 
गए कूटों से सही उत्तर चुनें :

सूची-I सूची-II
A. शुल्टिल्स रेडफीलड 1. आमासी प्रभाविता 
प्रभाव
B. रोबर्टसनियन 2. भूमि विकल्पी 
पक्षांतरण
C. हि अपचक 3. पुनर्थोड़न की 
क्षतिपूर्ति
D. सेतु निर्माण 4. सक्षु त्रिकोण
E. बिन्मध्य निरोधी 5. परिकेन्द्री प्रतिलोमन 
F. न्यूनता 6. प्रतिलोमन

कूट:
A B C D E F
(1) 3 4 1 6 5 2
(2) 3 4 2 5 6 1
(3) 4 3 2 6 5 1
(4) 2 5 6 3 1 4

3. फियाली जीन के विकासमूलक अवशेष को 
(1) आमासीजन कहते हैं।
(2) कूट विकल्पी कहते हैं।
(3) अ-विकल्पी जीन कहते हैं।
(4) समजीजन कहते हैं।

1. In Drosophila C / B genotype used by 
Muller, ‘C’ stands for crossover 
suppressor due to 
(1) presence of a suppressor gene 
(2) inversion of / B region 
(3) a deletion between / and B loci 
(4) transposable element between / 
and B loci

2. Match List I with List II and select the 
correct answer by using the codes given 
below the lists :

List I List II
A. Shultiz Red- 1. Pseudo 
field effect dominance
B. Robertsonian 2. Sister allele 
translocation segregation
C. Double 3. Compensation of 
reduction recombination
D. Bridge 4. Centric fusion 
elimination
E. Crossover 5. Paracentric 
suppressor inversion
F. Deficiency 6. Inversion 

Codes:
A B C D E F
(1) 3 4 1 6 5 2
(2) 3 4 2 5 6 1
(3) 4 3 2 6 5 1
(4) 2 5 6 3 1 4

3. Evolutionary relic of a functional gene 
is called as 
(1) Pseudogene 
(2) Pseudo allele 
(3) Non-allelic gene 
(4) Isogeny

2 02 (Botany)
4. Haploids may be used to produce
   (1) inversions
   (2) translocations
   (3) aneuploids
   (4) both translocations and aneuploids

5. In a nicked circular DNA of known size, the value obtained by dividing its total number of base pairs by the number of base pairs per turn is known as
   (1) twisting number
   (2) writhe
   (3) linking number
   (4) pitch

6. Out of these 4 deoxyribonucleotide triphosphates, synthesis of which one is different from the rest?
   (1) ATP    (2) GTP
   (3) TTP    (4) CTP

7. During in vitro translation which one of these synthetic ribose messenger does not translate into polypeptide?
   (1) Poly U   (2) Poly G
   (3) Poly C   (4) Poly A

8. In bioinformatics, which one of these amino acids is denoted by letter D?
   (1) Alanine
   (2) Aspartic acid
   (3) Asparagine
   (4) Any amino acid
9. To exist as independent self-replicating organism, the minimum number of genes required are
   (1) 100 – 150
   (2) 250 – 350
   (3) 450 – 550
   (4) 650 – 750

10. In a wheat monosomic, the average transmission of female gamete with ‘n’ chromosome is
    (1) 100%
    (2) 75%
    (3) 50%
    (4) 25%

11. Based on decreasing genomic size of crops which one of these sequence is correct?
    (1) Barley > Wheat > Maize > Rice > Arabidopsis
    (2) Wheat > Maize > Barley > Rice > Arabidopsis
    (3) Wheat > Barley > Maize > Rice > Arabidopsis
    (4) Maize > Wheat > Barley > Arabidopsis > Rice

12. In Rubisco enzyme
    (1) Both, the large and small polypeptides are encoded by cpDNA.
    (2) Only large polypeptide is encoded by cpDNA.
    (3) Only small polypeptide is encoded by cpDNA.
    (4) Both, the large and small polypeptides are encoded by nuclear DNA.
13. In following mapping populations given as
   a. Backcross I
   b. Doubled haploids
   c. F2 individuals
   d. Recombinant inbred lines
Which one is the correct set of immortal populations?
(1) a and b  (2) b and d
(3) b and c  (4) a and c

14. Mustard variety “Pusa Jai Kisan’ is a
   (1) Somatic hybrid
   (2) Composite hybrid
   (3) Transgenic variety
   (4) Somaclonal variant

15. Of the 7 subunits of mitochondrial Cytochrome Oxidase C
   (1) all subunits are encoded by mt DNA.
   (2) all subunits are encoded by nuclear DNA.
   (3) only 3 subunits are encoded by mt DNA.
   (4) only 4 subunits are encoded by mt DNA.

16. Of the total protein in green leaves, Rubisco protein is about
   (1) 70%  (2) 50%
   (3) 30%  (4) 25%
17. In DNA, natural selection favoured the use of thymine in place of uracil likely because
   (1) Uracil frequently fails to pair with adenine.
   (2) Thymine is available in most abundance in the cell.
   (3) Uracil interferes with DNA replication.
   (4) Cytosine occasionally gets converted into uracil.

18. Protein designated as TF II H is related to
   (1) Nucleotide excision repair
   (2) Base excision repair
   (3) Base Mismatch repair
   (4) Double strand breakage repair

19. Which one of these mustard varieties was released for entire country?
   (1) Kranti  (2) Durgamani
   (3) Laha 101  (4) Vaibhav

20. “Bragg” is an introduced variety of
   (1) Chilli  (2) Soyabean
   (3) Groundnut  (4) Brinjal

21. Radiation Unit Grey (Gy) equals
   (1) 93 ergs
   (2) 100 ergs
   (3) 100 rads
   (4) 93 rads
22. The experimental design that involves crossing selected F2 individuals to two inbred parents and their F1 to work out epistatic component was given by

(1) Comstock and Robinson
(2) Mather and Jinks
(3) Kearsey and Jinks
(4) Hayman and Griffing

23. Given the following molecular markers:

a. RFLP
b. SNP
c. AFLP
d. RAPD

Their correct chronological sequence is

(1) a, b, c, d
(2) a, c, d, b
(3) a, d, b, c
(4) a, d, c, b

24. Which one of these components of genetic variance is fixable in the population?

(1) Additive
(2) Dominance
(3) Additive x dominance
(4) Dominance x dominance

25. In which of these methods the individual traits are successively improved?

(1) stabilizing selection
(2) selection indices
(3) tandem selection
(4) selection with independent culling levels
26. While conducting test of significance, if a false null hypothesis is accepted, then it amounts to
   (1) Type 4 error
   (2) Type 3 error
   (3) Type 2 error
   (4) Type 1 error

27. If 375 genotypes are to be evaluated in the field without replications, then the appropriate design is
   (1) Completely randomized design
   (2) Randomized block design
   (3) Augmented design
   (4) Compact family block design

28. Conceptually, Line x Tester design is related to
   (1) NCD I
   (2) NCD II
   (3) NCD III
   (4) TTC

29. If expected genetic gain per year is defined as $\Delta G = ir \sigma_A/t$, where $\Delta G =$ response to selection, $i =$ intensity of selection, $r =$ selection accuracy, $\sigma_A =$ phenotypic standard deviation, $t =$ breeding cycle time.

Then which of the above mentioned components of $\Delta G$ is incorrectly described?
   (1) $i$
   (2) $r$
   (3) $\sigma_A$
   (4) $t$

02 (Botany)
30. What is not true about completely randomized design?
   (1) It is simplest in adoption and analysis.
   (2) Unequal number of replications for different treatments can be adopted.
   (3) Missing data for any replication of some treatments do not complicate the analysis.
   (4) It is suitable for large number of treatments.

31. Molecular marker assisted selection for quantitative characters is more important now because
   (1) Study of inheritance of quantitative traits was not possible earlier.
   (2) Quantitative characters are governed by polygenes.
   (3) Majority of polygenes controlling quantitative characters have already assembled into superior populations under cultivation.
   (4) Expression of polygenes is not free from influence of environment.

32. In graphical method of diallel analysis for any character overdominance is indicated when the Wr – Vr regression line
   (1) passes through origin
   (2) passes above origin and cuts Wr axis
   (3) passes above origin, cuts Wr axis and touches parabola limit
   (4) passes below origin and cuts Vr axis
33. The concept of path analysis was originally developed by
   (1) Dewey & Lu
   (2) Fisher
   (3) Wright
   (4) Mahalanobis

34. On the basis of grain yield performance in sorghum, which of the following sequence is correct?
   (1) Vybrid > Hybrid > Pureline
   (2) Hybrid > Vybrid > Pureline
   (3) Pureline > Vybrid > Hybrid
   (4) Pureline > Hybrid > Vybrid

35. What is not true about synthetic varieties?
   (1) Base population consists of inbred lines.
   (2) 4 – 10 parents (inbreds) may be involved.
   (3) General combining ability is tested.
   (4) Varietal maintenance is difficult.

36. On the basis of theoretical mean performance of single cross (SC), double cross (DC), three way cross (TWC) and synthetic (syn) variety, the correct sequence is
   (1) SC > TWC > DC > Syn
   (2) DC > TWC > SC > Syn
   (3) TWC > DC > SC > Syn
   (4) SC > TWC > Syn > DC
37. The progress in ideotype breeding is adversely affected by
(1) Asymmetrical size among plant parts.
(2) Compensation among plant parts.
(3) Pleiotropy and genetic background.
(4) Traits arising at different times and from different meristems.

38. Breeding method not commonly used for improvement of inbred lines available for hybrid development
(1) Pedigree method
(2) Back cross method
(3) Gametic selection
(4) Mutation breeding

39. Which of these assumptions of dominance hypothesis for heterosis is incorrect?
(1) The genes responsible for heterosis are dominant and beneficial.
(2) The gene effects of the loci involved are completely additive in nature.
(3) There is linkage between the loci.
(4) Increased vigour can be measured in terms of selective advantage.
40. Which one of these is a correct sequence in the decreasing order of inbreeding depression?
(1) Alfalfa – Pearl millet – Onion – Mung bean
(2) Pearl millet – Alfalfa – Onion – Mung bean
(3) Alfalfa – Onion – Pearl millet – Mung bean
(4) Pearl millet – Onion – Alfalfa – Mung bean

41. Which one of these is related to male sterility in pearl millet?
(1) Cina cytoplasm
(2) Milo cytoplasm
(3) Tifton cytoplasm
(4) Tms cytoplasm

42. The law of homologous series of variation was postulated by
(1) Stadler
(2) Gustafsson
(3) Shull
(4) Vavilov

43. Besides ICRISAT (Hyderabad), chickpea breeding research is also conducted at
(1) CIMMYT, Mexico
(2) ICARDA, Syria
(3) IRRI, Philippines
(4) AVRDC, Taiwan
44. In F2 generation, phenotypic ratio of 37 : 27 is obtained when in epistasis
   (1) alleles of 2 loci interact
   (2) alleles of 3 loci interact
   (3) alleles of 4 loci interact
   (4) alleles of 5 loci interact

45. As a modification of Pedigree method, “bulked progeny test method” was suggested in cotton by
   (1) Hays
   (2) Frey
   (3) Richmond
   (4) Harrington

46. In which of the following only extreme phenotypes remain in population?
   (1) Genetic assortative mating
   (2) Genetic dis-assortative mating
   (3) Phenotypic assortative mating
   (4) Phenotypic dis-assortative mating

47. Brassica Juncea is probably a cross between
   (1) B nigra and B aleracea
   (2) B nigra and B campestris
   (3) B aleracea and B campestris
   (4) B nigra and B carinata

48. Which one of these crops is a potential source of diosgenin alkaloid?
   (1) Cumin
   (2) Clusterbean
   (3) Fenugreek
   (4) Coriander
49. Which one of these is produced by natural selfing?
   (1) Hybrid   (2) Inbred
   (3) Clone   (4) Pure line

50. For production of certified seed of a pearl millet variety the isolation distance will be
   (1) 200 meters   (2) 400 meters
   (3) 800 meters   (4) 1000 meters

51. The basic chromosome number of groundnut is
   (1) \( \times = 10 \)   (2) \( \times = 20 \)
   (3) \( \times = 15 \)   (4) \( \times = 13 \)

52. In which of the following processes the developed plant is similar to conventional plant breeding?
   (1) Transgenesis
   (2) Cisgenesis
   (3) Intragenesis
   (4) Pangenesis

53. Which one of these is an epigenetic cause of somaclonal variation?
   (1) Chromosomal abrasion
   (2) Point mutations
   (3) Transposable elements activation
   (4) Methylation / demethylation

54. According to stability statistics, a genotype exhibiting small magnitude of among environmental variance will have
   (1) Type I stability
   (2) Type II stability
   (3) Type III stability
   (4) Type IV stability
55. According to Eberhart & Russel's model for stability, a stable genotype to be suitable for favourable environments should have regression coefficient (bi) value?
   (1) equal to 1
   (2) greater than 1
   (3) less than 1
   (4) equal to zero

56. In generation mean analysis, additive × dominance interaction is represented by
   (1) ‘i’ component
   (2) ‘j’ component
   (3) ‘k’ component
   (4) ‘l’ component

57. Isogenic lines are essential for the development of
   (1) Composite varieties
   (2) Pure line varieties
   (3) Hybrid varieties
   (4) Multiline varieties

58. In maize, S1 progeny selection has been found most promising for the development of
   (1) Synthetic varieties
   (2) Composite varieties
   (3) Hybrid varieties
   (4) Pure line varieties

59. In barley hybrid seed production has been done using
   (1) Primary trisomic
   (2) Secondary trisomic
   (3) Double trisomic
   (4) Balanced tertiary trisomic
60. Which one of these is associated with seed nutritional quality?
(1) Opaque – 2
(2) Norin – 10
(3) Tift – 20
(4) Dee-gee-woo-gen

61. When genetic cause of heterosis is true overdominance in a self-pollinated crop, then it is appropriate to develop
(1) Short-term F₁ hybrid
(2) F₁ hybrid
(3) Pure lines as good as or better than F₁ hybrid
(4) Improved parental lines for development of F₁ hybrid

62. Color of tag for foundation seed certification is
(1) Golden brown
(2) Blue
(3) White
(4) Golden Yellow

63. The shortest phase in a cell cycle is
(1) G₁
(2) G₂
(3) M
(4) S

64. In case of inhibitory gene action, the F₂ phenotypic ratio will be
(1) 13 : 3
(2) 9 : 7
(3) 15 : 1
(4) 9 : 3 : 4

60. इनमें से कौन बीज पोषण गुणवत्ता से संबंधित है?
(1) ओपेक – 2
(2) नोरिन – 10
(3) टिफ्ट – 20
(4) डी.जी.वू.जैन

61. जब एक स्वप्रगति फसल में संकर ओज का अनुवंशिक कारण वास्तविक अतिप्रभावित है तब पिस्टा का विकास करना उचित होता है:
(1) आधुनिक वृत्त F₁ संकर
(2) F₁ संकर का
(3) F₁ संकर जैसा अर्थात इससे वहेतर शुद्ध वंश क्रम का
(4) F₁ संकर के लिए उत्तर जनक अवस्था का

62. आधार बीज के प्रमाणित का टेग का रंग
(1) सुनहरा भूरा होता है।
(2) नीला होता है।
(3) सफेद होता है।
(4) सुनहरा पीला होता है।

63. एक कोशिका चक्र में सबसे छोटी उपायथा
(1) G₁ है।
(2) G₂ है।
(3) M है।
(4) S है।

64. निरोधी जीन क्रिया में F₂ लक्षणप्ररूप अनुपात
(1) 13 : 3 होगा।
(2) 9 : 7 होगा।
(3) 15 : 1 होगा।
(4) 9 : 3 : 4 होगा।
65. निम्नलिखित में से कौन अत्याचारी विक्रियाएँ हैं?
   (1) बीटा कण
   (2) ऑल्फा कण
   (3) परागैनिस्ट फिरण
   (4) गैमा फिरण

66. इनमें से कौन प्रजनक बीज की संतति है?
   (1) केन्द्रक बीज
   (2) आधार बीज
   (3) पंजीकृत बीज
   (4) प्रागतित बीज

67. प्रतीय संकरण के दौरान, कौन से प्रतीय संकर पीढ़ियों में आती है जनक के 99.8% प्रतिशत जीनों का प्रतिनिधित्व होता है?
   (1) BC7
   (2) BC8
   (3) BC9
   (4) BC10

68. लबणीय एवं क्षारीय प्रभाववाचक क्षेत्रों के लिए उपयुक्त जी की किसम?
   (1) आर.डी. -2052 है।
   (2) आर.डी. -2508 है।
   (3) आर.डी. -2624 है।
   (4) आर.डी. -2794 है।

69. धनिया के फल?
   (1) सीजोकार्ष कहलाता है।
   (2) कैरियुसिस कहलाता है।
   (3) नट कहलाता है।
   (4) एफ्मीन कहलाता है।

70. इनमें से कौन आनुवंशिक प्रसरण के सभी घटकों को कैम में लेते हैं?
   (1) शुद्ध वंश क्रम
   (2) अंत:प्रजात क्रम
   (3) संकर क्रम
   (4) सुरक्षित क्रम

65. Which of the following is non-ionizing radiation?
   (1) Beta particles
   (2) Alpha particles
   (3) UV rays
   (4) Gamma rays

66. Which one of these is a progeny of breeder seed?
   (1) Nucleus seed
   (2) Foundation seed
   (3) Registered seed
   (4) Certified seed

67. During back crossing, which back cross generation represents 99.8 percent genes of recurrent parent?
   (1) BC7
   (2) BC8
   (3) BC9
   (4) BC10

68. For salinity and alkalinity affected areas, the suitable barley variety is
   (1) RD 2052
   (2) RD 2508
   (3) RD 2624
   (4) RD 2794

69. The fruit of coriander is called as
   (1) Schizocarp
   (2) Caryopsis
   (3) Nut
   (4) Achene

70. Which one of the following exploits all components of genetic variance?
   (1) Pure lines
   (2) Inbreeds
   (3) Hybrid varieties
   (4) Open pollinated varieties
71. In a diploid plant species, if mutation rate of gene A is $10^{-8}$ and the of gene B is $10^{-6}$, then an individual with mutations in both gene A and B may appear at a frequency of

(1) $1 \times 10^{-8}$
(2) $2 \times 10^{-8}$
(3) $1 \times 10^{-14}$
(4) $1 \times 10^{-2}$

72. With reference to insect vectors, the term klenducity is related to

(1) disease escape
(2) disease tolerance
(3) disease resistance
(4) disease susceptibility

73. While considering contribution of different components of genetic variation arising from crosses between random pairs of plants in a population, the inbreeding coefficient ‘F’ will have squared value for

(1) additive variance
(2) dominance variance
(3) additive x additive variance
(4) additive x dominance variance

74. Which one of the following involves interaction of two genetic systems?

(1) Breeding for salinity resistance
(2) Breeding for drought resistance
(3) Breeding for yield improvement
(4) Breeding for biotic stress
75. एक सी $F_3$ कुलों की औसत उपज 250 g/पौधा है तथा वंशावधिकता 60 प्रतिशत है। यदि श्रेणि 5 प्रतिशत $F_3$ कुलों की औसत उपज 370 g/पौधा है तो वर्ण विवेद्धक का मान
(1) 120 g/पौधा होगा।
(2) 72 g/पौधा होगा।
(3) 18.5 g/पौधा होगा।
(4) 222 g/पौधा होगा।

76. इनमें से कौन विनोम संशोधन करने की नवीनतम तकनीक नहीं है?
(1) ZFNs
(2) TALENs
(3) T-DNA अन्वयन
(4) CRISPR – Cas 9

77. उपज निर्धारण में $F_1$ संकर की उत्कृष्टता की व्यावहारिक उपयोगिता द्वारा दर्शित होती है।
(1) औसत संकर आज
(2) हेटरोबिलिटीसिस
(3) साध्य संकर आज
(4) मानक संकर आज

78. वर्ष 2014 तक, PPV & FR अधिनियम के तहत अधिकतम पादप किस्मों के पंजीकरण के लिए आवेदनों की संख्या निम्न में से किस श्रेणी में थी?
(1) नई किस्मों के लिए सर्वाधिक थी।
(2) प्रचलित किस्मों के लिए सर्वाधिक थी।
(3) कृषिक किस्मों के लिए सर्वाधिक थी।
(4) बस्तूर: व्युत्पन्न किस्मों के लिए सर्वाधिक थी।

75. The mean yield of 100 $F_3$ families is 250 g/plant with heritability of 60%. If the mean yield of top 5% $F_3$ families is 370 g/plant, then the selection differential will be equal to
(1) 120 g/plant
(2) 72 g/plant
(3) 18.5 g/plant
(4) 222 g/plant

76. Which one of these is not latest genome editing technique?
(1) ZFNs
(2) TALENs
(3) T-DNA Insertion
(4) CRISPR – Cas 9

77. The practical usefulness of superiority of $F_1$ hybrid in yield performance is reflected in
(1) Average heterosis
(2) Heterobeltiosis
(3) Relative heterosis
(4) Standard heterosis

78. By the year 2014, maximum number of applications received for registration of plant varieties under PPV & FR Act was in the category of
(1) New varieties
(2) Extant varieties
(3) Farmer’s varieties
(4) Essentially derived varieties
79. In right handed double helical 'C' form of DNA the perpendicular distance between two base pairs is
   (1) 3.4 Å  (2) 2.6 Å  (3) 3.3 Å  (4) 3.7 Å

80. During the year 2016-17 the area under pearl millet cultivation in Rajasthan was approximately
   (1) 30 lac ha.  (2) 40 lac ha.  (3) 50 lac ha.  (4) 60 lac ha.

81. Which one of these is a desi cotton variety?
   (1) JKCH – 1947  (2) Runi – 314  (3) Bikaner Narva
   (4) RG – 8

82. The first white seeded cow-pea variety of Rajasthan is
   (1) RC-101  (2) RC-19  (3) RMO – 40  (4) Maru Bahar

83. The number of stamens in coriander flower is
   (1) 3  (2) 4  (3) 5  (4) 6

84. Which one of these is also known as miracle rice variety?
   (1) IR 50  (2) IR 8  (3) IR 20  (4) IR 36
85. The primary centre of origin of potato crop is
(1) China (2) Abyssinia
(3) South America (4) India

86. In coupling phase linkage with recombination value of 0.25 the percentage of AABB F2 individuals obtained from selfing AB/ab F1 is equal to
(1) 6.25 (2) 14.06
(3) 24.01 (4) 48.25

87. The draft whole genome sequence of reference pearl millet genotype “Tift” is approximately
(1) 1.69 Gb
(2) 1.79 Gb
(3) 1.89 Gb
(4) 1.99 Gb

88. In genetic divergence between a set of genotypes determined by meteroglyph analyses the X and Y axis represent
(1) Two least variable characters
(2) Two most variable characters
(3) One most variable and another least variable character
(4) Any two variable characters

89. For recovering single recessive gene mutation in a crop species (diploid) with mutation rate of $1 \times 10^{-4}$ and probability of 0.99, the number of M2 families to be examined would be
(1) 23260 (2) 46520
(3) 69780 (4) 93040
90. In eukaryotes, the number of copies of superovulant mRNA molecules per cell are
(1) one to few
(2) several hundreds
(3) ten thousand
(4) one million

91. Which one of these base sequences is known as Shine - Delgarno sequence?
(1) 5' – AACAACU – 3'
(2) 5' – AGGAGGU – 3'
(3) 5' – UGGAGGU – 3'
(4) 5' – CGGCGGU – 3'

92. The number of t-RNA genes in E.coli is
(1) 22
(2) 62
(3) 300
(4) 350

93. Which one of these is known as ‘Ochre’ stop codon?
(1) UAG
(2) UGG
(3) UAA
(4) UGA

94. In which one of these forms of double helical DNA the Phosphate – Sugar backbone forms central core?
(1) A form
(2) B form
(3) P form
(4) C form

95. To which one of these selection sieves, the process of “Certation” is associated?
(1) DNA repair
(2) Diplontic selection
(3) Haplontic selection
(4) Mutant expression
96. जिन प्रतिद्वंद्वितियों में से कौन परिवर्तन का उदाहरण नहीं है?
   (1) परा-परिवर्तन
   (2) मेथिलीकरण
   (3) अनुवंशिक छापन
   (4) जीन रूपांतरण

97. इलेक्ट्रोफोरेज़ में जब लेक्टर ओपरोन (lac operon) के एक mRNA अणु का अनुवाद होता है तब बीटा गैलॉक्टोसाइडेज, परसीएज तथा ट्रंस एस्पिरासिलेज का अनुपात
   (1) 1 : 1 : 1 होता है।
   (2) 1 : 2 : 1 होता है।
   (3) 1 : 0.5 : 0.2 होता है।
   (4) 2 : 5 : 0.2 होता है।

98. मात्रत्वक लक्षण विश्लेषण का शब्द निम्नलिखित
   (1) जेल्डरमैन ने किया था।
   (2) माता परंपरा जिंकन्स ने किया था।
   (3) राइट ने किया था।
   (4) अश्वाचताम ने किया था।

99. चित्रकृत सहायता करण के लिए मात्रत्वक लक्षणों का गुणात्मक लक्षणों के बीच साधारण का उपयोग 
   संबंध
   (1) ला द्वारा किया गया था।
   (2) एक्स्डर्स स्थान किया गया था।
   (3) स्थायीता पार किया गया था।
   (4) जिंकन्स स्थान किया गया था।

100. मात्रत्वक लक्षणों का प्रभावित करने वाले मुख्य जीवों का
   (1) बहुपॉपा अंडे द्वारा पता नहीं लगाया जा सकता है।
   (2) संलग्न - जन्म समूह द्वारा पता नहीं 
   लगाया जा सकता है।
   (3) जिन्हें अर्ध अंडा प्रत्यक्ष द्वारा पता नहीं लगाया जा सकता है।
   (4) प्रधानमंत्री अंडे द्वारा पता नहीं लगाया जा सकता है।

100. Major genes affecting quantitative 
   traits can not be detected by
   (1) Multi model distribution
   (2) Offspring – parent resemblance
   (3) Heterogeneity of variance
   (4) Normal distribution