PREVIEW QUESTION BANK

Module Name : Genetics and Plant Breeding - 01-ENG
Exam Date : 29-Jun-2024 Batch : 14:30-16:30

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negative Marks
Objective Question				
1	201	Movement of DNA from one bacterium to another through a tubular bridge or pilus: 1. Conjugation 2. Transposition 3. Transfection 4. Transduction A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
2	202	Which of the following is responsible for eliminating toxic oxygen by-products from cells? 1. Mitochondria 2. Golgi complex 3. Peroxisomes 4. Chloroplasts A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
3	203	A form of multiple parasitism in which a parasite preferentially attacks a host that is already parasitized by another species is known as 1. Cleptoparasitism 2. Ectoparasitoid 3. Obligate parasitism 4. Superparasitism A1 : 1	4.0	1.00

		A2 : 2 A3 : 3 A4 : 4		
Objective Question				
4	204	For mass multiplication of DD-136 nematode, the common host used is 1. Silk moth 2. Fruit sucking moth 3. Codling moth 4. Lesser wax moth A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
5	205	Chlorpyriphos methyl is effective against stored product insects except 1. *Rhizopertha dominica* 2. *Tribolium castaneum* 3. *Caryedon serratus* 4. *Oryzaephilus surinamensis* A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
6	206	Which of the following insects often cause inhalational allergies in human following large emergence of adult insects 1. Stick insects 2. May flies 3. Ear wigs 4. Preying mantis A1 : 1 A2 : 2	4.0	1.00

		A3 : 3 A4 : 4		
Objective Question				
7	207	Given below are two statements: Statement (I): Climate is a weather condition related to smaller areas at a given place and at a given time, Statement (II): Weather is a condition of atmosphere at a given place and at a given time In light of the above statements, choose the *most appropriate* answer from the options given below. 1. Both Statement (I) and Statement (II) are correct. 2. Both Statement (I) and Statement (II) are incorrect. 3. Statement (I) is correct but Statement (II) is incorrect. 4. Statement (I) is incorrect but Statement (II) is correct. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
8	208	The local name of cyclone in Phillippines is 1. Hurricane 2. Cyclone 3. Baquio 4. Typhoon A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
9	209		4.0	1.00

		Which one of the following are secondary tillage implements? (A).Subsoiler (B).Cultivator (C).Disc harrow (D).Wetland plough Choose the ***correct*** answer from the options given below: 1. (A), (B) and (D) only. 2. (B) and (C) only. 3. (B), (C) and (D). 4. (B) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
10	210	_____ is the most suitable, drought resistant and persistant grass? 1. *Atylosia sp.* 2. *Cenchrus ciliaris* 3. *Stylosanthes hamata* 4. *Sorghum bicolor* A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
11	211	The rainfed area in India is aproximately 1. 30 mha 2. 40 mha 3. 57 mha 4. 70 mha A1 : 1 A2 : 2	4.0	1.00

		A3 : 3 A4 : 4		
Objective Question				
12	212	Which nutrient is often a limiting factor in agricultural production? 1. Nitrogen 2. Carbon 3. Oxygen 4. Hydrogen A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
13	213	What is a potential disadvantage of agroforestry systems? 1. Increased soil erosion 2. Decreased carbon sequestration 3. Reduced biodiversity 4. Enhanced susceptibility to pests A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
14	214	Pungency in mustard oil is due to 1. Amino acid 2. Allyl isothiocyanate 3. Erusic acid 4. Oxalic acid A1 : 1 A2 : 2	4.0	1.00

		A3 : 3 A4 : 4		
Objective Question				
15	215	Sesamum belongs to the family 1. Chenopodiaceae 2. Papilionaceae 3. Leguminosae 4. Pedaliaceae A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
16	216	Dark period is critical in which type of plant? 1. Short day plant 2. Long day plant 3. Day neutral plant 4. All the options A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
17	217	Which of the following is NOT a significant contributor to greenhouse gas emissions from livestock farming? 1. Carbon dioxide 2. Methane 3. Nitrous oxide 4. Ammonia A1 : 1 A2 : 2 A3 : 3	4.0	1.00

		A4 : 4		
Objective Question				
18	218	Fe deficiency is mostly seen in crops growing on 1. Calcareous or alkaline soils 2. Salt affected soils 3. Acidic soils 4. Neutral soils A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
19	219	EDV (Essentially Derived Varieties) are those which are derived from: 1. crossing two commercially known varieties 2. hybrid introduced from other countries 3. existing variety through genetic engineering or mutation 4. crossing commercially known variety with its wild relative A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
20	220	What is the role of "companion planting" in agriculture? 1. Enhancing soil fertility through crop rotation 2. Growing different crop species together to deter pests 3. Cultivating plants in hydroponic system 4. Increasing soil compaction through cover cropping A1 : 1 A2 : 2 A3 : 3	4.0	1.00

		A4 : 4		
Objective Question				
21	1101	Which of the following marker system is called as Selective Restriction Fragment Amplification? 1. Restriction fragment length polymorphism 2. Amplified fragment length polymorphism 3. Simple sequence repeats 4. Random amplified polymorphic DNA A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
22	1102	A specialized form of selection based on genome wide distributed markers, in which the information from marker genotype data covering the entire genome forms the basis of selection is termed as _____ (A). Genomic selection (B). Genome wide selection (C). Genome wide association studies (D). Marker-assisted recurrent selection Choose the ***correct*** answer from the options given below: 1. (A), (B) and (C) only. 2. (A) and (B) only. 3. (A), (B), (C) and (D). 4. (B), (C) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
23	1103	The term 'Genetics of Disaster" by Harlan refers to _____ 1. Breeding of narrow genetic base cultivars and their wide cultivation 2. Breeding of broad genetic base cultivars and their wide adaptation 3. Development of transgenics in food crops 4. Development of Bt cotton	4.0	1.00

		A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
24	1104	*PJHM-1* is a hybrid variety of _____ 1. Wheat 2. Rice 3. Maize 4. Jowar A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
25	1105	Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R). Assertion (A) : Gene regulatory networks (GRN) are both bipartite and directional. Reason (R) : GRN are bipartite because there are two types of nodes: genes and regulators, although some genes are themselves regulators of other genes or proteins. GRN are directional because regulators control genes and usually not the other way around. In light of the above statements, choose the *correct* answer from the options given below. 1. Both (A) and (R) are true and (R) is the correct explanation of (A). 2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A). 3. (A) is true but (R) is false. 4. (A) is false but (R) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
26	1106		4.0	1.00

		The gene "M' has 10 alleles, viz. M_1 to M_{10}. How many genotypes are possible for the gene M with various allelic combinations? 1. 55 2. 100 3. 110 4. 10 A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
27	1107	The formula $\frac{SD}{\sqrt{N}}$ is used for the estimation of 1. Variance 2. Standard error 3. Standard variance 4. Error variance A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
28	1108	The biological mechanism by which proteins are transported to the appropriate destinations in the cell or outside of it is termed as _____ (A). Protein targeting (B). Protein mixing (C). Protein sorting (D). Protein purification Choose the ***correct*** answer from the options given below: 1. (A) and (D) only. 2. (A) and (C) only. 3. (A), (B), (C) and (D). 4. (B), (C) and (D) only. A1 : 1	4.0	1.00

		A2 : 2 A3 : 3 A4 : 4		
Objective Question				
29	1109	Which of the following mapping populations shows heterogeneous genetic background? (A). Near Isogenic Lines (B). Recombinant Inbred Lines (C). F_2 (D). Doubled Haploids Choose the ***correct*** answer from the options given below: 1. (A), (B) and (D) only. 2. (A), (B) and (C) only. 3. (A), (B), (C) and (D). 4. (B), (C) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
30	1110	In a genetic analysis experiment, the rust resistance gene was found to be completely linked with red glume color. The leaf rust resistant stock with red glume was crossed with contrasting leaf rust susceptible white glumed line. The F_1 plant between them was found to be susceptible and red glumed. The genetic nature of both the genes were found to be monogenic. In F_2 population the likely frequency of susceptible red glumed plant will be 1. 1/4 2. 1/16 3. 1/2 4. 9/16 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				

31	1111	The mutagenic action of Gamma-rays was discovered by 1. H.J. Muller in Drosophila 2. T.H. Morghan in Drosophila 3. L.J. Stadler in Barley 4. B. McClintock in Maize A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
32	1112	The mutant line with herbicide tolerance in rice is 1. Improved MTU1010 2. Improved Kala Namak 3. Robin 4. Pokkali A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
33	1113	Given below are two statements: Statement (I): The single cross hybrids have highest yield potential Statement (II): The single cross hybrid seed is harvested from detasseled line in commercial seed production plot In light of the above statements, choose the *most appropriate* answer from the options given below. 1. Both Statement (I) and Statement (II) are correct. 2. Both Statement (I) and Statement (II) are incorrect. 3. Statement (I) is correct but Statement (II) is incorrect. 4. Statement (I) is incorrect but Statement (II) is correct. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question				
34	1114	The number of secondary trisomic lines possible in *Triticum durum* is 1. 14 2. 28 3. 21 4. 42 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
35	1115	The nitrogenous base Cytocine is 1. 4-amino-6-oxypyrimidine 2. 6-amino-2-oxypyrimidine 3. 2-amino-4-oxypyrimidine 4. 4-amino-2-oxypyrimidine A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
36	1116	Given below are two statements: Statement (I): The prophase is longest stage during mitotic cell division Statement (II): The nuclear membrane completely disappears at the prophase In light of the above statements, choose the *most appropriate* answer from the options given below. 1. Both Statement (I) and Statement (II) are correct. 2. Both Statement (I) and Statement (II) are incorrect. 3. Statement (I) is correct but Statement (II) is incorrect. 4. Statement (I) is incorrect but Statement (II) is correct. A1 : 1 A2 : 2 A3 : 3	4.0	1.00

		A4 : 4		
Objective Question				
37	1117	The current chairperson of Protection of Plant Varieties and Farmers' Rights Authority is 1. S Nagrajan 2. P L Gautam 3. K V Prabhu 4. T Mohapatra A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
38	1118	In a genetic analysis of resistant stock, the F_1 plant with contrasting susceptible parent was found to be resistant. The F_2 population was segregating in a ratio of 13 resistant and 3 susceptible. The test cross will segregate in 1. 3 resistant and 1 susceptible 2. 1 resistant and 1 susceptible 3. 9 resistant and 7 susceptible 4. 3 susceptible and one resistant A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
39	1119	The ability of a seed to produce mucilage upon hydration is known as (A). Myxospermy (B). Mesospermy (C). Polyspermy (D). Monospermy Choose the ***correct*** answer from the options given below: 1. (A) and (B) only 2. (B) and (C) only 3. (C) and (D) only 4. (A) only	4.0	1.00

		A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
40	1120	Rafflesia flowers are exclusively pollinated by 1. Honey bee 2. Fly 3. Wasp 4. Beetle A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
41	1121	Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R). Assertion (A) : In hybrid seed production plot of GMS based hybrid, nearly 50% of the female plants are rogued out. Reason (R) : Male sterility phenotype in GMS line is governed by the nuclear recessive gene. In light of the above statements, choose the *correct* answer from the options given below. 1. Both (A) and (R) are true and (R) is the correct explanation of (A). 2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A). 3. (A) is true but (R) is false. 4. (A) is false but (R) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
42	1122		4.0	1.00

Gynoecious cucumber lines are maintained by using

1. Silver nitrate
2. Ethrel
3. IAA
4. ABA

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

43 1123 4.0 1.00

Match **List-I** with **List-II**

List-I	**List-II**
Seed Processing Equipment	**Effective for separation of**
(A). Specific gravity separator	(I). Partially filled achenes
(B). Indented Cylinder Separator	(II). Broken caryopsis
(C). Dodder mill	(III). Rough surfaced admixture
(D). Spiral separators	(IV). Splits in soybean

Choose the **correct** answer from the options given below:

1. (A) - (I), (B) - (IV), (C) - (III), (D) - (II)
2. (A) - (II), (B) - (IV), (C) - (III), (D) - (I)
3. (A) - (IV), (B) - (III), (C) - (II), (D) - (I)
4. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

44 1124 4.0 1.00

		Burr reducer is used to remove 1. Testa 2. Cork 3. Aril 4. Pericarp A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
45	1125	Concept of 'Quality Declared Seed (QDS) system was introduced by 1. OECD 2. ISTA 3. AOSA 4. FAO A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
46	1126	Under OECD certification system, the colour of the pre-basic seed is 1. White 2. White with diagonal violet stripe 3. Red 4. Blue A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
47	1127		4.0	1.00

		Which among the following is **not** an ROS scavenging enzyme 1. Catalase 2. Glutathione 3. Superoxide dismutase 4. Peroxidase A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
48	1128	The National Centre for Genetic Resources Preservation is located in 1. Japan 2. Australia 3. Norway 4. USA A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
49	1129	Which seed company produced the genetically modified Round Up Ready seeds? 1. Pioneer 2. Monsanto 3. Bayer 4. Corteva A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question				
50	1130	An example of externally seed borne pathogen is 1. *Ustilago nuda* 2. *Ustilago hordei* 3. *Xanthomonas campestris* pv. *phaseoli* 4. *Drechslera graminae* A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
51	1131	Turkey "X' is a disorder attributed to seed contamination by 1. *Penicillium rubrum* 2. *Aspergillus niger* 3. *Aspergillus flavus* 4. *Aspergillus clavatus* A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
52	1132	The natural habitat of *Alternaria porri* 1. Brassica seeds 2. Soil 3. Paddy seeds 4. Onion seeds A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question				
53	1133	The Chairperson of NBA is 1. Dr Vinod Mathur 2. Dr T Mohapatra 3. C Achalender Reddy 4. Dr PL Gautam A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
54	1134	Indian Seed Congress is hosted annually by 1. ISST 2. NSAI 3. ISF 4. IARI A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				

55	1135	Pre-breeding involves: 1. Identification of desirable trait expressions not present in the cultivated germplasm and transferring them from unadapted germplasm into breeding populations. 2. Identification of novel traits in crop wild relatives and their transfer to cultivated genepool resulting in broadening of genetic base. 3. Attempts to transfer genes controlling novel trait variations from crop wild relatives and unadapted germplasm into agronomically superior cultivars overcoming the problems of 'linkage drag'. 4. 1,2 and 3 above A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
56	1136	Evaluation of germplasm for quality traits are often misleading due to: 1. High genotype x environmental interactions in expression of traits. 2. Expression of secondary metabolites profiles depend on ecological factors. 3. The cultivation conditions are often not comparable for assessing quality traits greatly influence by environmental factors. 4. Options 1,2 and 3 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
57	1137	Which of the following DNA markers are codominant in inheritance? 1. RAPD, ISSR 2. SSR, SNP, RFLP 3. SCOT, SRAP 4. AFLP, SCAR A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question				
58	1138	The species concept that explains that a species' integrity is maintained by interbreeding within a species as well as by reproductive barriers between organisms in different species is known as: 1. Phylogenetic species concept 2. Ecological species concept 3. Biological species concept 4. Modern species concept A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
59	1139	Van Valen's (1976) Ecological species concept explains that a species taxon as a lineage of organisms is maintained and segmented by ecological forces. Accordingly, the species integrity is maintained by: 1. Stabilizing selection while disruptive selection can lead to new species 2. Reproductive barriers between organisms 3. Exchange genetic information through interbreeding 4. Pre-zygotic barriers upon hybridization A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
60	1140	Reproductive isolating barriers are responsible for: 1. Preventing breakdown of interspecific hybrids 2. Preventing gene flow between species 3. Ensure increase in diversity of subpopulations 4. Increasing gene flow between species A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question

61	1141	In a self-fertilizing species, maximum diversity can be captured by: 1. Sampling greater number of subpopulations rather than increasing sample size within subpopulations 2. Sampling larger number of individuals within subpopulations 3. Collecting larger number of seeds from each plant within subpopulations 4. Collecting equal number of seeds from each plant in a subpopulation. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question

62	1142	Correct nomenclature for a fertile amphidiploid generated between two species, *Abelmoschus esculentus and A. tetraphyllus var tetraphyllu*s is: 1. *Abelmoschus esculentus x tetraphyllus var. tetraphyllus* 2. *Abelmoschus x esculophyllus* 3. *A.esculentus x A. tetraphyllus var tetraphyllus* amphidiploid 4. *Abelmoschus x esculotetraphyllus* A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question

63	1143	The ability of crop variety to become adapted to new climatic and edaphic conditions is called 1. Adaptation 2. Acclimatization 3. Domestication 4. Natural selection A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question

64	1144	The concept of Pureline was proposed by.....in the year..... on the basis of his studies with beans (Phaseolus vulgaris) variety called..... 1. Vavilov,1905, Prince 2. Vavilov, 1913, Princess 3. Johannsen, 1903, Princess 4. Johannsen,1905, Prince A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
65	1145	Allopolyploid that has two copies of each genome present in it and, as a consequence, behaves as a diploid during meiosis 1. Diploids 2. Polyploids 3. Amphidiploids 4. Autopolyploids A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
66	1146	Which of the following is not a two gene dwarf variety of wheat? 1. Sonora-63 2. Sonora-64 3. Kalyan Sona 4. Moti A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
67	1147		4.0	1.00

Match the following crop species with their respective haploid chromosome number. Match **List-I** with **List-II**

List-I	List-II
(A). Hordeum	(I). 8
(B). Chickpea	(II). 7
(C). Sunflower	(III). 12
(D). Rice	(IV). 17

Choose the **correct** answer from the options given below:

1. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
2. (A) - (III), (B) - (II), (C) - (IV), (D) - (I)
3. (A) - (II), (B) - (I), (C) - (IV), (D) - (III)
4. (A) - (IV), (B) - (II), (C) - (III), (D) - (I)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

68 1148

Statement I- Primary gene pool consists of cultivated species and landraces.

Statement II- The secondary gene pool consists of the progenitor species that are crossable with reduced fertility of the resulting hybrids and progenies

Statement III-The tertiary gene pool consists of all the species that are crossable with cultivated species.

1. All the statements are correct
2. I and II are correct III is incorrect
3. I is incorrect, II and III are correct
4. All the statements are incorrect

4.0 1.00

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

69 1149

4.0 1.00

		Crop varieties developed to express a specified desirable monogenic, oligogenic, or polygenic traits combination are often referred to as 1. Super organic 2. Genetically modified crops 3. Designer crops 4. Transgenics A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
70	1150	Diversity array technology (DArT) is a high throughput, low-cost genotyping system. It is essentially similar to..... procedure 1. AFLP 2. RFLP 3. SNP 4. SSR A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
71	1000101	If an allele, 'A', mutates to 'a' with a frequency of 1 in 10,000 and back mutates with a frequency of 1 in 1,00,000, and if all the three genotypes have equal fitness, what will be the genotype frequencies at equilibrium in a random mating population? 1. AA:0.0083; Aa: 0.1653; aa:0.8264 2. AA: 0.9053; Aa: 0.0083; aa:0.8264 3. AA:0.0083; Aa: 0.1653; aa: 0.0083 4. AA:0.0083; Aa: 0.1653; aa: 0.1653 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question

72	1000102	Excess of the coupling phase of linkage leads to overestimation of _____ 1. Dominance genetic variance 2. Additive genetic variance 3. Degree of dominance 4. Dominance by additive variance A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question

73	1000103	Selection is most and least effective when the gene frequencies are ___ and ____, respectively. 1. q = 0.5 and q = 0.01 2. q = 0.95 and q= 0.05 3. q = 0.25 and q = 0.75 4. q = 0.99 and q = 0.5 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question

74	1000104	If a population is maintained by random mating among 5 pairs of parents in every generation, what will be its inbreeding coefficient after the 2^{nd} generation? 1. 0.061 2. 0.999 3. 0.001 4. 0.097 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question

75	1000105	A predominantly self-fertilizing plant regularly cross-pollinates with a frequency of 3%. Assuming no selection, what will be the percent of heterozygotes at a locus with two alleles showing gene frequencies of 0.3 and 0.7? 1. 1.01 2. 2.44 3. 0.63 4. 3.00 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
76	1000106	Given below are the statements on testers in Line x Tester analysis: Statement (I): Minimum two testers are required for Line x Tester analysis. Statement (II): Testers should be related by pedigree to lines for better outcomes. Statement (III): Testers should represent the broad genetic base. In light of the above statements, choose the *most appropriate* answer from the options given below. 1. The Statement (I) and Statement (II) are true and Statement (III) is false. 2. The Statement (I) and Statement (II) are false and Statement (III) is true. 3. The Statement (I) and Statement (III) are true and Statement (II) is false. 4. All the three statements, Statement (I), Statement(II) and Statement(III) are true A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
77	1000107	If the regression of offspring on mean of parents is 0.32 and the resemblance due to environment or dominance is negligible, what would be the heritability of the target trait? 1. 0.64 2. 0.32 3. 0.16 4. 0.10 A1 : 1	4.0	1.00

		A2 : 2 A3 : 3 A4 : 4		
Objective Question				
78	1000108	Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R). Assertion (A) : The which-won-where view of the GGE biplot is superior to the AMMI1 graph for mega-environment analysis. Reason (R) : GGE biplot explains more (G + G x E) than AMMI1 graph and it is easier to construct and visualize. In light of the above statements, choose the *most appropriate* answer from the options given below. 1. Both (A) and (R) are correct and (R) is the correct explanation of (A). 2. Both (A) and (R) are correct but (R) is NOT the correct explanation of (A). 3. (A) is correct but (R) is not correct. 4. (A) is not correct but (R) is correct. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
79	1000109	Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R). Assertion (A) : Linkage disequilibrium (gametic phase equilibrium) is the non-random association of alleles at different loci. Reason (R) : The tight linkage between the alleles of different loci results in high levels of linkage disequilibrium In light of the above statements, choose the *most appropriate* answer from the options given below. 1. Both (A) and (R) are correct and (R) is the correct explanation of (A). 2. Both (A) and (R) are correct but (R) is NOT the correct explanation of (A). 3. (A) is correct but (R) is not correct. 4. (A) is not correct but (R) is correct. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
80	1000110		4.0	1.00

Suppose a marker locus (M/m) is linked to the target locus (G/g) with the recombination frequency (r) of 0.05 and F_1 has genotype MG/mg, where the target allele G is to be selected. when M is linked to G, the G can be selected on the basis of M. Therefore, what could be the probability of selecting correct genotype G/G through a selection marker M/M?

1. 0.90
2. 0.81
3. 0.75
4. 0.99

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

81	1000111	Introduction of powerful new traits that might outperform native traits by transforming plants with synthetic genes is called as? 1. Cisgenic modification 2. Xenogenic modification 3. Intragenic modification 4. Introgenic modification A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question

82	1000112	Which of the following methods can be employed for production of near isogenic lines (NILs)? (A). Backcrossing (B). Selfing (C). Mutation (D). Chromosome substitution Choose the ***correct*** answer from the options given below: 1. (A), (B) and (D) only. 2. (A), (B) and (C) only. 3. (A), (B), (C) and (D). 4. (B), (C) and (D) only.	4.0	1.00

		A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
83	1000113	The theoretical melting temperatures for the forward (TCTATTACGATGCCACCGC) and reverse (GGCAATTCATGTCGAGGTG) primer of a gene (Zm00001eb042180) are_____ 1. Forward primer: 31.8 ℃ and Reverse primer: 32.8 ℃ 2. Forward primer: 58 ℃ and Reverse primer: 58 ℃ 3. Forward primer: 64.8 ℃ and Reverse primer:65.8 ℃ 4. Forward primer: 50.8 ℃ and Reverse primer: 52.8 ℃ A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
84	1000114	Given below are two statements: Statement (I): Collinearity refers to the location of markers in the same linear order in two different chromosomes of the same species or in the chromosomes of two different species. Statement (II): For the reliable estimates if genomic estimated breeding values (GEBVs) the training population should exhibit low collinearity between markers. In light of the above statements, choose the *most appropriate* answer from the options given below. 1. Both Statement (I) and Statement (II) are true. 2. Both Statement (I) and Statement (II) are false. 3. Statement (I) is true but Statement (II) is false. 4. Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
85	1000115		4.0	1.00

		Given below are two statements: Statement (I): During somatic embryogenesis induction is achieved by auxins. Statement (II): Meristemoids are the group of meristematic cells formed during the shoot regeneration. Statement (III): Altered expression of multigene families leads to somclonal variations. In light of the above statements, choose the *most appropriate* answer from the options given below. 1. The Statement (I), Statement (II) and Statement (III) are false. 2. Statement (II) and Statement (III) are false and Statement (I) is true. 3. Statements (I), Statement (II) and Statement (III) are true. 4. Statement (I), Statement (III) are false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
86	1000116	Which of the following peptide address label target the proteins to chloroplasts? 1. Transit peptide 2. Presequence 3. Signal peptide 4. Sorting localization pre-sequence A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
87	1000117	Which of the following genome editing approach employs deaminases for creation of single nucleotide variations in the target loci of the genome? 1. Zinc-Finger Nucleases 2. Transcription-Activator Like Effector Nucleases 3. Meganucleases 4. Base Editing A1 : 1 A2 : 2	4.0	1.00

A3 : 3

A4 : 4

Objective Question

88 | 1000118 | 4.0 | 1.00

Which of the following location is most suitable and priority for undertaking the germplasm exploration of a crop species to capture its maximum variability.

1. Primary centre of diversity
2. Secondary centre of diversity
3. Microcenter
4. Newly introduced place

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

89 | 1000119 | 4.0 | 1.00

Match the following crop species with their centre of origin. Match **List-I** with **List-II**

List-I	**List-II**
Centre	**Crop**
(A). China	(I). *Gossypium arboreum*
(B). Hindustan	(II). *Gossypium barbedense*
(C). Asia Minor	(III). Peppermint
(D). South America	(IV). Buckwheat
(E). Mediterranean	(V). Chestnut

Choose the **correct** answer from the options given below:

1. (A) - (III), (B) - (V), (C) - (I), (D) - (IV), (E) - (II)
2. (A) - (I), (B) - (II), (C) - (V), (D) - (III), (E) - (IV)
3. (A) - (IV), (B) - (I), (C) - (V), (D) - (II), (E) - (III)
4. (A) - (II), (B) - (III), (C) - (IV), (D) - (V), (E) - (I)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

90	1000120	Section 45 of The Protection of Plant Varieties and Farmers Rights Act, 2001 facilitates the establishment of_____ 1. National Gene Bank 2. National Gene Fund 3. Farmers Gene Bank 4. Farmers Fund for varietal protection A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question

91	1000121	The real value of seed lot is determined by_____ 1. $\frac{Purity\,(\%) \times Germination(\%)}{100}$ 2. $\frac{Germination(\%) \times Dockage(\%)}{100}$ 3. $\frac{Germination(\%) \times Dockage(\%)}{Dockage(\%)}$ 4. Purity (%) × Dockage (%) A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question

92	1000122	Which of the following methods is a form of *ex-situ* germplasm conservation? 1. Natural park 2. Field gene Bank 3. Gene sanctuary 4. Microcentre A1 : 1 A2 : 2 A3 : 3	4.0	1.00

		A4 : 4		
Objective Question				
93	1000123	Which of the following multivariate analysis follows interdependence model? 1. Principal component analysis 2. Multiple correlation 3. Discriminant function analysis 4. Canonical correlation A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
94	1000124	Given below are two statements: Statement (I): Least significant difference (LSD) test is more suited for unplanned pair comparison. Statement (II): Duncan's multiple range test (DMRT) is more suited for planned pair comparison. In light of the above statements, choose the *most appropriate* answer from the options given below. 1. Both Statement (I) and Statement (II) are true. 2. Both Statement (I) and Statement (II) are false. 3. Statement (I) is true but Statement (II) is false. 4. Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
95	1000125	In which type of the selection, the yield of each of the five plants within the grid is expressed as percentage of the average yield of four parental plants surrounding the grid? 1. Rhombic grid selection 2. Honeycomb selection 3. Grid selection 4. Individual pedigree selection A1 : 1	4.0	1.00

		A2 : 2 A3 : 3 A4 : 4		
Objective Question				
96	1000126	Given below are two statements: Statement (I): The *Lr34* gene was the first R gene cloned from wheat Statement (II): The *Lr34* gene encodes for ABC-type transporter In light of the above statements, choose the *most appropriate* answer from the options given below. 1. Both Statement (I) and Statement (II) are incorrect. 2. Both Statement (I) and Statement (II) are correct. 3. Statement (I) is correct but Statement (II) is incorrect. 4. Statement (I) is incorrect but Statement (II) is correct. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
97	1000127	If two inbred lines of a single cross hybrid differ for K number of loci and in case of extreme dispersion with all the positive alleles with increasing value on the phenotype are present in one of the inbred lines. The Co-efficient of dispersion (r_d)= 1. 0 2. 1 3. 0.5 4. ∞ A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
98	1000128		4.0	1.00

		The popular extra early maize hybrid Vivek maize hybrid 9 was developed by 1. Sain Dass 2. Sain Prasad 3. V P Mani 4. B K Mukherjee A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
99	1000129	Two white-flowered lines of sweet peas were crossed to produce F_1. The F_1 plants produce only red flowers. Random mating among F_1 plants produced 192 plants, 106 of which had red flowers and 86 of which had white flowers. What will be the expected frequency of red coloured F_2 plants which will segregate in 3 red and 1 white coloured flower in $F_{2:3}$ generation 1. 9/16 2. 7/16 3. 4/16 4. 1/2 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
100	1000130	Given below are two statements: Statement (I): The 2AS/2NS translocation was developed using *Aegilops tauschii* for rust resistance in wheat Statement (II): The significance of the 2AS/2NS translocation has increased due to the fact that it also confers resistance to wheat blast In light of the above statements, choose the *most appropriate* answer from the options given below. 1. Both Statement (I) and Statement (II) are correct. 2. Both Statement (I) and Statement (II) are incorrect. 3. Statement (I) is correct but Statement (II) is incorrect. 4. Statement (I) is incorrect but Statement (II) is correct. A1 : 1 A2 : 2	4.0	1.00

		A3 : 3 A4 : 4		
Objective Question				
101	1000131	The nature of gain of function mutations are generally 1. Recessive 2. Dominant 3. Silent 4. Neutral A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
102	1000132	Which are correct about Restriction map (A). The restriction map provides Linkage map of genetic material (B). Points mutation can be detected if they are present in restriction site (C). Point mutations can be detected easily even if they are located between the target site of restriction endonuclease (D). Restriction map measures distance between sites of cleavage by restriction endonuclease Choose the ***correct*** answer from the options given below: 1. (A), (B) and (D) only. 2. (B) and (D) only. 3. (A), (B), (C) and (D). 4. (B), (C) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
103	1000133		4.0	1.00

		The strand of DNA that directs the synthesis of mRNA via complementary base pairing is 1. Template strand 2. Sense strand 3. Coding strand 4. Anticodon strand A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
104	1000134	The variation in size of tRNA is because of variation in length of 1. D arm and extra arm 2. D arm and anticodon arm 3. Acceptor and T ΨC arm 4. Extra arm and acceptor arm A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
105	1000135	Given below are two statements: Statement (I): Stock 6 is a paternal haploid inducer line in maize Statement (II): The paternal haploid induction in Stock 6 results from mutation in the *ig1* (indeterminate gametophyte) gene In light of the above statements, choose the *most appropriate* answer from the options given below. 1. Both Statement (I) and Statement (II) are correct. 2. Both Statement (I) and Statement (II) are incorrect. 3. Statement (I) is correct but Statement (II) is incorrect. 4. Statement (I) is incorrect but Statement (II) is correct. A1 : 1 A2 : 2 A3 : 3	4.0	1.00

		A4 : 4		
Objective Question				
106	1000136	The Mitotic division is terminated by 1. Phosphorylation of substrates by M Phase kinase 2. Dephosphorylation of substrates by M Phase kinase 3. Phosphorylation of substrates by Phosphatases 4. Dephosphorylation of substrates by Phosphatases A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
107	1000137	B McClintock used pseudodominance to locate gene 1. In wheat using deficiency 2. In maize using deficiency 3. In rice using deficiency 4. In maize using duplication A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
108	1000138	Which is correct about the 4E-ms System of Producing Hybrid Wheat (A). The 4E chromosome carries Blue aleurone (Ba) gene with dosage effect (B). The 4E chromosome also carries male fertile (Ms) gene (C). The white seeds will give male sterile plant and used in hybrid seed production (D). Deep blue seed with 2n+2 chromosome will be used as maintainer line Choose the ***correct*** answer from the options given below: 1. (A), (B) and (D) only. 2. (A), (B) and (C) only. 3. (A), (B), (C) and (D). 4. (B), (C) and (D) only. A1 : 1	4.0	1.00

		A2 : 2 A3 : 3 A4 : 4		
Objective Question				
109	1000139	The erucic acid is 1. Saturated, 22 carbon fatty acid 2. Saturated, 20 carbon fatty acid 3. Monounsaturated, 22 carbon fatty acid 4. Monounsaturated, 20 carbon fatty acid A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
110	1000140	An Indian landrace of wheat with superior biscuit making quality 1. Local wheat Hungo 2. Nap Hal 3. Khapli landrace 4. Sharbati wheat A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
111	1000141	A dominant disease resistance gene in donor parent is linked with a dominant STMS marker with 300 bp amplicon in coupling phase. The marker assisted backcross breeding will be performed to transfer the gene using 1. Background selection based on presence of 300 bp amplicon in BC_1F_1 plants 2. Foreground selection based on absence of 300 bp amplicon in BC_1F_1 plants 3. Foreground selection based on presence of 300 bp amplicon in BC_1F_1 plants 4. Background selection based on absence of 300 bp amplicon in BC_1F_1 plants A1 : 1	4.0	1.00

		A2 : 2 A3 : 3 A4 : 4		
Objective Question				
112	1000142	Given below are two statements: Statement (I): *Triticum spelta* is allohexaploid in nature Statement (II): *Triticum spelta* carries AABBDD genome In light of the above statements, choose the *most appropriate* answer from the options given below. 1. Both Statement (I) and Statement (II) are correct. 2. Both Statement (I) and Statement (II) are incorrect. 3. Statement (I) is correct but Statement (II) is incorrect. 4. Statement (I) is incorrect but Statement (II) is correct. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
113	1000143	To know the allelic relation between restorer gene(S) for two restore lines, the lines were crossed to generate F_1. The F_1 plant was crossed as pollen parent with CMS line. Proper care was taken to avoid any chance of cross contamination by foreign pollen.The 1000 progenies obtained from the seed on CMS line have mostly fertile plants except 5 sterile plants. The result indicates that 1. Both the lines are carrying different restorer gene and are independently assorting 2. Both the lines are carrying different restorer genes closely linked in repulsion phase 3. Both the lines are carrying same restorer gene but are recessive in nature 4. Both the lines are carrying different restorer genes closely linked in coupling phase A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
114	1000144		4.0	1.00

Match the following Brassica species with their Chromosome numbers. Match **List-I** with **List-II**

List-I	**List-II**
(Brassica species)	**(Chromosome number)**
(A). *B. napus*	(I). 36
(B). *B. Juncea*	(II). 16
(C). *B. carinata*	(III). 38
(D). *B. nigra*	(IV). 34

Choose the **correct** answer from the options given below:

1. (A) - (III), (B) - (I), (C) - (II), (D) - (IV)
2. (A) - (III), (B) - (IV), (C) - (II), (D) - (I)
3. (A) - (I), (B) - (III), (C) - (IV), (D) - (II)
4. (A) - (III), (B) - (I), (C) - (IV), (D) - (II)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

115 1000145 4.0 1.00

Given below are two statements:

Statement (I): In general, chloroplast genome is much larger than mitochondrial genome

Statement (II): In higher plants the chloroplast DNA is present around 20-40 copies per chloroplast

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are incorrect.
2. Statement (I) correct and Statement (II) is incorrect.
3. Both Statement (I) and Statement (II) are correct.
4. Statement (I) is incorrect but Statement (II) is correct.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question				
116	1000146	The founder editor of "Indain journal of genetics and plant breeding" was 1. B P Pal 2. M S Swaminathan 3. A B Joshi 4. T S Venkataraman A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
117	1000147	What will be the possible total number of double cross hybrid in maize involving 20 inbred lines developed through pedigree breeding method 1. 400 2. 3420 3. 14535 4. 6840 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
118	1000148	As per Double strand break model of recombination, which statement is NOT correct? 1. Two Holliday type junction are formed 2. Holliday Junctions can be resolved by two topologically equivalent ways 3. Holliday Junctions can be resolved by four topologically equivalent ways 4. Heteroduplex regions are unequal in length A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				

119	1000149	Given below are two statements: Statement (I): GUG codes for N-Formylmethionine at initiation codon Statement (II): At other positions GUG codes for valine In light of the above statements, choose the *most appropriate* answer from the options given below. 1. Both Statement (I) and Statement (II) are incorrect. 2. Both Statement (I) and Statement (II) are correct. 3. Statement (I) is correct but Statement (II) is incorrect. 4. Statement (I) is incorrect but Statement (II) is correct. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
120	1000150	If the inbred lines crossed to develop hybrid are produced through doubled haploid technique, the difference in gene frequency "y" between them can only be 1. 0 2. 1 3. 0 or 1 4. 0 to 1 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00