Select most appropriate answer from the following

[1] Aims and objectives of Plant Breeding; History and development of plant breeding.

1 Norin-10 is a dwarfing gene of

(a) *Triticum aestivum* (b) *Zea mays*
(c) *Oryza sativa* (d) *Secale cereal*

2 Plant breeding deals with the improvement in

(a) Yield (c) Quality
(b) Stress resistance **(d) All of these**

3 The father of green revolution is

(a) (B)P.Pal **(c) N.E.Borlaug**
(b) M.S.Swaminathan (d) (C)T.Patel

4 Which of the following is prerequisite for crop improvement?

(a) Hybridization (c) Mutation
(b) Genetic variation (d) Male sterility

5 The first artificial plant hybrid was produced by crossing between

(a) Carnation X Sweet William (c) Varieties of wheat
(b) Carnation X Sweet Potato (d) Carnation X Sweet corn

6 C. A. Barber and T.S.Venkataraman are famous for their work on

(a) Sorghum **(c) Sugarcane**
(b) Soybean (d) Spices

7 Which are prime requirement for initiation of plant breeding work

(a) Variation in population (c) Large population
(b) Stable population (d) Healthy population

8 Brassica oil cake contain the anti-nutritional factor

(a) Erucic acid (c) Glucosinolate
(b) Cynogenic glycoside (d) Saponin

9 Among which of the following scientist was developed first cotton hybrid?

(a) M.S.Swaminathan **(c) C.T.Patel**
(b) C.H.Patel (d) D. S. Athwal

10 Plant breeding can improve _____ of plant

(a) Phenotype (c) Dormancy
(b) Heredity (d) Susceptibility

11 Resistance to shattering is an important objective among which of the following crop?

(a) Pea (c) Wheat
(b) Cotton **(d) Green gram**

12 Among which of the following is pre requisite for selection?

(a) Hybridization **(c) Variation**

(b) Domestication (d) Introduction

[2] Modes of reproduction

13 Development of embryo from synergids or antipodal cells without fertilization

(a) Apospory **(b) Apogamy**

(c) Diplospory (d) Apomixis

14 Each anther has

(a) One pollen sac (b) Two pollen sacs

(c) Four pollen sacs (d) Three pollen sacs

15 Genetic variation in progeny produced due to which of the following?

(a) Segregation (c) Recombination

(b) Segregation and recombination (d) None of these

16 When sexual reproduction occurs along with apomixis is known as

(a) Apogamy (c) Apospory

(b) Facultative Apomixis (d) Obligate Apomixis

17 Origin of embryo from egg cells of another embryo sac developed from diploid tissue is known as

(a) Parthenogenesis (c) Apogamy

(b) Apospory (d) All of these

18 A process of formation of pollen grain is known as

(a) Micro sporogenesis (c) Mega sporogenesis

(b) Micro gametogenesis (d) Mega gametogenesis

19 The triple fusion leads to development of

(a) Synergids (c) Embryo

(b) Apogamy **(d) Endosperm**

20 The embryo develop from embryo sac without pollination is known as

(a) Diplospory **(c) Parthenogenesis**

(b) Apogamy (d) Apospory

[3] Modes of pollination

21 The process of dehiscence of an anther is known as

(a) Pollination **(c) Anthesis**

(b) Fertilization (d) Hybridization

22 Protogyny is found in the case of

(a) Rice (c) Wheat

(b) Maize **(d) Pearl millet**

23 A crop showing less than 5 % cross pollination is considered as

(a) Cross pollinated crop (c) Often cross pollinated crop

(b) Self pollinated crop (d) Often self pollinated crop

24 Herkogamy condition occurs in which crop

(a) *Calotropis* **(b) Lucern**

(c) tobacco (d) Sugarcane

25 The situation when pollen from a flower of one plant falls onto the stigmas of other flower of the same plant

(a) Often cross pollination (b) Allogamy

(c) Pollination **(d) Geitonogamy**

26 Clestogamy promotes

(a) Cross pollination **(c) Self pollination**

(b) Geitonogamy (d) All of the above

27 Protandry is found in which of the following crop?

(a) Maize (b) Bajra

(c) Wheat (d) chickpea

28 In alfalfa allogamy condition is due to

(a) Heterostyly (c) Cleistogamy

(b) Male sterility **(d) Herkogamy**

29 A condition in which opening of flower after fertilization is called

(a) Chasmogamy (c) Cleistogamy

(b) Dichogamy (d) Herkogamy

30 The geitonogamy condition is found among which of the following crop?

(a) Maize (c) Wheat

(b) Pigeonpea (d) Papaya

[4]. Plant Genetic Resources, their conservation and Genetic diversity

31 Land races refers to

(a) Primitive cultivars (c) Obsolate cultivars

(b) Modern cultivars (d) Mutant lines

32 In the full form of NBPGR, B stands for

(a) Board **(c) Bureau**

(b) Botanical (d) Breeding

33 In India, the indigenous germplasm collection of cultivated species carry prefix

(a) EC **(c) IC**

(b) IW (d) IG

34 Germplasm is also called

(a) Gene pool (b) Genetic resources

(c) Gene bank **(d) All of these**

35 The primitive cultivars which were selected and cultivated by farmers is ?

(a) Modern cultivars (c) Wild relatives

(b) Obsolete cultivars (d) **Land races**

36 Head quarter of NBPGR located at

(a) Hyderabad **(c) New Delhi**

(b) Chennai (d) Bangalore

37 Which of the following substation of NBPGR represent arid zone ?

(a) Jaipur, Rajasthan **(c) Jodhpur, Rajasthan**

(b) Katch, Gujarat (d) Akola, Maharastra

38 Which of the following substation of NBPGR represent mixed climate zone?

(a) Jaipur, Rajasthan (c) Jodhpur, Rajasthan

(b) Katch, Gujarat **(d) Amravati, Maharashtra**

39 Law of homologous series of variation was proposed by

(a) **Vavilov (1951)** (c) Jensen (1901)

(b) Hull (1945) (d) Jenkis (1927)

40 A specific place or area or region where crop plant where maximum variability is found is called

(a) Center of diversity (c) Genetic origin

(b) Center of origin **(d) Both (a) and (b)**

[5]. Methods of breeding- A Brief outlines

41 The method is often used to correct some specific weakness of an established variety

(a) Heterosis breeding **(c) Combination breeding**

(b) Transgressive breeding (d) selection

42 The new genotype cannot create incase of

(a) Pedigree method (c) Backcross method

(b) Mass selection (d) SSD method

43 Breeding behavior of a plant can be determine through

(a) Progeny test (c) Back cross

(b) Mass selection (d) Pure line selection

44 Which of the following method of plant breeding is not used for asexually propagated crops?

(a) Plant introduction (c) Clonal selection
(b) Mutation breeding **(d) Pure line selection**

45 Variety is not uniform incase of

(a) Mass selection (c) Pureline selection
(b) Heterosis breeding (d) Progeny selection

46 Most basic method of crop improvement is

(a) Domestication (c) Plant introduction
(b) Selection (d) Pedifree methods

47 Recurrent selection method of crop improvement can be grouped into

(a) General method (c) Special method
(b) Population improvement (d) Non hybridization

[6] Domestication, acclimatization and genetic erosion of plant

48 The first step in genetic improvement of a plant species is

(a) Domestication (c) selection
(b) Germplasm collection (d) hybridization

49 The adjutant of a variety or population in new environment is known as

(a) Adaptation (c) Buffering
(b) Acclimatization (d) Both A and B

50 Who explained the origin of tetraploid species of *Brassica*

(a) East (b) Kanpenchenko
(c) Nagaharu (d) Richey

51 Which of the following undesirable consequences related with plant breeding?

(a) Genetic erosion (c) Narrow genetic base
(b) Susceptibility to minor pest and disease **(d) All of these**

52 Variety developed through mass selection is

(a) Homozygous & Homogeneous (c) Heterozygous & Homogeneous
(b) Homozygous & Heterogeneous **(d) Heterozygous & Heterogeneous**

53 Gradual loss of genetic variability in a crop is known as

(a) Genetic drift **(c) Genetic erosion**
(b) Acclimatization (d) All of these

[7] Plant introduction

54 The plant introduction method is used for_____ plant species

(a) Self pollinated (c) Cross pollinated

(b) Vegetative propagated **(d) All of these**

55 Sonara-64 and Lerma Rojo wheat varieties are examples of

(a) Secondary introduction (c) Acclimatization

(b) Primary introduction (d) Domestication

56 Jaya and Ratna rice variety contain dwarfing gene from

(a) Dee-woo-gen-geo (c) Dee-woo-gen

(b) Dee-geo-woo-gen (d) Dee-gen-woo

57 Which of the following variety good example of primary introduction?

(a) TN 1 (b) IR 8

(c) IR 28 **(d) All of these**

58 Oldest method of crop improvement is

(a) Mass selection **(c) Plant introduction**

(b) Pureline selection (d) Pedigree selection

[8] Selection, Johannson's pure line theory, genetic basis, pure line selection, progeny selection and mass selection

59 Genetic variation in pureline may arise due to

(a) Mechanical mixture (c) Mutation

(b) Out crossing **(d) All of these**

60 Mass selection is always based on

(a) Phenotype (c) Progeny test

(b) Genotype (d) Heritability

61 Purity of existing pureline varieties can be maintain by regular

(a) Pure line selection (b) Pedigree selection

(c) Mass selection (d) Recurrent selection

62 The differential rate of reproduction is

(a) Selection (c) Introduction

(b) Domestication (d) Mutation

63 The maximum variability is found in

(a) F_1 generation **(c) F_2 generation**

(b) F_3 generation (d) F_4 generation

64 Vilmorin practiced individual plant selection in sugarbeet to improve

(a) Root yield (c) Sugar yield

(b) Sugar content (d) Root colour

65 Selection provides an opportunity to isolate the most desirable genotype from

(a) Homogeneous population (c) Homozygous population

(b) Heterogeneous population (d) Heterozygous population

66 Among which of the following always done based on phenotypic performance?

(a) Pure line selection **(c) Mass selection**

(b) Progeny selection (d) Pedigree selection

67 Pure line is

(a) Homozygous & Homogeneous (c) Heterozygous & Homogeneous

(b) Homozygous & Heterogeneous (d) Heterozygous & Heterogeneous

68 Among which of the following method is not appropriate for cross pollinated crops?

(a) Mass selection **(c) Pureline selection**

(b) Bulk method (d) heterosis breeding

[9] Definition of biometrics, assessment of variability, component of genetic variance and Genotype x Environment interaction

69 The performance is almost same in F_1 and F_2 indicate presence of _____

(a) Non additive genes **(b) Additive genes**

(c) Dominance (d) Epistatic gene

70 The differential response of varying genotype under changes in the environment is known as

(a) Genetic variation **(b) G x E interaction**

(c) Correlation (d) Genetic diversity

71 Wright (1935) classified genetic variance into

(a) Additive & Non-additive variance (b) Heritable fixable variance

(c) Heritable-Fixable & Epistasis variance (d) Heritable –Non fixable variance

72 Mather (1949) classified genetic variance into

(a) Additive & Non-additive variance (b) Heritable fixable variance

(c) Heritable-Fixable & Epistasis variance **(d) Heritable fixable – Heritable non fixable variance**

73 A variance due to average effects of gene on all segregating loci is called

(a) Dominance variance **(b) Additive variance**

(c) Epistasis (d) Non fixable

74 A variance due to the deviation of heterozygote (Aa) from the average of two homozygotes

(a) Dominance variance (b) Additive variance
(c) Epistasis (d) Non fixable

[10] Self incompatibility and male sterility and their utilization in crop improvement

75 The self incompatibility system arise due to difference in flower morphology

(a) Gametophytic (c) Homomorphic
(b) Heteromorphic (d) Sporophytic

76 In CGMS system B line used as

(a) Female line (b) Male sterile line
(c) Maintainer line (d) Restorer line

77 In male sterile system, which of two lines are isogenic in nature?

(a) A and R lines **(b) A and B lines**
(c) A and D lines (d) B and R lines

78 Which following are a compatible matting?

(a) Pin x pin **(c) Pin x thrum**
(b) Thrum x thrum (d) Both A and B

79 Which of the following male sterility system is generally used without depend on types of crop species

(a) Genetic **(b) Chemically induced male sterility**
(c) CMS (d) CGMS

80 The term self incompatibility was coined by

(a) Harrington (c) Lewis
(b) Stout (d) East

81 Which of the following is not compatible matting?

(a) Pin x pin (c) Pin x thrum
(b) Thrum x Thrum (d) All of these

82 Which of the following male sterility system is the mostly applicable in vegetatively propagated crop?

(a) GMS (b) Chemically induced male sterility
(c) CMS (d) CGMS

83 In case of gametophytic system which of the following is partial compatible matting?

(a) S_1S_2 X S_1S_2 **(c) S_1S_2 X S_2S_3**
(b) S_1S_2 X S_3S_4 (d) S_1S_3 X S_2S_4

84 Causes of male sterility are

(a) Genetic (c) Interaction of cytoplasm and genetic
(b) Cytoplasm **(d) All of these**

85 Among which of the following type of self-incompatibility not arise due to difference in flower morphology?

(a) Gametophytic (c) Homomorphic
(b) Sporophytic **(d) Both A and B**

86 In CGMS system B line used as_____

(a) Female line (c) Male sterile line
(b) Maintainer line (d) Restorer line

87 Tifft-23A is male sterile line of

(a) Sorghum **(c) Pearlmillet**
(b) Rice (d) Wheat

88 CGMS system does not have

(a) A-line (c) B-line
(b) R-line **(d) C-line**

89 The concept of male sterility was given by

(a) Jones and Davis (c) Shull
(b) Nilsson and Ehle (d) Jenson

[11] Hybridization, Aims and objectives, types of hybridization;

90 A cross between two genetically dissimilar homozygous parents is called

(a) Testcross (c) Variety
(b) Backcross **(d) Hybrid**

91 In cross pollinated species, a true breeding line developed by continuous selfing is known as

(a) Pureline (c) Hybrid
(b) Variety **(d) Inbred**

92 The numbers of possible single crosses excluding reciprocals is calculated by

(a) n (n-1)/2 (c) n (n-1)
(b) n (n-1) (n-2) (n-3)/8 (d) n (n-1)/3

93 Most commonly used hybridization method in crop improvement program is

(a) Distant hybridization (c) Inter specific hybridization
(b) Intra specific hybridization (d) Inter-genetic hybridization

94 For accurate genetic studies which emasculation method is most suitable?

(a) Self incompatibility **(c) Hand emasculation**
(b) Male sterility (d) Use of gametocides

95 Selfing reduces heterozygosity in each generation by the factor

(a) 1/3 **(c) 1/2**

(b) 1/4 (d) 1/8

96 The proportion of completely homozygous plant is equal to

(a) $[(2^n-1)/2^m]^n$ (b) $[(2^m-1)/2^m]^m$

(c) $[(2^n-1)/2^n]^n$ **(d) $[(2^n-1)/2^n]^m$**

97 A hybrid between genetically different genotypes of the species is known as

(a) Inter specific **(c) Intra specific**

(b) Inter generic (d) Intra generic

98 Fresh seed need to be produce every year in case of

(a) Hybrid variety (c) Synthetic variety

(b) Composite variety (d) Both B and C

[12] Methods of handling of segregating generations, pedigree method, bulk method, back cross method and various modified form of methods *i.e* SSD.

99 Which parent is used only once in back cross breeding method?

(a) Recurrent (c) Female

(b) Donor (d) Male

100 Which of the following methods provide information about the mode of inheritance of various qualitative characters?

(a) Pedigree breeding (c) Mass selection

(b) Backcross breeding (d) Heterosis breeding

101 Which method is generally used to improve specific character of a well adapted variety?

(a) Single seed decent **(c) Backcross breeding**

(b) Heterosis breeding (d) Pedigree breeding

102 Which of the following method is modified form of bulk breeding?

(a) Single seed decent method (c) Recurrent selection

(b) Heterosis breeding (d) Pedigree breeding

103 The main weakness of SSD method is

(a) Early generation selection **(c) Plant loss**

(b) High demand on resources (d) None of these

104 Segregating generations in self pollinated crops can be handled with

(a) Pedigree method (c) Backcross method

(b) SSD method **(d) All of these**

105 Population produced by which selection method has heterogeneity and wider adaptation

(a) Progeny selection (b) Mass selection
(c) Bulk method (d) Pedigree selection

106 Which method known as evolutionary methods of breeding

(a) Pedigree methods **(b) Bulk methods**
(c) Mass-pedigree methods (d) Mass selection

107 Modified pedigree method was given by

(a) Harrington (b) Brim
(c) Goulden (d) Harlan

108 A cross between hybrid with either of its parent is known as

a) Top cross (c) Test cross
(b) Double cross **(d) Back cross**

109 Basic requirement of back cross programme is/are

(a) Recurrent parent (c) High heritability of character
(b) Donor parent **(d) All of these**

110 Which of the following method is used for handling segregation generating?

(a) Recurrent selection **(c) Pedigree selection**
(b) Pureline selection (d) Mass selection

111 Modified form of bulk method is

(a) Bulk method (c) Mass selection
(b) SSD method (d) Pedigree selection

112 Which of the following methods takes longer time for varietal development?

(a) Mass selection **(c) Bulk method**
(b) Pedigree method (d) Back cross method

113 In pedigree breeding after F_8, homozygous plants are known as

(a) Variety **(c) Strain**
(b) Genotype (d) Segregants

[13] Heterosis, inbreeding depression, various theories of Heterosis, exploitation of hybrid vigour development of inbred lines and different types of hybrids.

114 A cross between an inbred line and an open pollinated variety is known as

(a) Back cross (c) Test cross
(b) Top cross (d) wide cross

115 A cross between two inbred lines is called

(a) Poly cross **(c) Single cross**
(b) Test cross (d) Top cross

116 Inbreeding depression is maximum in_____

(a) Self pollinated crops (c) Often cross pollinated crop
(b) Cross pollinated crops (d) Both A and B

117 The term heterosis was first used by

(a) Bruce (1908) (c) Jones (1917)
(b) Shull (1914) (d) Hull (1945)

118 The method applicable in both self- and cross-pollinated crops is

(a) SSD (c) Pedigree selection
(b) Heterosis breeding (d) Synthetic varieties

119 Which variance is associated with heterosis?

(a) GCA (c) Both GCA and SCA
(b) SCA (d) None

120 Which estimates of heterosis is of commercial or practical value?

(a) Relative heterosis **(c) Economic heterosi s**
(b) Heterobeltiosis (d) Luxuriance

121 The hybrid is superior to the mid-parent value is called

(a) Reduced heterosis (c) Heterobeltiosis
(b) Standard heterosis **(d) Relative heterosis**

122 The hybrid GCH-7 of castor among which type of hybrid?

(a) Single cross (b) Double cross
(c) Poly cross (d) Three way cross

123 The hybrid superior to better parent value is called

(a) Heterobeltiosis (c) Reduced heterosis
(b) Standard heterosis (d) Relative heterosis

124 If 10 inbreds are crossed in all possible combination, then total number of direct cross will be?

(a) 45 (c) 55
(b) 90 (d) 105

125 Which of the following are genetic causes of heterosis?

(A) Dominance (c) Over-dominance
(B) Epistasis **(d) All of these**

126 Mating between closely related individual is known as

(a) Hybridization (c) Heterosis
(b) Inbreeding (d) Standard heterosis

127 The magnitude of heterosis is associated with

(a) Homozygosity (c) Homogeneous
(b) Heterogeneous **(d) Heterozygosity**

128 Heterobeltiosis can be computed by mean value of the following formulae

(a) F_1-F_2/F_1 x 100 (c) BP-F_1/BP x 100
(b) F_1-BP/BP x 100 (d) MP-F_1/F_1 x 100

129 The formulae F_1-SC/SC x 100 can be used to compute which of the following

(a) Standard heterosis (c) Relative heterosis
(b) Heterobeltiosis (d) inbreeding depression

130 Inbreeding depression is very less in case of

(a) Self pollinated crops (c) Often cross pollinated
(b) Cross pollinated (d) Both A and B

131 Which of the following is known as father of hybrid rice

(a) Harlen (c) E.E. Hartwig
(b) G.W.Burton **(d) Y.L.Ping**

[14] Hardy-Weinberg law and population improvement approaches.

132 Diallel selective mating system is used for genetic improvement among which of the following crop?

(a) Cross pollinated **(c) Self pollinated**
(b) Often cross pollinated (d) Vegetatively propagated crop

133 Method used for population improvement is

(a) Pedigree (c) Bulk
(b) Recurrent selection (d) SSD

134 Among which of the following method is not appropriate for population improvement?

(a) Pureline selection (c) Biparental mating
(b) Recurrent selection (d) Disruptive selection

135 A population in which each individual plant having equal chance to mating with other individual of that population

(a) Random mating population (c) Mendelian population
(b) Panmictic population (d) **All of these**

136 A fundamental law of population genetics was developed by

(a) Hardy & Fisher **(c) Hardy& Weinberg**
(b) Weinberg & Flor (d) Hardy & Mather

137 Among which of the following evolutionary forces change gene frequency?

(a) Mutation, Migration, Selection and Genetic drift
(b) Mutation, selection and Genetic drift
(c) Migration, Mutation and Genetic drift
(d) Selection, Genetic drift and Mutation

138 Repeated selection generation to generation simultaneously intermating of selected plant to provide genetic recombination is known as

(a) Disruptive selection (c) Biparental selection
(b) Recurrent selection (d) Progeny selection

139 Recurrent selection is more commonly used in

(a) Autogamous species **(c) Allogamous species**
(b) Often self pollinated crops (d) Often cross pollinated crops

140 Which of the following is base material for recurrent selection?

(a) Open pollinated variety (c) Self pollinated variety
(b) Pureline (d) Wild species

141 Which of the following is/are basic assumption of recurrent selection?

(a) Absence of epistasis (c) Absence of linkage disequilibrium
(b) Absence of multiple alleles **(d) All of these**

142 In case of simple recurrent selection, selection is made on _____ basis

(a) Phenotype (c) Genotype
(b) Progeny (d) Yield

143 Recurrent selection in which heterozygous tester is used?

(a) Simple recurrent selection **(c) Recurrent selection for GCA**
(b) Recurrent selection for SCA (d) Reciprocal recurrent selection

144 Recurrent selection in which homozygous tester is used

(a) Simple recurrent selection (c) Recurrent selection for GCA
(b) Recurrent selection for SCA (d) Reciprocal recurrent selection

145 End product of recurrent selection is

(a) Top cross (c) Pureline
(b) Clone **(d) Inbred**

146 Among which of the following efficient breeding method used for breaking undesirable linkages?

(a) Pedigree method (c) Pureline selection
(b) Disruptive selection (d) SSD method

[15] Synthetics and composites varieties

147 Yield prediction and reconstitution is possible in case of

(a) Hybrid variety **(c) Synthetic variety**
(b) Composite variety (d) Pureline variety

148 Synthetic and composite varieties mostly relevant to

(a) Self pollinated (c) Both self and cross pollinated
(b) Cross pollinated (d) None of these

149 Base material used to produce synthetic varieties are

(a) Open pollinated variety (c) clones
(b) Inbred **(d) All of these**

150 A variety which is produced by crossing between number of lines in all possible combination which combine well with each other is known as

(a) Composite variety **(c) Synthetic variety**
(b) Germplasm complexes (d) All of these

[16] Methods of breeding for vegetatively propagated crops; Clonal selection.

151 In case of clonal/vegetatively propagated crop which type of cell division occurred?

(a) Mitosis (c) Both A and B
(b) Meiosis (d) Uncertain

152 Origin of genetic variation within clones is due to

(A) Bud mutation (c) Mechanical mixer
(B) Occasional sexual reproduction **(d) All of these**

153 Cell of an individual that consist two or more different genotypes is known as

(a) Chimera (c) Clone
(b) Mericlinal (d) Periclinal

154 Genetic constitution of clone is

(a) Heterozygous & homogeneous (c) Homozygous & heterogeneous
(b) Homozygous & homogeneous (d) Heterozygous & heterogeneous

155 Clone is maintained by

(a) Sexual reproduction **(c) Asexual reproduction**
(b) Self pollination (d) Cross pollination

156 Asexually propagated crops differ from sexual propagated with respect to

(a) Heterozygosity (c) Identical with each other
(b) Breeding material (d) Homozygosity

157 Clone is degeneration leads to

(a) **Increase vigour & productivity** (c) heterozygosity
(b) homozygosity **(d) Decrease vigour & productivity**

[17] Special breeding approaches: Mutation breeding; Ploidy breeding; Wide hybridization, significance in crop improvement.

158 An allopolyploids which arise by combining genomes of two diploids species is known as

(a) Diploidization (b) Autosyndesis
(c) Autosyndesis **(d) Amphidiploid**

159 Which of the following method considered as a special breeding method?

(a) Back cross breeding (c) Pedigree breeding
(b) Ploidy breeding (d) All of these

160 Triticale was developed from cross between

(a) Wheat and Barley (c) Wheat and Rice
(b) Wheat and Maize (d) **Wheat and Rye**

161 The *Raphanobrassica* result due to combination of

(a) Radish and Cauliflower (c) Radish and mustard
(b) Radish and Cabbage (d) Radish and turnip

162 A mutation arise due to treatment of mutagenic agents

(a) Spontaneous mutation (c) Somatic mutation
(b) Induced mutation (d) None of these

163 The process of shifting hydrozen atom from one position to another in purine or in pyramiding base is called

(a) Base analogues (c) Ionization
(b) Radiation **(d) Tautamerization**

164 Sharbati sonara is mutant variety of

(a) Rice (b) Maize
(c) Barley **(d) Wheat**

165 A numerical change in entire genome is called

(a) Haploid **(b) Euploidy**
(c) Heteroploidy (d) Hypoploidy

166 Change of one or few chromosome in entire genome is called?

(a) Haploidy (c) Euploidy
(b) Aneuploidy (d) Allopolyploid

167 An individual having more than two basic set of chromosomes

(a) Haploidy (b) Aneuploidy
(c) Heteroploidy **(d) Polyploidy**

168 Polyploids which originate by multiplication of chromosome of a single species

(a) Amphidiploid (c) Diploidization
(b) Autopolyploidy (d) Allopolyploids

169 A polyploid individual which combines complete genome from two or more species

(a) Amphidiploid (c) Diploidization
(b) Autopolyploidy **(d) Allopolyploids**

170 The process by which a polyploidy species behaves like a diploid species is called

(a) Disomic **(c) Diploidization**
(b) Autopolyploidy (d) Allopolyploids

171 Which of the following is an example of artificial alloploids

(a) Rice (c) Bananas
(b) Triticale (d) Grapes

172 Which of the following are types of distant hybridization?

(a) Interspecific and Intervarietal hybridization
(b) Interspecific & Intergeneric hybridization
(c) Intraspecific and Intrageneric hybridization
(d) interspecific and intraspecific hybridization

173 Intra generic hybridization give rise to_____type of hybrid

(a) Fully fertile (c) Partially fertile
(b) fully sterile **(d) All of these**

174 The first intergeneric cross between wheat and rye was made by

(a) Rimpu (1890) (c) Karpenchenko (1928)
(b) Shull (1914) (d) Kolreuter (1617)

175 Intergeneric cross between radish and cabbage was made by

(a) Rimpu (1890) **(c) Karpenchenko (1928)**
(b) Shull (1914) (d) Kolreuter (1617)

176 Which of the following crop has evolved through wide hybridization

(a) Sugarcane **(c) Triticale**
(b) Wheat (d) Mustard

[18] Ideotype concept in crop improvement

177 The concept of plant ideotype was given by

(a) Donald (c) Peterson
(b) Muller (d) Stadler

178 A method of crop improvement which is used to increase genetic yield potential through genetic manipulation of specific plant trait?

(a) Mutation breeding **(c) Ideotype breeding**
(b) Polyploidy breeding (d) Heterosis breeding

179 Which of the following steps of Ideotype breeding are in correct sequences?

(a) Development of theoretical model→selection of base materials→Inclusion of desirable traits →Phenotypic selection

(b) Development of theoretical model→ Phenotypic selection → Inclusion of desirable traits → Selection of base materials

(c) Phenotypic selection →Development of theoretical model→Selection of base materials→ Inclusion of desirable traits

(d) Inclusion of desirable traits →Development of theoretical model→Selection of base materials→ Phenotypic selection

180 Total dry matter production per plant is called

(a) Economical (c) Harvest index

(b) Biological (d) All of these

181 Harvest index refers to

(a) Ratio of economic yield to biological yield

(b) Ratio of biological yield to economic yield

(c) Sum of biological yield to economic yield

(d) Sum of economic yield to biological yield

[19] Breeding resistance to biotic and abiotic stresses

182 Which of the following is the cheapest and best method for stress resistance?

(a) Biological **(b) Genetic resistance**

(c) Chemical (d) Physical

183 An ability of some genotypes to give higher yields as compare to susceptible variety at same level of infection

(a) Non-preference (c) Antibiosis

(b) Genetic resistance (d) Avoidance

184 Various characteristics of plant which make the host unattractive to insect pest for hibernation, food or even reproduction

(a) Non-preference (c) Antixenosis

(b) Non acceptance **(d) All of these**

185 Source of stress resistance in crop plant is /are

(a) Cultivated varieties (b) Germplasm collections

(c) Wild species **(d) All of these**

186 Mechanism of crop plant which cause adverse of insect-pest on feeding, growth and even reproduction?

(a) Antibiosis (c) Genetic resistance

(b) Avoidance (d) Antixenosis

187 Sturdy resistance is also refers to

(a) Tolerance **(c) Long enduring resistance**

(b) Only escape (d) Temporary resistance

188 _____is heritable feature of a host plant that suppress or retard the development of pathogen or insect-pest

(a) Physical resistance **(c) Genetic resistance**

(b) Biochemical resistance (d) Non-genetic resistance

189 Genetic resistance is governed by one or few genes is known as

(a) Specific resistance (b) Minor gene resistance

(c) General resistance (d) Horizontal resistance

190 Genetic resistance is provide protection against all race of pathogen is called

(a) Specific resistance (b) Oligogenic resistance

(c) Vertical resistance **(d) Horizontal resistance**

191 Gene for gene hypothesis was first developed by

(a) Vavilov **(c) Flor**

(b) Plank (d) Shull

192 Under moisture stress condition, plant having ability to maintain internal water balance is called

(a) Drought tolerance (c) Drought escape

(b) Drought avoidance (d) Drought resistance

193 Plant withstand against low tissue water content is called

(a) Drought tolerance (c) Drought escape

(b) Drought avoidance (d) Drought resistance

[20] IPR and its related matter; PBR, PPV&FRA

194 The property which results from the brain of person i.e. idea/product/process which can be used on commercial purpose

(a) Intellectuals property (b) Movable property

(c) Immovable property (d) All of these

195 The rights associated with things with unique features is known as

(a) Primary intellectual rights (c) Copy rights

(b) Property rights **(d) Suigeneris rights**

196 Suigeneris rights includes which of the following?

(a) Plant breeders rights (b) Copy rights

(c) Patents (d) Trade secrets

197 Primary intellectual rights includes among which of the following?

(a) Copy rights (c) Patents

(b) Trade marks **(d) All of these**

198 Suigeneris rights includes among which of the following?

(a) Data base rights (b) Plant breeders rights
(c) Farmers rights **(d) All of these**

199 The name of any region, a specific place or country used to describe an agricultural, natural or manufactured freight or food stuff is known as

(a) Trade name (c) Trade secret
(b) Patents **(d) Geographical indications**

200 Plant breeders' rights is also known as

(a) Plant variety rights (b) Moral rights
(c) Indigenous plant rights (d) Farmers rights

201 The period of protection of field crops under PPV& FRA are

(a) 15 years (c) 18 years
(b) 20 years (d) 14 years

202 The period of protection of trees and horticultural crops under PPV& FRA are

(a) 15 years **(c) 18 years**
(b) 20 years (d) 14 years

203 The basic requirements for protection of a plant variety under PPV and FRA are

(a) Novelty; Distinctiveness and Uniformity
(b) Novelty; Distinctiveness; Uniformity and Stability
(c) Distinctiveness; Uniformity and Stability
(d) Novelty; Distinctiveness and Stability