University of Agriculture, Faisalabad
Discipline: Seed Science and Technology

MCQs

1)	Ripened ovule of gymnosperms and angiosperms is called:			
	a	Embryo	b	Pollen
	c	**Seed**	d	Ovary
2)	Fertilized ovule from which a new plant emerges:			
	a	**Embryo**	b	Pollen
	c	Seed	d	Ovary
3)	*Glycine max* is the scientific name of:			
	a	Sesame	b	**Soybean**
	c	Mustard	d	Chickpea
4)	Scientific name of ground nut is:			
	a	*Helianthus annus*	b	***Araechis hypogaea***
	c	*Gossypium hirsutum*	d	*Linum usilatimum*
5)	In monocots, protective covering around the root is called:			
	a	Coleoptile	b	**Coleorhiza**
	c	Epicotyl	d	Hypocotyl
6)	Dry, indehiscent fruit developed from one carpel is called:			
	a	Millet	b	**Cereal**
	c	Legume	d	Grain
7)	------- may or may not be capable of germination:			
	a	Millet	b	Seed
	c	Legume	d	**Grain**
8)	--------- provide about half of the energy consumed by humans:			
	a	**Cereal**	b	Legume
	c	Nuts	d	None of these
9)	Fruit of two fused carpels is known as:			
	a	**Siliqua**	b	Hilum
	c	funicle	d	Spike
10)	Connection between ovary and ovule is called -------:			
	a	Seed ovule	b	**Funicle**
	c	Panicle	d	Pedicle
11)	Scar on seed coat is-------:			
	a	**Hilum**	b	Microspore
	c	Ovule	d	Siliqua
12)	Concentration of the DNA of seed specific pathogens is determined by			
	a	**Nano drop**	b	Real Time PCR
	c	pH meter	d	Agarose gel
13)	PCR was discovered by			
	a	**Kary Mullus**	b	Oliver Smithies
	c	Ame Tisilius	d	Arnold Orville Beckman
14)	Which is serological method of testing/confirming the presence of viruses in the seed is			
	a	PCR	b	**ELISA**
	c	Infectivity essay	d	Nucleic acid based tests

15)	Peptidoglycans is an example of			
	a	R-genes	b	Hypertensive response
	c	**MAMPs**	d	Bacterial Effectors
16)	The genes present in which organelle/s do not follow Mendel's laws of Genetics?			
	a	Plastids	b	Mitochondria
	c	**Both of these**	d	None of these
17)	If you are given culture of bacterial or fungal pathogen, based on which single test you will decide that it is really a pathogen?			
	a	PCR	b	ELISA
	c	Gram staining	d	**Infection test**
18)	The primary objective of the ISTA association is to			
	a	To give new varieties	b	**Protocols for seed production and health**
	c	To Test varieties for infection test	d	None of these
19)	A provisional certificate is given as during ISTA certification for			
	a	**A submission certificate for the seed sample**	b	Completion certificate for the seed testing
	c	Sampling and testing from the same laboratory	d	Sampling and testing from the different laboratories
20)	Those seeds which can be dried up to------ moisture content and remain viable:			
	a	**5%**	b	15%
	c	10%	d	16%
21)	Which of the following is a recalcitrant seed:			
	a	**mango**	b	rice
	c	wheat	d	quinoa
22)	One seeded, dry and indehiscent fruit that is attached to the fruit wall at only one point is called------			
	a	siliqua	b	all of these
	c	caryopsis	d	**achene**
23)	Which of the following is a pseudo cereal?			
	a	buckwheat	b	quinoa
	c	**Both a and d**	d	non
24)	Seed coat is thick in-------:			
	a	**coconut**	b	citrus
	c	peanut	d	All of these
25)	The rudimentary shoot or stem of an embryonic plant is called-------:			
	a	coleoptile	b	**plumule**
	c	funicle	d	pedicle
26)	All are the characteristics of normal seedling, except			
	a	**nutrient deficiency**	b	Well-developed shoot system
	c	none	d	Well-developed root system
27)	Cause of abnormal seedling:			
	a	freeze damage	b	heat damage
	c	insect damage	d	**all of these**
28)	Obligate parasites			
	a	Can be grown on media plates	b	**Cannot be grown on media plates**
	c	: Only survive in the soil	d	All of the above
29)	Durable resistance in plants against pathogens is believed to exist because of……			
	a	Environment	b	Pathogen
	c	Major genes	d	**Minor genes**
30)	Plant antimicrobial peptides range in size up to			
	a	**10 kDa**	b	30 kDa
	c	20 kDa	d	40 kDa
31)	Physical characteristics of seed includes			
	a	Seed size	b	Seed Color

	c	Uniformity	d	**All**
32)	Drought resistance is a ……. Character			
	a	Physical character	b	Can be both
	c	**Genetic character**	d	Nom
33)	Objectives of seed certification includes			
	a	**High quality**	b	Discontinues supply of varieties to consumers
	c	Unavailability of varieties to the farmers	d	All
34)	Which of the following is important to understand the market demand of a specific product for a small seed company?			
	a	Consumer research	b	Industrial Research
	c	**Market research**	d	Empirical Research
35)	The data related to respondents opinion, suggestion and opinion in qualitative or linguistic form is called			
	a	Internal data	b	**Qualitative data**
	c	External data	d	Quantitative data
36)	Which of the following information does not contain in seed marketing activities?			
	a	Socio economic factors	b	Customer factors
	c	Distribution factors	d	**Legal factors**
37)	Who are involved typically to collect market information regarding farmers problems?			
	a	Distributors	b	**All of the above**
	c	Dealers	d	Wholesalers
38)	Government organizations, breeding institutes, certification and extension services departments are sources of			
	a	**External information**	b	Both a and b options
	c	Internal information	d	None of the above
39)	Personal interviews and groups discussions are the main techniques to			
	a	Explore data	b	Gather data
	c	Generate data	d	**All of the above**
40)	Shield budding is a method of propagation in which T-Cut is given			
	a	10-20 cm	b	**15-20 cm**
	c	10-15 cm	d	15-25 cm
41)	In apricot, plum can be propagated through			
	a	**Shield budding**	b	Flute budding
	c	Micro- budding	d	Ring budding
42)	Patch budding commonly carried out in the following plants			
	a	Apple	b	Pear
	c	Citrus	d	**Walnut**
43)	What kind of propagation method take place in mulberry			
	a	Flue budding	b	T-grafting
	c	**Ring budding**	d	T-budding
44)	Grapes and apples mostly propagated through			
	a	**Chip budding**	b	T-budding
	c	Veneer grafting	d	Splice grafting
45)	Small opening in the surface of an ovule through which sperm enters in embryo sac:			
	a	plumule	b	spikes
	c	**micropyle**	d	hyllum
46)	Coleorhiza and coleoptile is absent in ------- seeds:			
	a	**pea**	b	rice
	c	wheat	d	maize
47)	There are ------- type of carbohydrates stored in seeds:			
	a	**two**	b	four
	c	three	d	five
48)	Starch and hemicellulose belong to the group of:			

	a	simple carbohydrates	b	**polymeric carbohydrates**
	c	raffinose series	d	None
49)	Raffinose series belong to the ----- group of carbohydrates:			
	a	**simple carbohydrates**	b	granular
	c	polymeric carbohydrates	d	all of these
50)	--------- contains more starch than protein:			
	a	**endosperm**	b	scutellum
	c	aleurone layer	d	all of these
51)	Aleurone layer is rich in:			
	a	starch	b	pectin
	c	**protein**	d	hemicellulose
52)	Starch synthesis starts first in---------- endosperm:			
	a	**central**	b	younger
	c	peripheral	d	both b and c
53)	Starch granules are larger in --------- of endosperm:			
	a	peripheral	b	central
	c	older	d	**both b and c**
54)	Class of simple carbohydrates:			
	a	low molecular weight sugars	b	Golgi
	c	sucrose	d	Pro-plastids
55)	Glucose molecules in starch are linked through -------- linkage:			
	a	1-2	b	1-6
	c	**1-4**	d	1-3
56)	Branched form of starch is linked through ------ linkage:			
	a	1-2	b	**1-6**
	c	1-4	d	1-3
57)	Out of total starch content in seed 95% amylopectin is present in -------:			
	a	rice	b	wrinkled mutant of pea
	c	**waxy mutant of maize**	d	smooth seeds of pea
58)	Rugosus contain ------ of amylopectin:			
	a	70%	b	60%
	c	65%	d	**30%**
59)	Which of the following enzyme is not involved in starch synthesis			
	a	AGPase	b	Starch synthase
	c	**cellulase**	d	isoamylase
60)	In maize seeds, lack of AGPase produce ------- mutants:			
	a	shugary	b	waxy
	c	**shrunken**	d	wrinkled
61)	Sh2 stands for			
	a	shugary	b	waxy
	c	**shrunken**	d	wrinkled
62)	In cereals, AGPase is present in------- :			
	a	Plastids	b	golgi
	c	cytosol	d	**both a and c**
63)	In non-cereals AGPase is present in -------:			
	a	**plastids**	b	mitochondria
	c	cytosol	d	none
64)	Plastidial ADPG transporten, transport the ADPG from cytosol to ------- :			
	a	mitochondria	b	nucleus
	c	**plastids**	d	all of these
65)	At high temperature activity of soluble ----- in wheat endosperm is reduced at high temperature:			

	a	AGPase	b	isoamylase
	c	plastidial ADPG transporter	d	**starch synthase**
66)	How many types of starch branching enzymes (SBE) are present in seeds?			
	a	**two**	b	four
	c	three	d	five
67)	SBE cuts the ------ linkage in glucose units of starch chain:			
	a	**α (1, 4)**	**b**	α (1, 3)
	c	α (1, 6)	d	α (1, 5)
68)	GBSS stands for			
	a	**Granule-bound starch synthase**	b	Granule-bound starch synthesis
	c	Glucose-bound starch synthase	d	none
69)	Waxy mutants of maize lack the gene for --------:			
	a	SS	b	AGPase
	c	**GBSS**	d	isoamylase
70)	------ enzyme is expressed in young endosperm:			
	a	**SBEII**	b	both a and c
	c	SBEI	d	all of these
71)	In ------ there are two types of SBEII:			
	a	vegetables	b	fruits
	c	legumes	d	**cereals**
72)	Isoamylase cut the ------- linkage in starch:			
	a	α (1,4)	b	β (1,4)
	c	**α (1,6)**	d	α (1,3)
73)	After --------- weeks after anthesis starch grains become visible in chloroplast of seed:			
	a	**2-3**	b	4-5
	c	3-4	d	6-7
74)	High ------- starches don't crystallize on freezing:			
	a	amylose	b	sucrose
	c	**amylopectin**	d	cellulose
75)	---------- starches used in making instant puddings and jellies:			
	a	**high amylose**	b	high sucrose
	c	high amylopectin	d	high cellulose
76)	Seeds containing galactomannans:			
	a	fenugreek	b	date palm
	c	guar	d	**all of these**
77)	Hemicellulose containing ------ linkage in starchy endosperm:			
	a	β-1,3	b	β-1,6
	c	β-1,4	d	**both a and c**
78)	End product of the conversion of sucrose in polymeric carbohydrates:			
	a	**galactose**	b	glucose
	c	mannan	d	all of these
79)	International seed testing association was founded in:			
	a	1923	b	**1924**
	c	1925	d	1927
80)	Number of laboratories accredited by ISTA those can issue international seed lot analysis certificate are:			
	a	102	b	201
	c	**120**	d	210
81)	Certificate issued before the completion of test by ISTA is:			
	a	Orange international seed lot certificate	b	**provisional certificate**
	c	Blue international seed lot certificate	d	all of these
82)	Which of the following DNA anomaly does not affect the total length of existing DNA			

	a	**Substitution of DNA**	b	Deletion of DNA
	c	Addition of DNA	d	None of thes
83)	During plant pathogen interaction, the resistance offered by the plant is a			
	a	**Dominant trait**	b	Codominant trait
	c	Recessive trait	d	Over dominant trait
84)	Fusarium is a			
	a	**Soil borne pathogen**	b	Soil and seed borne pathogen
	c	Seed borne pathogen	d	none of these
85)	If the moisture contents of the seed lot are high			
	a	only viral infections	b	less fungal infections
	c	**more fungal infections**	d	none of these
86)	In seed fungicides are mostly applied in the form of			
	a	**dry powder**	b	granules
	c	liquid	d	paste
87)	Antimicrobial peptides which protect seed from pathogens are			
	a	Thaumatins	b	**Defensins**
	c	Thionins	d	Snakins
88)	Which group of pathogens is mostly reported from seed during storage?			
	a	Bacteria	b	Viruses
	c	Nematode	d	**Fungi**
89)	In ELISA Plates after incubation of secondary antibody the wash buffer is used to			
	a	Increase cleaning	b	For removal of PCR product
	c	**To reduce unspecific binding**	d	For removal of DNA
90)	Certificate that is issued when both sampling and testing is done by accredited laboratory:			
	a	**Orange international seed lot certificate**	b	provisional certificate
	c	Blue international seed lot certificate	d	all of these
91)	When sampling is not the responsibility of the accredited laboratory, issued certificate is:			
	a	Orange international seed lot certificate	b	provisional certificate
	c	**Blue international seed lot certificate**	d	all of these
92)	For large-scale testing of seed-transmitted viruses------ method is preferred:			
	a	grow-out test	b	southern blotting
	c	**ELISA**	d	northern blotting
93)	In seeds, RNA viruses have been detected by:			
	a	ELISA	b	**RT-PCR**
	c	PCR	d	all of these
94)	Tests based on the reaction of antigen with antibody are:			
	a	ELISA	b	DAC-ELISA
	c	DAS-ELISA	d	**all of these**
95)	Agglutination test is used for detection and identification of:			
	a	Bacteria	b	fungi
	c	Viruses	d	**both a and c**
96)	In Indicator hosts test symptoms appear after -------- days:			
	a	**7-10**	b	20-25
	c	10-15	d	none
97)	The reproductive branches of cotton plants are called:			
	a	Monopodial	b	fruiting
	c	**Sympodial**	d	non-fruiting
98)	Excess of nitrogen			
	a	**Delays ripening**	b	delays germination
	c	Delays growth	d	delays tillering
99)	Cotton rotation must be planned so as to include:			

	a	**Legume crops**	b	broad leaf crops
	c	Dwarf varieties	d	tall varieties
100)	Polygenic traits are governed by:			
	a	Few genes	b	single gene
	c	**Several genes**	d	all of these
101)	Schleiden and Schwann (1838) recognize the cell as the unit of structure and function of all living organisms and named it as :			
	a	Epigenesis	b	box theory
	c	Homonucleus	d	**cell theory**
102)	Simultaneous fusion of the generative nuclei one with egg cell and other with the endospermic nuclei is termed as:			
	a	Sterility	b	**double fertilization**
	c	cloning	d	Single fertilization
103)	At the completion meiosis cell division a daughter cell will have --------- set of chromosomes as compared to the parents:			
	a	Triploid	b	diploid
	c	monoploid	d	**haploid**
104)	Which is correct:			
	a	A seed-borne pathogen may or may not be seed transmitted	b	A seed-borne pathogen is never seed transmitted
	c	**A seed-borne disease is always a seed transmitted**	d	a and b
105)	DNA and RNA are very much similar in their composition except:			
	a	Adenine	b	**Uracil**
	c	Cytosine	d	Guanine
106)	ICARDA is located in:			
	a	India	b	Mexico
	c	**Syria**	d	Philippines
107)	Genetic engineering can be best described as:			
	a	**Application of molecular genetics in agriculture**	b	Genetics of nitrogen fixing bacteria
	c	Application of principles of engineering in genetics	d	Synthesis of genes in laboratory
108)	The outer most covering of a true seed is called:			
	a	Radicle	b	Testa
	c	Scutellum	d	raphe
109)	RCBD refers to:			
	a	**Randomized complete block design**	b	Randomized complete based design
	c	Randomized central block design	d	None
110)	Transgenic plants are known as the plants:			
	a	Selection from traditional plants	b	With superior traits developed through conventional breeding
	c	**Plant sources developed through biotechnology**	d	none
111)	Certification is not required for:			
	a	**Breeder seed**	b	Foundation seed
	c	Nucleus seed	d	Certified seed
112)	The traits showing continuous variation in expression are called as			
	a	Discontinuous traits	b	Qualitative traits
	c	**Quantitative traits**	d	Mendelian traits
113)	Proteins are made up of:			

	a	Fatty acids	b	nucleic acids
	c	Sugars	d	**amino acids**
141)	Which one stands for International Maize and Wheat Improvement Centre:			
	a	IRRI	b	**CIMMYT**
	c	ICRIAT	d	AVRDC
115)	Chloroplasts are present in:			
	a	Animal cells	b	some of animal cells
	c	**Plant cells**	d	Both a and c
116)	Which one is concerned with agricultural research in barani areas:			
	a	**BARI**	b	NIBGE
	c	AARI	d	NIAB
117)	Which one is not mandatory crop of PARC:			
	a	wheat	b	rice
	c	**cotton**	d	maize
118)	Ethyl methane sulphonate is a			
	a	**Chemical mutagen**	b	Mechanical mutagen
	c	Physical mutagen	d	None
119)	In per the temperature required for denaturation is			
	a	70 degree	b	**94 degree**
	c	80 degree	d	None
120)	Forward genetics is			
	a	**From phenotype to genotype**	b	From phenotype to phenotype
	c	From genotype to phenotype	d	From genotype to genotype
121)	The rudimentary shoot or stem of an embryonic plant is called-------:			
	a	Pedicle	b	P**lumule**
	c	Coleoptile	d	Funicle
122)	Small opening in the surface of an ovule through which sperm enters in embryo sac:			
	a	Plumule	b	M**icropyle**
	c	Spikes	d	Hyllum
123)	Isoamylase cut the ------- linkage in starch:			
	a	α (1,4)	b	**α (1,6)**
	c	. α (1,3)	d	β (1,4)
124)	Seeds containing galactomannans:			
	a	fenugreek	b	guar
	c	Date palm	d	**all of these**
125)	. Botanical name of American cotton is:			
	a	*Gossypium barbadense*	b	*Gossypium arboreum*
	c	***Gossypium hirsutism***	d	none of these
126)	Which of the following approach is a best tool to collect the data in an accessible way?			
	a	Postal surveys	b	Telephone interviews
	c	**Desk research**	d	Group discussions
127)	While developing the questionnaire the researchers developed appropriate question and use scales. For instance, Do you buy rice seed? is an example of			
	a	Open ended questions	b	Multi choice questions
	c	Close ended questions	d	**Single choice questions**
128)	Is the process of identifying and then separating a total market into parts so that different marketing strategies can be used for each part?			
	a	**Market segmentation**	b	Market positioning
	c	Market targeting	d	Market capturing
129)	Farmers can be grouped according to the kind of			

	a	Market	b	Yield
	c	**Farm**	d	Crop
130)	What are factors for successful grafting?			
	a	Compatibility	b	Irrigation
	c	Matching tissues	d	A & C
131)	A gene influencing more than one traits in an individual simultaneously is called:			
	a	phenocopy	b	modifier
	c	phenotype	d	**pleiotropic**
132)	Protein content is highest among following seeds:			
	a	chickpea	b	Mung bean
	c	**soybean**	d	lentil
133)	IPM refers to:			
	a	**Integrated pest management**	b	intensive pest management
	c	integrated profit management	d	none of these
134)	Simple correlation is represented as:			
	a	**r12**	b	R1.23
	c	r1.23	d	r12.3
135)	Seed is botanically called as:			
	a	**ripened ovule**	b	ripened ovule and ovary
	c	ripened ovary	d	ripened endosperm
136)	ELISA technique is mostly used for the detection of:			
	a	fungal diseases	b	**viral diseases**
	c	bacterial diseases	d	all of these
137)	A cotyledon is:			
	a	floral leaf	b	**leaf of an embryo**
	c	foliage leaf	d	leaf of a stem
138)	Phenotypic variance and co-variance are used for the estimation of:			
	a	genotypic correlation	b	environmental correlation
	c	**Phenotypic correlation**	d	all of these
139)	Colchicine is an important chemical mutagen, it prevents the formation of:			
	a	gamete	b	**spindle fiber**
	c	nucleolus	d	crossing over
140)	Growth of living organisms is dependent on:			
	a	**mitosis**	b	gametogenesis
	c	meiosis	d	sporogenesis
141)	Seed cotton means:			
	a	**seed with lint**	b	lint
	c	seed without lint	d	only seed
142)	Bread wheat is an allohexaploid which means the genetic constitution will be:			
	a	AAAAAA	b	**AABBDD**
	c	AABB	d	AABBDDCC
143)	A gene has three important components, which can be described as single unit called as:			
	a	histone	b	**nucleotide**
	c	nucleoside	d	nucleoplasm
144)	Norin10 is the source of dwarfing gene in			
	a	**wheat**	b	rice
	c	maize	d	oat
145)	Analysis of variance permits examination of:			
	a	phenotypic variation	b	experimental variation
	c	genotypic variation	d	**all of these**
146)	The value of simple correlation lies between:			

	a	0 and 1	b	1 and 2
	c	**-1 and 1**	d	none of these
147)	The value of multiple correlation lies between:			
	a	-1 and 1	b	1 and 2
	c	**0 and 1**	d	none
148)	CCRI stands for:			
	a	cotton crop research institute	b	center for crop research institute
	c	**central cotton research institute**	d	None of these
149)	CLCV stands for:			
	a	cotton leaf cover virus	b	curl leaf cotton virus
	c	**cotton leaf curl virus**	d	none of these
150)	In BT cotton, BT stands for:			
	a	***Bacillus thuringiensis***	b	*Bemisia trachpterus*
	c	*Bemisia tabaci*	d	none of these
151)	Botanical name of American cotton is:			
	a	*Gossypium barbadense*	b	***Gossypium hirsutum***
	c	*Gossypium arboreum*	d	none of these
152)	AZRI is:			
	a	**Arid zone research institute**	b	Attock zonal research institute
	c	Agriculture zonal research institute	d	none of these
153)	Genotype correlation results due to:			
	a	Pleiotropy	b	both a and c
	c	linkage	d	**all of these**
154)	A condition in which pollen is absent or non-functional in flowering plants is called:			
	a	incompatibility	b	sterility
	c	**male sterility**	d	all of these
155)	GMO means:			
	a	genetically mutant organisms	b	genetically modifying organisms
	c	**genetically modified organisms**	d	none of these
156)	Pakistan receives most of the wheat germplasm from:			
	a	ICARDA	b	**CIMMYT**
	c	FAO	d	ICRISAT
157)	Karyokinesis means:			
	a	cell division	b	nuclear fusion
	c	cytoplasm fusion	d	**nuclear division**
158)	In eukaryotes non-chromosomal information is transmitted to another organisms through:			
	a	ribosomes	b	lysosomes
	c	nucleus	d	**cytoplasm**
159)	Seed of sugarcane is known as:			
	a	**fuzz**	b	grain
	c	tassel	d	caryopsis
160)	In human diploid cells the chromosome number will be:			
	a	40	b	**46**
	c	43	d	42
161)	The law of segregation was proposed by:			
	a	Darwin	b	**Mendel**
	c	Hook	d	none of these
162)	In plants process of male gamete formation is known as:			
	a	microsporogenesis	b	megasporogenesis
	c	oogenesis	d	**Microgametogenesis**
163)	In spermatogenesis, each spermatogonium increases in size to form a:			

	a	spermatozoa	b	primary oocyte
	c	**spermatocyte**	d	spermatid
164)	A mature ovule is known as:			
	a	**seed**	b	fruit
	c	endosperm	d	ovary
165)	An alternate form of a gene is known as:			
	a	**allele**	b	locus
	c	chromatids	d	gamete
166)	Which of the following are main fruiting branches in cotton:			
	a	monopodial	b	**sympodial**
	c	both	d	none
167)	Undifferentiated mass of cells produced *in vitro* is called:			
	a	**callus**	**b**	tissue
	c	organ	d	clone
168)	AZRI is:			
	a	**Arid zone research institute**	b	None
	c	Attock zonal research institute	d	Agriculture zonal research institute
169)	A mature ovule is known as:			
	a	**seed**	b	endosperm
	c	fruit	d	ovary
170)	The phenotypic variation in a population is increased through the process of:			
	a	**meiosis**	b	mitosis
	c	linkage	d	none of these
171)	Most appropriate experimental design for an experimental area with fertility patches is:			
	a	CRD	b	**RCBD**
	c	LSD	d	none of these
172)	DNA and RNA are very much similar in their composition except:			
	a	Adenine	b	Cytosine
	c	**Uracil**	d	Guanine
173)	ICARDA is located in:			
	a	India	b	**Syria**
	c	Mexico	d	Philippines
174)	. In plants process of male gamete formation is known as:			
	a	microsporogenesis	b	**Microgametogenesis**
	c	oogenesis	d	megasporogenesis
175)	The law of segregation was proposed by:			
	a	Darwin	b	Hook
	c	**Mendel**	d	none of these
176)	Union of male and female gamete is known as:			
	a	**fertilization**	b	crossing
	c	pollination	d	double fertilization
177)	Fertilization resulted from the union of gametes produced:			
	a	**autogamy**	b	allogamy
	c	anemophillus	d	hydrophillus
178)	Stalk of stamen which supports the anther is called:			
	a	pedicle	b	petiole
	c	**filament**	d	none of these
179)	Hybrid breeding began in -------- by George Shull.:			
	a	**1906**	b	1909
	c	1809	d	1808
180)	The commodity or quantity that customers are willing to pay at a reasonable price is called			

	a	Forecasting	b	Price
	c	Supply	**d**	**None of the above**
181)	Marketing campaigns are launched to influence			
	a	Distributors	b	Wholesalers
	c	**Farmers**	d	None of the above
182)	Which of the following approach is commonly used in developing countries where government is directly involved in planning and seed supply?			
	a	**Target setting**	b	Growth rates
	c	Growth trends	d	Sampling
183)	A certain percentage should not just be added to the previous year's figures as the previous year may not have been typical comes under the domain of			
	a	Supply forecasting	b	Projections
	c	**Demand forecasting**	d	None of the above
184)	In a marketing perspective, the term Seed can be considered as			
	a	Product	b	**Both a and c options**
	c	Variety	d	None of the above
185)	Variety characteristics, such as plant type, pest and disease resistance, yield, quality, response to inputs are example of			
	a	Supplier performance	b	**Product performance**
	c	Organizational performance	d	Distributor performance
186)	What is optimum temperature for apple callus formation?			
	a	20-30C	b	20-27C
	c	24-45C	d	**24-27C**
187)	Walnut callus formation show good results at			
	a	**25-30C**	b	25-35C
	c	25-45C	d	25-15C
188)				
	a	25-45C	b	25-15C
	c	**25-30C**	d	25-35C
189)	What is best humidity for propagation?			
	a	70-90%	b	70-95%
	c	**95-100%**	d	85-95%
190)	Splice grafting usually more successful in			
	a	Tropical fruits	b	Temperate fruits
	c	Sub-tropical fruits	d	**Deciduous fruit**
191)	Which international center is responsible for breeding triticale, wheat, barley and corn:			
	a	**CIMMYT**	b	ICRISAT
	c	ICARDA	d	AVRDC
192)	Flower contain all four floral organs are known as			
	a	imperfect flower	b	perfect flower
	c	**complete flower**	d	incomplete flower
193)	The transfer of pollen from anther to stigma is known as:			
	a	fertilization	b	self-pollination
	c	**pollination**	d	cross-fertilization
194)	In the process of protein synthesis the required amino acids are brought into a polypeptide chain by:			
	a	mRNA	b	**tRNA**
	c	rRNA	d	sRNA
195)	Union of male and female gamete is known as:			
	a	**fertilization**	b	pollination
	c	crossing	d	double fertilization
196)	Fertilization resulted from the union of gametes produced:			

	a	**autogamy**	b	anemophillus
	c	allogamy	d	hydrophillus
197)	Plants having different alleles in their chromosomes are :			
	a	**heterozygous**	b	hemizygous
	c	heterostylous	d	homozygous
198)	The study of living organisms at cell level is termed as:			
	a	biotechnology	b	histology
	c	ecology	d	ecology
199)	The phenotypic variation in a population is increased through the process of:			
	a	**meiosis**	b	mitosis
	c	linkage	d	none of these
200)	The study of plant life in relation to its environment is known as			
	a	pathology	b	taxonomy
	c	**plant ecology**	d	physiology

201)	The nutritive tissue around the embryo is called:			
	a)	endosmosis	b)	**endosperm**
	c)	endodermis	d)	embryo-sac
202)	The first ever discovered auxin was:			
	a)	**IAA**	b)	IPA
	c)	IBA	d)	none of these
203)	CRD is statistical approach for:			
	a)	field experiment	b)	laboratory experiment
	c)	**both a and b**	d)	none of these
204)	Dormancy is a function of interaction of growth promoter like GA and growth inhibitor like --------:			
	a)	**ABA**	b)	alar
	c)	cycocell	d)	palcobutrazole
205)	Dormancy in seed is a biological mechanisms that provide protection against ---------:			
	a)	seed spoilage	b)	**pre-mature germination**
	c)	embryo abortion	d)	dehydration
206)	The major metabolic process which takes place in the harvested produce is ---------:			
	a)	ripening	b)	softening
	c)	**respiration**	d)	senescence
207)	Self-fertility refers to the ability of a variety to produce fruits with viable-----:			
	a)	pollen	b)	ovules
	c)	**seeds**	d)	ovaries
208)	Failure of a viable pollen to grow down the style of the flower of the same variety is called -------:			
	a)	self-sterility	b)	self-unfruitfulness
	c)	**self-incompatibility**	d)	sterility
209)	Onion seeds can germinate at the temperature of ------- ◦C:			
	a)	0-1	b)	5-11
	c)	**1-5**	d)	15-20
210)	To preserve the germination, ability of most seeds, store them in a:			
	a)	cool environment after scarification	b)	warm and dry environment
	c)	warm and moist environment after stratification	d)	**cool and dry environment**
211)	Damping-off is caused by:			
	a)	bacteria	b)	nematodes
	c)	**fungi**	d)	virus
212)	Pollination and fertilization within closed floret is:			
	a)	**autogamy**	b)	plasmogamy
	c)	allogamy	d)	cleistogamy

213)	Secondary dormancy is due to:			
	a)	immature embryo	b)	light requirement
	c)	**chemical inhibitors**	d)	hard seediness
214)	Pollination is sexual process in which pollen is deposited on the stigma of the plant. It starts the process of fertilization and ---------- :			
	a)	growth of pollen tube	b)	production of fruit and seed coat
	c)	seed formation	d)	**all of these**
215)	Megasporogenesis is the formation of which gamete:			
	a)	male	b)	both a and c
	c)	**female**	d)	none of these
216)	The process of callus formation in plant tissue culture is termed as -----:			
	a)	organogenesis	b)	embryogenesis
	c)	microsporogenesis	d)	**callogenesis**
217)	Undifferentiated mass of cells in *vitro* culture is known as:			
	a)	wound	b)	cambium
	c)	**callus**	d)	meristem
218)	In order to decrease standard error:			
	a)	number of treatments should be increased	b)	size of experimental blocks should be increased
	c)	number of people taking observation to be increase	d)	**replication number should be increased**
219)	TZ test is used for:			
	a)	estimation of chlorines in leaves	b)	detection of nitrogen contents
	c)	estimation of bromine in seeds	d)	**viability of seeds**
220)	------ mitotic divisions of the megaspore form the embryo sac:			
	a)	two	b)	four
	c)	**three**	d)	eight
221)	Steps of embryo developments are:			
	a)	six	b)	eight
	c)	seven	d)	**nine**
222)	Average seed weight of double coconut is------kg			
	a)	**20**	b)	60
	c)	30	d)	90
223)	↑Auxin and ↓cytokinin =---------- :			
	a)	**shoot development**	b)	callus development
	c)	root development	d)	all of these
224)	Which of the following is a seed document:			
	a)	Seed Act, 1976	b)	**both a and c**
	c)	Seed Act, 2015	d)	none of these
225)	WPADC was dissolved in --------:			
	a)	1961	b)	**1972**
	c)	1947	d)	1991
226)	-------- is used as a food thickener:			
	a)	cooking oil	b)	**corn starch**
	c)	corn syrup	d)	all of these
227)	Maize ranked ------- in the world:			
	a)	2nd	b)	4th
	c)	**3rd**	d)	5th
228)	Fourth largest grown crop of Pakistan is:			
	a)	wheat	b)	**maize**
	c)	rice	d)	cotton

229)	Annual production of maize in Pakistan is------ million metric tons:			
	a)	2.5	b)	1
	c)	**3.5**	d)	6.5
230)	In Pakistan, crop suitable for one year maize crop rotation is:			
	a)	wheat	b)	barseem
	c)	spring maize	d)	**all of these**
231)	At the time of maize seed germination, root originate from within a seed is called:			
	a)	**seminal root**	b)	coronal root
	c)	nodal root	d)	brace root
232)	Root that form nodes after plumule emergence is known as:			
	a)	seminal root	b)	coronal root
	c)	nodal root	d)	coronal root
233)	In maize seeds, brace root arises from the nodes------ ground:			
	a)	below	b)	parallel
	c)	**above**	d)	all of these
234)	Seed rate of maize seeds is:			
	a)	10-11 kg/acre	b)	**10-12 kg/acre**
	c)	11-13 kg/acre	d)	none of these
235)	Plant population in maize field is ------:			
	a)	70000/ha	b)	**70000-75000/ ha**
	c)	74000/ha	d)	none
236)	Fertilizer rate (NPK) for maize is:			
	a)	100-100-100	b)	**150-100-100**
	c)	150-100-150	d)	none
237)	In maize, critical stages for moisture stress are:			
	a)	flowering	b)	milking
	c)	fertilization	d)	**all of these**
238)	-------- irrigations are required in maize:			
	a)	5-6	b)	10-18
	c)	**6-10**	d)	8-10
239)	Weeds of maize in Pakistan are:			
	a)	deela	b)	maina
	c)	itsit	d)	**all of these**
240)	In maize after sowing, manual hoeing is performed ------ DAS:			
	a)	20	b)	**25**
	c)	10	d)	30
241)	All are the insects of maize except:			
	a)	shoot fly	b)	**giant water bug**
	c)	stem borer	d)	army worm
242)	Maize is harvested at the moisture content of:			
	a)	20%	b)	25%
	c)	23%	d)	**all of these**
243)	Storage temperature of maize seeds is:			
	a)	**20-25◦C**	b)	both a and c
	c)	25-35◦C	d)	none of these
244)	Endosperm formation is of ----- types:			
	a)	2	b)	**4**
	c)	3	d)	6
245)	First stage of endosperm development is:			
	a)	differentiation	b)	cellularization
	c)	**synctial**	d)	death

246)	Cellularization of endosperm development begin in:			
	a)	Golgi apparatus	b)	**embryo surrounding region**
	c)	chalazal region	d)	none of these
247)	Grain filling period in seeds takes ------- days:			
	a)	30-50	b)	60-80
	c)	**40-60**	d)	none of these
248)	Outer glume of monocot seeds develop into:			
	a)	husk	b)	spikes
	c)	**awns**	d)	all of these
249)	Inner glume of monocot seeds develop into:			
	a)	**husk**	b)	spikes
	c)	awns	d)	all of these
250)	-------- is compressed between inner glumes and seed coat:			
	a)	**pericarp**	b)	spikes
	c)	awn	d)	husk
251)	------- prevents O2 and water efflux in seed:			
	a)	**pericarp**	b)	spikes
	c)	awns	d)	husk
252)	Seed coat is derived from-----:			
	a)	**integument**	b)	spikes
	c)	stalk	d)	pedicle
253)	Genotype of seed coat is -------:			
	a)	maternal	b)	ovular
	c)	pollen	d)	**both a and b**
254)	At maturity, ------- is lignified as a protective covering of seed:			
	a)	pericarp	b)	spikes
	c)	**seed coat**	d)	none of these
255)	Nucellus is-------:			
	a)	haploid	b)	polyploid
	c)	**diploid**	d)	none of these
256)	During grain filling period photosynthetically competent organ is called:			
	a)	**source**	b)	both a and c
	c)	sink	d)	none
257)	How many type of assimilates are in seed:			
	a)	**2**	b)	4
	c)	3	d)	6
258)	In cereals, main source of photosynthesis is:			
	a)	**flag leaf**	b)	lower leaves
	c)	ear and awns	d)	stem
259)	In legumes, main source of photosynthesis is:			
	a)	tendrils	b)	stipules
	c)	leaflets	d)	**pods**
260)	Photoassimilates are translocated by the ------ systems:			
	a)	**two**	b)	four
	c)	three	d)	five
261)	Intracellular transport methods are:			
	a)	diffusion	b)	**all of these**
	c)	protoplasmic streaming	d)	transporters---Pi
262)	---------- is the transport in short distance of assimilates from cell wall to cell wall:			
	a)	symplast	b)	diffusion
	c)	**apoplast**	d)	none of these

263)	Phloem unloading occurs in the ------:			
	a)	**seed coat**	b)	funicle
	c)	embryo	d)	pedicle
264)	How many components of nutrient and water transport system are present in developing seeds:			
	a)	two	b)	five
	c)	three	d)	**six**
265)	Enzyme involve in ATP-dependent sucrose transport in sieve element loading is:			
	a)	cellulase	b)	**ATPase**
	c)	AGPase	d)	none of these
266)	Second stage of seed development is:			
	a)	Histo-differentiation	b)	maturation drying
	c)	**cell enlargement**	d)	none of these
267)	Which of the following seed undergo maturation drying:			
	a)	coffee seed	b)	cocoa
	c)	**wheat**	d)	citrus
268)	Concentration of abscisic acid is low during ------- seed development stage:			
	a)	**early**	b)	late
	c)	mid	d)	all of these
269)	Sensitivity of embryo to osmoticum is greater at -------- stage of development:			
	a)	early	b)	**late**
	c)	mid	d)	all of these
270)	---------- is the germination of embryo within the fruit on the parent plant:			
	a)	ovipary	b)	priming
	c)	Pre-harvest sprouting	d)	**Vivipary**
271)	Lipid and protein bodies are present in------:			
	a)	seed coat	b)	scutellum
	c)	**aleurone layer**	d)	endosperm
272)	In triglycerides, fatty acids are linked through ------- bond with glycerol's:			
	a)	**ester**	b)	ionic
	c)	hydrogen	d)	metallic
273)	What is oleosome?			
	a)	protein body	b)	starch globule
	c)	**lipid body**	d)	phytate
274)	Legume storage proteins are low in -------- containing amino acids:			
	a)	**S**	b)	Ca
	c)	P	d)	Fe
275)	Cereal storage proteins are relatively low in --------:			
	a)	methionine	b)	glycine
	c)	**lysine**	d)	valine
276)	Mechanical losses of seeds are due to			
	a)	Breakage	b)	Bruising
	c)	Injury during handling	d)	All
277)	Almost how much losses take place during harvesting			
	a)	20%	b)	30%
	c)	40%	d)	All
278)	In tray dryers the seed are dispersed at the depth of			
	a)	500-600 nm	b)	600-700 nm
	c)	700-800 nm	d)	All
279)	In solar drying the unit has …… higher temperature than normal drying			
	a)	20-30 degree	b)	30-40 degree
	c)	40-50 degree	d)	All

280)	Physiological maturity in cereals and legumes is attained at …. moisture content			
	a)	35-45%	b)	30-40%
	c)	20-25%	d)	40-45%
281)	Life of seed doubled by decreasing moisture content to			
	a)	**1%**	b)	2%
	c)	3%	d)	4%
282)	The life of the seed doubles by decreasing temperature to			
	a)	4 degree	b)	**5 degree**
	c)	6 degree	d)	7 degree
283)	The ability of seed to delay its germination until the favorable condition is			
	a)	Seed deterioration	b)	**Seed dormancy**
	c)	Seed pathology	d)	None
284)	The ability to produce toxicity in plants is			
	a)	Exotoxins	b)	Endotoxins
	c)	**Toxigenesis**	d)	None
285)	A microorganism that is able to cause disease in plant is			
	a)	Virus	b)	Bacteria
	c)	**Pathogen**	d)	None
286)	Reproductive meristems give rise to			
	a)	Fruits	b)	Seeds
	c)	**Both**	d)	Stems and roots
287)	Pollen grain lands on stigma and germinates by sending			
	a)	Fusion tube	b)	**Pollen tube**
	c)	Stamen tube	d)	None
288)	Vegetative meristems give rise to			
	a)	Stems	b)	Leaves
	c)	Roots	d)	**All**
289)	Study of the ecological strategies plants utilize to ensure their reproduction by seed			
	a)	Seed formation	b)	Seed development
	c)	**Seed ecology**	d)	All
290)	Chalk soil can be			
	a)	Light	b)	Heavy
	c)	Medium	d)	**Both A and B**
291)	Clayey soil is made up of how much clay			
	a)	20%	b)	**25%**
	c)	30%	d)	35%
292)	Sandy soil is … in nature			
	a)	Acidic	b)	Basic
	c)	Neutron	d)	None
293)	Soybean grows best at			
	a)	**50-86**	b)	50-70
	c)	50-80	d)	All
294)	Minimum temperature for sorghum and corn germination is			
	a)	47 F	b)	**48 F**
	c)	49 F	d)	50 F
295)	Minimum temperature for tobacco seed germination is			
	a)	55 F	b)	56 F
	c)	**57 F**	d)	58 F
296)	Key mat model 946 is a			
	a)	Seed distributor	b)	**Seed count**

	c)	Seed sample	d)	All
297)	Combined dormancy is			
	a)	**Morphological + physical**	b)	Chemical + physical
	c)	Morphological + chemical	d)	All
298)	Thermo-dormancy is due to			
	a)	**Temperatures**	b)	Light
	c)	Humidity	d)	All
299)	CMS lines is maintained by cross it with			
	a)	Maintainer line	b)	Restorer line
	c)	A line	d)	All
300)	Peduncle is the main axis of the:			
	a)	fruit	b)	seed
	c)	inflorescence	d)	**flower**
301)	The terminal part of the pedicel bearing the sepals, petals, stamens and carpels is called:			
	a)	pedicel	b)	**thalamus**
	c)	inflorescence	d)	none of these
302)	The stamens are the male organs of flowers which are also called:			
	a)	pistil	b)	**androecium**
	c)	gynoecium	d)	carpel
303)	The fruits which do not usually open to shed seed are known as::			
	a)	Dehiscent fruit	b)	**indehiscent fruit**
	c)	fleshy fruit	d)	dry fruit
304)	Pollination between two such flowers situated on the same plant is known as:			
	a)	**autogamy**	b)	cross pollinated
	c)	allogamy	d)	none of these
305)	Ripened ovary is called:			
	a)	Flower	b)	**fruit**
	c)	seed	d)	embryo
306)	Reproduction of plants through seeds is also known as:			
	a)	vegetative propagation	b)	asexual propagation
	c)	tissue culture	d)	**sexual propagation**
307)	Abscisic acid (ABA) is natural plant hormone, which:			
	a)	promote the growth	b)	induce the fruit maturity
	c)	initiate the ripening	d)	**retards the growth**
308)	Plant response to the relative length of daylight or darkness is known as:			
	a)	long day	b)	neutral
	c)	short day	d)	**photoperiodism**
309)	Physiological aging activity in which plant tissues degenerate and ultimately die is called:			
	a)	**Senescence**	b)	climacteric
	c)	Ripening	d)	degeneration
310)	Skirt in date palm fruit is:			
	a)	mesocarp	b)	**endocarp**
	c)	exocarp	d)	seed
311)	Petiole is the main part of:			
	a)	Flower	b)	inflorescence
	c)	**leaf**	d)	seed
312)	Dormancy in plant and seed is mainly due to:			
	a)	environmental factors	b)	**both a and c**
	c)	physiological factors	d)	none

313)	Metaxenia is the impact of:			
	a)	pollen on seed	b)	**pollen on ovule**
	c)	pollen on ovary	d)	pollen on fruit
314)	Perianth is the union of:			
	a)	**calyx and corolla**	b)	anther and stigma
	c)	pedicle and thalamus	d)	style and ovary
315)	Polyembryony means:			
	a)	one embryo	b)	two embryo
	c)	more than two embryo	d)	**more than three embryo**
316)	Chilling injury in seeds occurs at -----◦C temperature:			
	a)	less than 4	b)	less than 6
	c)	**less than 5**	d)	less than 8
317)	Seed of strawberry fruit is refers as:			
	a)	**Achene**	b)	viable seed
	c)	true seed	d)	aborted seed
318)	A complete flower has:			
	a)	**5 whorls**	b)	2 whorls
	c)	3 whorls	d)	4 whorls
319)	Auxin destruction activity is inhibited by			
	a)	Blue light	b)	green light
	c)	**red light**	d)	none of these
320)	Growth retarders are the substances which slow down:			
	a)	cell division	b)	**a and b**
	c)	cell elongation	d)	none of these
321)	Many ------- in super-optimal concentrations also act as growth inhibitors:			
	a)	**auxins**	b)	cytokinins
	c)	GA	d)	all of above
322)	Dormancy of seeds are broken by:			
	a)	**GA**	b)	water
	c)	ethylene	d)	none of these
323)	Dormancy period in tomato is about:			
	a)	one month	b)	three month
	c)	**two month**	d)	half month
324)	Potato dormancy can be broken through:			
	a)	chemical treatment	b)	**both a and c**
	c)	low temperature	d)	none of these
325)	Cultivar means:			
	a)	**some cultivated variety**	b)	rejected variety
	c)	discarded variety	d)	approved variety
326)	In binomial nomenclature, first name is:			
	a)	**genus**	b)	family
	c)	specie	d)	sub-family
327)	Dicots could be identified on the basis of			
	a)	**reticulate leaf venation**	b)	no leaf venation
	c)	parallel leaf venation	d)	none of these
328)	Mango is ----- fruit:			
	a)	**drop**	b)	berry
	c)	pome	d)	aggregate
329)	True fruits develop from:			
	a)	pericarp	b)	locule
	c)	ovule	d)	**ovary**

330)	Transplanting means:			
	a)	shifting of seedlings	b)	shifting of potted plants
	c)	shifting of large plants	d)	**all of above**
331)	Color development in tomato fruit Is due to:			
	a)	**lycopene**	b)	polypropylene
	c)	carotenoid	d)	all of above
332)	The portion of axis below the cotyledons in seed is:			
	a)	micropyll	b)	epicotyle
	c)	**hypocotyle**	d)	none
333)	Red color of carrot is due to:			
	a)	lycopene	b)	anthocyanin
	c)	**carotene**	d)	propanine
334)	The cause of hotness in chilies is:			
	a)	cucurbitacin	b)	allicin
	c)	**capsicum**	d)	all of above
335)	Which one is not the best source of protein:			
	a)	**potato**	b)	beans
	c)	peas	d)	okra
336)	Maturation of anther and stigma at the same time refers to:			
	a)	**homogamy**	b)	cleistogamy
	c)	chasmogamy	d)	dichogamy
337)	Self-pollination is a form of:			
	a)	**in-breeding**	b)	random breeding
	c)	out-breeding	d)	none of these
338)	Tetraploid watermelon must be pollinated by------- plants to produce seedless watermelon:			
	a)	triploid	b)	aneuploid
	c)	**diploid**	d)	tetraploid
339)	Hormone which control the apical dominance:			
	a)	auxins	b)	GA
	c)	**cytokinins**	d)	Polyamines
340)	Poorest seed storage capacity is in:			
	a)	okra	b)	peas
	c)	cucurbits	d)	**onion**
341)	During storage of vegetable seeds, seed moisture should be:			
	a)	**less than 10%**	b)	greater than 10%
	c)	equal to 10%	d)	none of above
342)	Male sterility is not due to			
	a)	genetic factor	b)	cytogenetic factor
	c)	genome factor	d)	**nutritional factor**
343)	Most common pollinating insect in Pakistan is:			
	a)	syrphid fly	b)	**honey bees**
	c)	bumble bees	d)	house fly
344)	Isolation during seed production is termed as:			
	a)	types (varieties)	b)	zoning
	c)	**plantation as distance**	d)	all of above
345)	The most important seed component affecting seed viability during storage is:			
	a)	temperature	b)	**moisture**
	c)	humidity	d)	food reserves
346)	Removal of off-type plants from a seed field is termed as:			
	a)	weeding	b)	**rouging**
	c)	hoeing	d)	all of above

347)	Production of seeds without fertilization is termed as:			
	a)	parthenocarpy	b)	gametogenesis
	c)	**parthenogenesis**	d)	all of above
348)	Controlled inbibition of seed is termed as:			
	a)	**priming**	b)	soaking
	c)	chilling	d)	none of above
349)	TZ test determines the seed viability is a:			
	a)	**chemical test**	b)	germination test
	c)	enzyme test	d)	germination test
350)	Seed vigor is effected by:			
	a)	time of storage	b)	storage environment
	c)	type of seed stored	d)	**all of above**
351)	Stage at which seed achieves its maximum dry weight and has maximum germination potential and vigor is:			
	a)	**physiological maturity**	b)	harvest maturity
	c)	edible maturity	d)	none of these
352)	In seed formation, integument remains thin and develops into:			
	a)	testa	b)	aril
	c)	**tegmen**	d)	hilum
353)	Which of the following is a recalcitrant seed?			
	a)	**tea**	b)	rice
	c)	soybean	d)	mung bean
354)	Truth-in-labelling rule was established in --------:			
	a)	1990	b)	1880
	c)	**1991**	d)	1881
355)	The crop raised for the production of seed is inspected by ------- for genetic purity:			
	a)	AARI	b)	PCCC
	c)	PARC	d)	**FSC&RD**
356)	Institute involved in cotton variety development and testing is ------:			
	a)	**PCCC**	b)	CIMMYT
	c)	PARC	d)	AARI
357)	On what basis plant variety registration is performed?			
	a)	DUS	b)	**both a and c**
	c)	VCU	d)	none of these
358)	Breeder seed is _____ % pure:			
	a)	99	b)	**100**
	c)	70	d)	99.99
359)	Pure Live Seed (PLS) is related to:			
	a)	physical purity	b)	**germination percentage**
	c)	genetic purity	d)	contamination
360)	Contamination permitted in maize seeds is:			
	a)	**1%**	b)	0.1%
	c)	2%	d)	0.2%
361)	Colored varieties of rice have aleurone layer:			
	a)	**thicker**	b)	coarse
	c)	thinner	d)	smooth
362)	Seed moisture varies from crop to crop in ranges from:			
	a)	15-20%	b)	30-40%
	c)	1-2%	d)	**9-12%**
363)	Cotyledons in gymnosperms are called:			
	a)	embryo	b)	**mega-gametophyte**
	c)	integuments	d)	endosperm

364)	Freedom from inert matter and defective seeds:			
	a)	**physical purity**	b)	defective purity
	c)	genetic purity	d)	normal purity
365)	Seed certification requires:			
	a)	improved variety	b)	genetic purity
	c)	physical purity	d)	**all of these**
366)	Physical purity of 95% is permissible for the foundation and certified seed of:			
	a)	ground nut	b)	soybean
	c)	**carrot**	d)	spinach
367)	Seed coat is derived from:			
	a)	**nucellus**	b)	endosperm
	c)	testa	d)	embryo
368)	*Cuscuta* is an objectional weed of:			
	a)	wheat	b)	rice
	c)	maize	d)	**barseem**
369)	Breeder seed is the progeny of:			
	a)	foundation seed	b)	**nucleus seed**
	c)	certified seed	d)	registered seed
370)	*rgemone mexicana* is an objectional weed in:			
	a)	wheat	b)	barley
	c)	**mustard**	d)	chickpea
371)	A mixture of all the primary sample taken from the seed lot is called:			
	a)	working sample	b)	sealed sample
	c)	**composite sample**	d)	certified seed
372)	A -------- flower has both stamens and carpels:			
	a)	perfect	b)	complete
	c)	imperfect	d)	**both a and c**
373)	Which of the following shows indeterminate type of growth?			
	a)	**cotton**	b)	tomato
	c)	wheat	d)	all of these
374)	Queen of forage crops is --------:			
	a)	alfalfa	b)	sorghum
	c)	**Lucerne**	d)	none of these
375)	Parallel leaf venation is the characteristic of --------:			
	a)	maize	b)	pea
	c)	wheat	d)	**both a and c**
376)	Which of the following seed shoe epigeal germination:			
	a)	wheat	b)	onion
	c)	pea	d)	**garden bean**
377)	EC stands for:			
	a)	electronic conductivity	b)	electronic compatibility
	c)	**electrical conductivity**	d)	none of these
378)	All are stress tolerance tests of seed except:			
	a)	**TZ test**	b)	cold test
	c)	Accelerated ageing test	d)	cool germination test
379)	The sum total of those properties of the seed which determine the level of activity and performance of the seed of seed lot during germination and seedling emergence is called:			
	a)	seed purity	b)	seed germination
	c)	seed viability	d)	**seed vigor**
380)	Maximum weight ratio of sample to seed lot is :			
	a)	1 : 2000	b)	1 : 40000

	c)	**1 : 20000**	d)	0.5 : 10000
381)	Tetrazolium test works on the principle of ---------- of TZ salt:			
	a)	**dehydrogenation**	b)	reduction
	c)	hydrogenation	d)	none of these
382)	Which of the following is a seed moisture determining test:			
	a)	drying without heat	b)	freeze drying
	c)	lyophilization	d)	**all of these**
383)	According to ISTA (1976) there are ------- components of a seed lot:			
	a)	Two	b)	four
	c)	**three**	d)	five
384)	Which of the following divider is riffle type?			
	a)	conical divide	b)	**soil divider**
	c)	centrifugal divider	d)	none of these
385)	There are ------ openings in a bin trier:			
	a)	6-7	b)	6-8
	c)	6-9	d)	10
386)	A specified quantity of seed which is physically identifiable is called:			
	a)	seed sample	b)	seed pack
	c)	**seed lot**	d)	none of these
387)	-------- is refer to the procedure of obtaining a suitable fraction of the seed lot such that it is representative of whole seed lo:			
	a)	seed testing	b)	seed analysis
	c)	**seed sampling**	d)	purity test
388)	Which of the following is a perennial vegetable?			
	a)	spinach	b)	onion
	c)	sweet potato	d)	**both a and c**
389)	The cooling of seed during germination in order to accelerate flowering when it is planted is called:			
	a)	stratification	b)	**vernalization**
	c)	scarification	d)	seed coating
390)	---------- in botany involves weakening, opening, or otherwise altering the coat of a seed to encourage germination:			
	a)	stratification	b)	vernalization
	c)	**scarification**	d)	all of these
391)	---------- is a cold, moist period that breaks seed dormancy:			
	a)	**stratification**	b)	vernalisation
	c)	scarification	d)	none of these
392)	Which of the following is an annual plant:			
	a)	**tomato**	b)	onion
	c)	carrots	d)	turnip
393)	An annual plant is a plant that completes its life cycle, from germination to the production of seeds, within ---------, and then dies:			
	a)	**one year**	b)	three years
	c)	two years	d)	four years
394)	A ------ plant is a flowering plant that takes two years to complete its biological lifecycle:			
	a)	perennial	b)	annual
	c)	**biennial**	d)	none of thes
395)	Hybrid breeding began in -------- by George Shull.:			
	a)	1906	b)	1809
	c)	**1909**	d)	1808
396)	*In-vivo* method of haploid production is:			

	a)	tissue culture	b)	**genetic induction**
	c)	anther culture	d)	none of these
397)	Rich source of phosphorus of seed reserves is:			
	a)	**phytate**	b)	protein
	c)	oleosome	d)	starch
398)	In maize, phytate is present in:			
	a)	endosperm	b)	**embryo**
	c)	aleurone layer	d)	scutellum
399)	In dicot seeds, storage proteins are transported through:			
	a)	RER	b)	Vacuoles
	c)	SER	d)	**Golgi apparatus**
400		Scientific name of maize is:		
	a)	*Triticum aestivum*	b)	*Solanum tuberosum*
	c)	*Glycine max*	d)	***Zea mays***
401)	Plants bear flowers of only one sex on one plant are known as:			
	a	incomplete	b	**monoecious**
	c	complete	d	dioecious
402)	Monoecious plants have:			
	a	separate male and female organs on different flowers	**b**	**separate male and female flowers on same plan**
	c	separate flowers on same flowers	d	none of these
403)	In which organelle of cell protein synthesis takes place?			
	a	mitochondria	b	nucleus
	c	**ribosomes**	d	lysosomes
404)	When plants are regenerated in vitro through the vegetative parts of the plants is known as:			
	a	cuttings	b	budding
	c	grafting	d	**tissue culture**
405)	In cells the function of mitochondria is			
	a	digestion	b	photosynthesis
	c	respiration	d	**power regeneration**
406)	An organisms having a pair of identical alleles is called:			
	a	heterozygous	b	hemizygous
	c	**homozygous**	d	none
407)	Maize plant inflorescence is normally:			
	a	complete	b	dioecious
	c	perfect	d	**monoecious**
408)	Localized incompatibility can be overcome through			
	a	Dwarf root stock	b	**Inter stock**
	c	Medium root stock	d	Approach grafting
409)	Common example of localized incompatibilit			
	a	**Apple**	b	Citrus
	c	Mango	d	Jamun
410)	What is common inter stock use to overcome localized incompatibility			
	a	Barlett	b	Cherry
	c	Quince	d	**Old home**
411)	Which is common stock used to overcome translocated incompatibility			
	a	Hales early	b	**Bromptom**
	c	Myrobalan B	d	Quince
412)	What is suitable soil pH for plant growth in nurseries?			
	a	**5.5-6.5**	b	6.5-7.5

	c	4.5-5.5	d	4.5-6.5
413)	What should be conditions for seed germination			
	a	Dormant	b	high moisture
	c	**Viable & Non-dormant**	d	A & B
441)	What in the fertilization process?			
	a	Egg with polar nuclei	b	Egg with antipodal cell
	c	**Male and female**	d	A & B
415)	The commodity or quantity that customers are willing to pay at a reasonable price is			
	a	Forecasting	b	Supply
	c	Price	**d**	**None of the above**
416)	Marketing campaigns are launched to influence			
	a	Distributors	b	Wholesalers
	c	**Farmers**	d	None of the above
417)	The product line or variety of products offered by a seed company is called			
	a	Product line	b	Business volume
	c	Strategic business unit	d	**Product portfolio**
418)	It aim to satisfy the farmer's demand for reliable supply of a range of improved seed varieties of assured quality at an acceptable price in a seed market			
	a	**Seed marketing**	b	Seed management
	c	Seed logistics	d	None of the above
419)	Which of the following involves licensing varieties and sourcing seeds from own and third-party suppliers			
	a	New product development	b	Distribution management
	c	**product sourcing**	d	Product management
420)	Which of the following business enterprises should work under the Government seed legislation framework			
	a	Public enterprise	b	Cooperatives
	c	**Private enterprise**	d	None of the above
421)	What are most influencing factors on seed germination			
	a	Water	b	Alkalinity
	c	Temperature	d	**All**
422)	What chilling temperature required during stratification			
	a	6 °C	b	-1°C
	c	**-5 °C**	d	-8 °C
423)	What kind of chemicals used for seed treatments?			
	a	**Potassium nitrate**	b	Potassium sulphate
	c	Potassium chloride	d	All
424)	In DNA molecule Adenine pairs with:			
	a	proline	b	cytosine
	c	guanine	d	**thymine**
425)	Seed production from foundation seed is called:			
	a	breeder seed	b	registered seed
	c	foundation seed	d	**certified seed**
426)	One seeded dry fruit with thin pericarp adherent to the seed is called:			
	a	ovary	b	**caryopsis**
	c	seed	d	fruit
427)	Compound inflorescence with pedicle flowers usually loose or irregular:			
	a	spikelet	b	spike
	c	spidex	d	**panicle**
428)	Mature ovary wall around the ovule:			
	a	**pericarp**	b	endocarp
	c	mesocarp	d	actocarp

429)	Flower pollinated by wind is called:			
	a	hydrophilus	b	**anemophilus**
	c	zoophilus	d	entomophilus
430)	Selection is practiced in segregating germination in F5 and F6:			
	a	pedigree method	b	**bulk population method**
	c	double haploid	d	single seed descent method
431)	A good source of vegetable protein is:			
	a	**wheat**	b	maize
	c	pulses	d	all of these
432)	In cotton extra floral nectars are present on:			
	a	leaves	b	stem
	c	**bracts**	d	none
433)	Inflorescence of rice is called:			
	a	tassel	b	spidex
	c	**panicle**	d	tassel
434)	After microgametogenesis how many gametes form in pollen grain:			
	a	one	b	Three
	c	**two**	d	Four
435)	The petals of a flower are collectively known as:			
	a	calyx	b	androecium
	c	gynoecium	d	**corolla**
436)	Group of ---- is known as calyx:			
	a	**sepals**	b	carpels
	c		d	stamens
437)	Essential parts of flower are:			
	a	sepals	b	pistil
	c	stamens	d	**both b and c**
438)	The enlarged basal portion of the pistil in which seeds are born:			
	a	ovule	b	**ovary**
	c	stigma	d	style
439)	Stalk of stamen which supports the anther is called:			
	a	**filament**	b	none of these
	c	petiole	d	pedicle
440)	The upper of the two bracts enclosing each floret in the grasses is termed as:			
	a	**lemma**	b	spikes
	c	palea	d	none of these
441)	The lower of the bracts enclosing each floret in the grasses is termed as:			
	a	lemma	b	spikes
	c	**palea**	d	glumes
442)	The outer husks of each spikelet covering the floret in grasses is called:			
	a	lemma	b	spikes
	c	**glume**	d	palea
443)	Yield in cross-pollinated crops decreases by continuous selfing:			
	a	out breeding	b	random mating
	c	in breeding	d	**in breeding depression**
444)	A progeny descendent by self-pollination from single homozygous plant is called			
	a	inbred line	b	**pure line**
	c	advanced line	d	line breeding
445)	A hybrid from a cross between two single crosses is known as:			
	a	three way cross	b	**double cross**
	c	dihybrid	d	two way cross

446)	Gene pool is the sum total of ----within reproductive cells of members in a population:			
	a	genotypes	b	**alleles**
	c	gametes	d	phenotypes
447)	Cross between inbred and open-pollinated variety if maize is known as:			
	a	poly cross	b	three way cross
	c	single cross	d	**top cross**
448)	Selection is delayed up to F6 generation:			
	a	**bulk method**	b	pedigree method
	c	SSD method	d	recurrent selection
449)	Crossing scheme in which one parent is used recurrently is named as:			
	a	test cross	b	recurrent selection
	c	**back cross**	d	mass selection
450)	Color development in tomato fruit Is due to			
	a	**lycopene**	b	carotenoid
	c	polypropylene	d	all of above
451)	TZ test is used for:			
	a	estimation of chlorines in leaves	b	estimation of bromine in seeds
	c	detection of nitrogen contents	d	**viability of seeds**
452)	Which of the following is a seed document:			
	a	Seed Act, 1976	b	**both a and c**
	c	Seed Act, 2015	d	none of these
453)	Viable seed germinate with range of			
	a	**5-14 days**	b	15-20 days
	c	10-20 days	d	5-20 day
454)	Blowing is a method used for			
	a	Seed testing	b	**Seed separating**
	c	Seed cleaning	d	All
455)	Method which use combination of weight and surface characteristics of particles to be separated is:			
	a	Friction cleaning	b	None
	c	**Specific gravity separation**	d	Liquid flotation
456)	Seed grading can assist			
	a	Mechanical sowing of seed	b	**Both**
	c	Hand sowing of seed	d	None
457)	Stationary tray kilns contain			
	a	35 trays	b	37 trays
	c	**36 trays**	d	38 tray
458)	Small portion taken from one point in the lot is			
	a	**Primary sample**	b	Tertiary sample
	c	Secondary sample	d	None
459)	Seed formed by combining all primary samples is			
	a	Secondary seed	b	**Composite seed**
	c	Tertiary seed	d	All
460)	Sample submitted to seed testing lab is			
	a	**Submitted sample**	b	Primary sample
	c	Testing sample	d	None
461)	Sample which is taken from submitted sample is			
	a	**Working sample**	b	Secondary sample
	c	Lab sample	d	All
462)	Specific quantity of a seed on the basis of which seed test certificate can be issued			
	a	Seed mixture	b	**Seed lot**
	c	Primary seed	d	None

463)	Fertilized matured ovule with seed coat is			
	a	**Seed**	b	Ovary
	c	Endosperm	d	None
464)	The development of a plant from a seed is			
	a	**Germination**	b	Sprouting
	c	Emergence	d	None
465)	Cotton is a …… crop			
	a	Self-pollinated	b	**Often cross pollinated**
	c	Cross pollinated	d	All
466)	Wheat is a ……..crop			
	a	**Self-pollinated**	b	Can be both
	c	Cross pollinated	d	None
467)	Sunflower is a ……. Crop			
	a	Self-pollinated	**b**	Often cross pollinated
	c	**Cross pollinated**	d	All
468)	Cowan presented his discipline in			
	a	1972	b	**1974**
	c	1973	d	1975
469)	GMO stand for			
	a	**Genetically modified organisms**	b	Genetics of markers and organisms
	c	Genetics of molecular organisms	d	All
470)	To develop hybrid A is crossed with			
	a	B line	b	A line
	c	**R line**	d	None
471)	Mendel was able to conclude the law of independent assortment because of the absence of			
	a	**linkage**	b	epistasis
	c	mutation	d	crossing over
472)	Heterobeltiosis is estimated over:			
	a	mid-parent	b	popular variety
	c	popular hybrid	d	**better parent**
473)	Useful heterosis is estimated over:			
	a	**popular variety**	b	mid parent
	c	popular hybrid	d	better parent
474)	Watson and Crick model of DNA was given in:			
	a	1889	b	**1952**
	c	1889	d	1998
475)	Group of similar appearing plants are selected, and their seed is composite is known as:			
	a	pure-line selection	b	synthetic variety
	c	composite variety	d	**mass selection**
476)	Selfing of a plant belonging to open-pollinated group is called:			
	a	synthetic	b	pure line
	c	**inbred lines**	d	line breeding
477)	The organisms with chromosome number not exact multiple of the monoploid set is called			
	a	hetroploid	b	euploid
	c	**aneuploid**	d	polyploid
478)	The cross between two inbreds is called:			
	a	**single cross**	b	double cross
	c	three way cross	d	three way cross
479)	Heterosis can be fully exploited in the form of:			
	a	**hybrids**	b	multilines
	c	composites	d	synthetics

480). ---------- is considered to be the first method of breeding for the improvement of crop plants:				
	a	hybridization	b	introduction
	c	**selection**	d	back crossing
481)	The seed of improved variety developed by the breeder by crossing two varieties is called:			
	a	**nucleus seed**	b	registered seed
	c	foundation seed	d	none of these
482)	Tests of significance includes:			
	a	Z-test	b	**all of these**
	c	local control	d	randomization
483)	In which design number of treatments and number of replications is same:			
	a	CRD	b	all of these
	c	**LSD**	d	RCBD
484)	Which of the following design consists of main plots and subplots:			
	a	CRD	b	RCBD
	c	LSD	d	**split plot design**
485)	Applications of statistical concepts and procedures to the study of biological problem is called:			
	a	biometrics	b	all of these
	c	**biometry**	d	biostatistics
486)	All the energy present in the biological world and in fossil fuels is ----- energy:			
	a	petroleum	b	none of these
	c	**solar**	d	other chemicals
487)	Transfer of genes between populations by the movement of gametes, individuals or group of individuals from one population to another population, is known as:			
	a	genetic load	b	immigration
	c	**gene flow**	d	genetic death
488)	A pure-line is the progeny of a single, ---------- , self-pollinated plant:			
	a	heterozygous	b	both a and c
	c	**homozygous**	d	none of these
489)	Variation within a pure-line is purely----------:			
	a	**environmental**	b	none of these
	c	quantitative	d	qualitative
490)	--------- called as father of modern genetics			
	a	**Gregor Mendel**	b	Lamarck
	c	Watson and Crick	d	Charles Darwin
491)	The total of all the genes carried out by a population at a given time is called as:			
	a	**gene pool**	b	gene flow
	c	genome	d	All of these
492)	A collection of cloned DNA fragments that includes all or part of the genome of a species is			
	a	gene bank	b	gene pool
	c	**gene library**	d	karyotype
493)	Number of independent comparison is called			
	a	ANOVA	b	SOV
	c	**DF**	d	MSS
494)	Analysis of variance is designated as:			
	a	ANOVA	b	ANACOVA
	c	ACOVA	d	none of these
495)	Sum of all the observations in a sample divided by their number is called:			
	a	**arithmetic mean**	b	variance
	c	range	d	none of these
496)	Regression is the measurement of:			
	a	**Functional relationship between two variance**	b	simple linear relationship between two variables

	c	Functional relationship between three variance	d	none of these
497)	The first generation in a series of monohybrid crosses is referred to as the ------ generation			
	a	A1	b	**F1**
	c	P1	d	F2
498)	If the environmental conditions are homogeneous in an experimental area than most suitable experimental design is :			
	a	**CRD**	b	split plot design
	c	LSD	d	RCBD
499)	The most suitable design to compare two or more treatments is :			
	a	**factorial**	b	LSD
	c	CRD	d	RCBS
500)	The most suitable design to compare two or more treatments is :			
	a	**factorial**	b	RCBS
	c	LSD	d	CRD
501)	In seed formation the inner integument remains thin and develops into			
	a	Testa	b	Aril
	c	**Tegmen**	d	Hilum
502)	During seed formation, a sear left by the funiculus is termed as			
	a	Hilum	**b**	Funiculus
	c	**Operculum**	d	Raphe
503)	Endosperm like tissue (2n) in seed developing from nucellus is			
	a	Endosperm	b	Cotyledon
	c	**Perisperm**	d	Mericarp
504)	Orthodox seeds after dissemination may be			
	a	Non dormant	b	Dormant
	c	Quiescent	d	**All of above**
505)	**Secondary dormancy in non-dormant seeds is due to:**			
	a	**Temperature**	b	Moisture
	c	Aeration	d	Light
506)	Germination of undeveloped seeds is favored by			
	a	Warm temperature (>20°C)	b	Gibberellic acid
	c	Low temperature (<20°C	d	**a & b**
507)	Stage at which seed achieves it maximum dry weight and has maximum germination potential and vigor is:			
	a	**Physiological maturity**	b	Harvest maturity
	c	Edible maturity	d	None of above
508)	**Seed vigor is affected by**			
	a	Time of storage	b	Type of seed stored
	c	Storage environment	d	**All of above**
509)	Tetrazolium test to check seed viability is			
	a	Chemical test	b	Germination test
	c	Enzyme test	**d**	**a & c**
510)	Researchers describe seed moisture contents in terms of:			
	a	Dry weight	b	Wet weight
	c	Percent weight	d	**a & b**
511)	Controlled inhibition of seed is termed as:			
	a	Priming	b	Soaking
	c	Chilling	d	None of above
512)	For hybrid seed production _____ flowers are completely suppressed on female plants			
	a	**Staminate**	b	Pistillate

	c	Staminode	d	Alternate
513)	Production of seeds without fertilization is termed as:			
	a	Parthenocarpy	b	**Parthenogenesis**
	c	Gametogenesis	d	All of above
514)	Removal of off type plants from a seed field is termed as			
	a	Weeding	b	**Rouging**
	c	Hoeing	d	All of above
515)	The most important seed component affecting seed /viability during storage is:			
	a	**Temperature**	b	Humidity
	c	Moisture	**d**	Food reserves
516)	Potato is propagated through			
		Seed potato	b	Potato seed
		True Potato Seed	d	**All of above**
517)	Isolation during seed production is done by			
		Types (Varieties)	b	**Plantation at a distance**
		Zoning	d	All of above
518)	Seed production in biennial vegetables is mostly done by			
		Seed to seed method	b	In situ method
		Replanting method	d	**All of above**
519)	Watermelon for seed should be harvested when			
		Tendril's wither	b	Skin color is green
		Skin color is pale yellow	d	Vine dry out
520)	In Pakistan, vegetables for seed production are harvested by:			
		Manual method	b	Machines
		Combine harvesters	d	All of above
521)	**During storage of vegetable seeds, seed moisture should be**			
		Less than 10%	b	Equal to 10%
		Greater than 10%	d	None of above
522)	The poorest seed storage capacity is in:			
		Okra	b	Peas
		Cucurbits	d	**Onion**
523)	**Tetraploid watermelon must be pollinated by ____ plants to produce a seedless watermelon**			
		Triploid	b	Aneuploid
		Diploid	d	Tetraploid
524)	**Turmeric is propagated by:**			
		Corms	b	Seed
		Rhizome	d	Bulb
525)	Exposure of seed to low temperature before germination is termed as:			
		Scarification	b	**Stratification**
		Vernalization	d	All of above
526)	imbibed or germinated seeds subjected to cold temperature is termed as:			
		Scarification	b	Stratification
		Vernalization	d	Sterilization
527)	The portion of axis below the cotyledons in seed is:			
		Micropyle	b	**Hypocotyl**
		Epicotyl	d	None of above
528)	Which type of flowers cannot produce seeds and / or fruit?			
		Pistillate	b	Perfect
		Hermaphrodite	d	**Staminate**
529)	Seed potato seed has			

		Dormancy	b	Rest period
		Both of these	d	None of these
530)	Seed rate/acre in potato for autumn crop is			
	a	**900-1100 Kg**	b	500 Kg
	c	400 Kg	d	100kg
531)	Development of seed stalks earlier in biennial crops is called			
	a	**Bolting**	b	Buttoning
	c	Greening	d	None of these
532)	Dormancy of seeds are broken by			
	a	**GA**	b	Ethylene
	c	Water	d	None of above
533)	Kinnow seed is			
	a	**Polyembryonic**	b	Monoembryonic
	c	Multiembryonic	d	None
534)	**Apomictic seedlings are also called as:**			
	a	**Nucellar seedlings**	b	Sexual seedlings
	c	Embryonic seedlings	d	None
535)	Metaxenia is the impact of			
	a	Pollen on seed	b	Pollen on fruit
	c	**Pollen on ovule**	d	Pollen on ovary
536)	Dormancy in plant and seed is mainly due to			
	a	Environmental factor	b	Physiological factor
	c	**a & b**	d	None
537)	Micropyle is an opening in			
	a	Stomata	b	**Seed**
	c	Flower	d	Ovary
538)	Mushroom seed is called:			
	a	**Spawn**	b	Seed
	c	Button	d	None
539)	The development of fruit without fertilization or seed is called as:			
	a	Pollination	b	polyembryony
	c	pseudogamy	d	**Parthenocarpy**
540)	Reproduction of plants through seeds are also called:			
	a	Asexual propagation	b	Vegetative propagation
	c	**Sexual propagation**	d	Tissue culture
541)	The nutritive tissue around the embryo in seed is			
	a	Endosmosis	b	Endodermis
	c	**Endosperm**	d	Embryo-sac
542)	The germination of seed in which cotyledons come above ground is			
	a	Epigeal	b	Hypogeal
	c	Epigynous	d	Epipetalous
543)	Dormancy of seed is a biological mechanism that provides protection against _____:			
	a	Seed spoilage	b	Embryo abortion
	c	**Premature germination**	d	Dehydration
544)	Self-fertility refers to the ability of a variety to produce fruits with viable ___:			
	a	Pollens	b	Seeds
	c	Ovules	d	Ovaries
545)	To preserve the germination ability of most seeds, store them in a:			
	a	Warm, dry environment	b	**Cool, dry environment**
	c	Cool environment after scarification	d	Warm, moist environment after stratification

546)	**The species which produce seed from vegetative cells and not through sexual means are called**			
	a	Hybrid	b	**Apomictic**
	c	Zygotic	d	Inbred
547)	The process of formation of two or more embryos in the seed is known as			
	a	Apomixis	b	Polyploidy
	c	**Polyembryony**	d	All of above
548)	Seed cotton means			
	a	**Seed with lint**	b	Seed without lint
	c	Lint	d	None of these
549)	Sex nucleus that fuses with another in sexual reproduction is:			
	a	Cell	b	**Gamete**
	c	Spore	d	None of these
550)	*Gossypium hirsutum* is the botanical name of			
	a	**American Cotton**	b	Desi Cotton
	c	Barley	d	Sugar Cane
551)	Selection of plants on the basis of phenotypic superiority is known as:			
	a	Hybrid	b	Inbred Line
	c	**Mass Selection**	d	None of these
552)	Inqalab – 91 is a variety of:			
	a	Rice	b	**Wheat**
	c		d	Cotton
553)	F.A.O. has its headquarters in:			
	a	London	b	New York
	c	Geneva	d	**None of these**
554)	The ploidy level of American Cotton is			
	a	Diploid	b	Triploid
	c	**Tetraploid**	d	None of these
555)	The science of classification is called:			
	a	Ecology	b	Horticulture
	c	**Taxonomy**	d	None of these
556)	A group of similar looking plants that has approved for general cultivation in ecological zone is called:			
	a	**Variety**	b	Taxonomy
	c	Strain	d	None of these
557)	The basic set of chromosomes in case of wheat is:			
	a	**7**	b	42
	c	14	d	all
558)	In DNA, adenine always pair with			
	a	**Thymine**	b	Cytosine
	c	Guanine	d	None of these
559)	Ploidy level of maize plant is:			
	a	**Diploid**	b	Hexaploid
	c	Tetraploid	d	None of these
560)	Hardy-Weinberg equilibrium provides basis for study of:			
	a	Genetic Engineering	b	Mendelian Genetics
	c	**Population Genetics**	d	Biometrical Genetics
561)	'CIMMYT" is an organization working for the improvement of			
	a	**Wheat and maize**	b	Pulses and oilseeds
	c	Rice and cotton	d	Dryland Agriculture
562)	Synapsis of chromosomes occurs between:			

	a	Sister chromatids	b	Non homologous
	c	**Homologous chromosomes**	d	None of these
563)	The amino acids which cannot be synthesized by the mammals are called:			
	a	Non-essential amino acid	b	Basic amino acids
	c	Non-Polar amino acids	d	**Essential amino acids**
564)	Quantitative traits are measurable traits that show:			
	a	Discontinuous variation	b	Phenotypic
	c	**Continuous variation**	d	None of these
565)	The process of programmed cell death is called:			
	a	**Apoptosis**	b	Degeneration
	c	Necrosis	d	Both (a) and (b)
566)	Genetic material of an organism changes with:			
	a	Age	b	Nutritional change
	c	Environmental change	d	**None of these**
567)	Biotechnology refers to:			
	a	Manipulation of Genes	**b**	Manipulation of Biological Systems
	c	Cheese Making	d	**All of these**
568)	Increased vigor growth of a hybrid over parents is called:			
	a	**Heterosis**	b	Hybridization
	c	Heterozygous	d	None of these
569)	ICRISAT is located in:			
	a	China	b	Mexico
	c	**India**	d	None of these
570)	Plants having flowers of only one sex are:			
	a	**Dioecious**	b	Monogamy
	c	Monoecious	d	None of these
571)	Oryza Sativa is the botanical name of:			
	a	**Rice**	b	Barley
	c	Wheat	d	**None**
572)	Khapra beetle is the pest of:			
	a	Rice	b	Barley
	c	Sorghum	d	**All of these**
573)	Humidity is measured by means of:			
	a	Anemometer	b	Thermometer
	c	**Psychrometer**	d	None of these
574)	Sorghum inflorescence is called:			
	a	**Panicle**	b	Ear
	c	Flower	d	Spike
575)	KS-282 and KS-133 are the cultivars of			
	a	Maize	b	**Coarse rice**
	c	Wheat	d	Fine rice
576)	Bread wheat is:			
	a	Tetraploid	b	Monoploid
	c	**Hexaploid**	d	Diploid
577)	Ratio of additive variance to phenotypic variance is called:			
	a	Heritability (Broad sense)	b	Co- Heritability
	c	**Heritability (Narrow sense)**	d	Gene Action
578)	Shull and East (1908) proposed over dominance hypothesis of heterosis in			
	a	**Maize**	b	Barely
	c	Wheat	d	None of these
579)	Global gene pool rice is maintained at_____			

	a	Mexico	b	China
	c	**IRRI Philippines**	d	None of the above
580)	Germplasm collected within the country is known as_____			
	a	**Indigenous collection**	b	Working collection
	c	Exotic collection	d	Active collection
581)	A place or area where maximum variability of crop plants is observed_____			
	a	**Centers of diversity**	b	Micro centers
	c	Gene sanctuaries	d	Genetic diversity
582)	The term mitosis was coined by_____			
	a	De Vries and correns (1908)	b	None of these
	c	Bruce and Keeble (1908)	d	**Fleming (1882)**
583)	When pollination and fertilization occur in unopened flower bud it is known as_____			
	a	Homogamy	b	Chasmogamy
	c	**Cleistogamy**	d	All the above
584)	Analysis of covanance permits estimation of_____			
	a	Environmental covanance	b	Genotypic convanance
	c	Phenotypic covanance	d	**All the above**
585)	Biometrics for the study of quantitative genetics was provided by _____			
	a	**Fisher**	b	Falconer
	c	Mather	d	Hayman
586)	Germplasm which is meant for short term storage (3 to 5 years) is known as_____			
	a	Indigenous collection	b	None of these
	c	Exotic collection	d	**Working collection**
587)	Seeds which dried at low moisture content and stored at low temperature without losing their viability are_____			
	a	Recalcitrant seeds	b	**Orthodox seeds**
	c	Active seeds	d	Certified seeds
588)	Primitive cultivars which are selected and cultivated by farmers for many years are_____			
	a	tertiary gene pool	b	**Land races**
	c	Obsolete cultivars	d	Modern cultivars
589)	Development of embryo from egg cell without fertilization is known as_____			
	a	Autogamy	b	Apospory
	c	**Parthenogenesis**	d	Apogamy
590)	Rice flowers has ---------- stamens			
	a	**3**	b	**6**
	c	4	d	None
591)	Protandry is found in_____			
	a	**Maize**	b	Sorghum
	c	Barley	d	Wheat
592)	Genetic correlation between two variables may be due to_____			
	a	Gene interaction	b	Dominance
	c	**Pleiotropy**	d	Selection differential
593)	Erucic Acid is found in			
	a	**Mustard**	b	Til
	c	Soybean	d	Safflower
594)	Heterobeltosis is----------heterosis			
	a	**Better parent**	b	Standard parent
	c	Mid parent	d	Popular variety
595)	In rice, brown plant hopper has no preference for_____			
	a	Purple stigma	b	Red pericarp

	c	Low asparagine	d	**All the above**
596)	The value of regression and correlation is the same when the correlation between two variables is_____			
	a	Imperfect	b	Negative
	c	Positive	d	**Perfect**
597)	Healthy plant not bearing seed may be due to			
	a	**Male sterility**	b	Self-incompatibility
	c	Female sterility	d	All the above
598)	All organism or cell having a chromosome number that is not an exact multiple of the monoploid or basic number is known as_____?._____			
	a	**Aneuploid**	b	Allopolyploid
	c	Autopolyploid	d	Euploid
599)	The cell theory was propounded by_____			
	a	**Schleiden and Schwann**	b	Morgan
	c	Sarwin and Wallace	d	Watson and Crick
600)	RNA contains_____			
	a	Thymine	b	Cystine
	c	Arginine	d	**Uracil**
601)	size of seed directly related to:			
	a	More temperature	b	**Source sink relationship**
	c	More photosynthesis activity	d	Photoperiod
602)	protein content in oils seed crop increases with:			
	a	**Increase in nitrogenous fertilizer**	b	Decreases N Fertilizer
	c	Increases N fertilizer and decreases P fertilizer	d	All of the above
603)	Seed priming is done to improve:			
	a	Seed maturity	b	Seed setting
	c	**Seed germination**	d	Seed vigor
604)	By the use of good quality seed yield can be increased.			
	a	5-10%	b	**15-25%**
	c	35-40%	d	40-50%
605)	How much quantity of seed should be taken from each container during sampling -------			
	a	**Equal**	b	Less than ½ of previous
	c	1/3 than the precious	d	¼ than the previous
606)	Bold or large seed in cob are present in the --------			
	a	Top portion	b	Middle portion
	c	**Bottom portion**	d	Top and middle portion
607)	The universal requirements for seed germination are			
	a	Water	b	Oxygen
	c	Temperature	d	**a+b+c**
608)	The quantity of seeds up to maximum of --------- kg for the seed size less than *Triticum* species is called seed lot			
	a	Bacteria	b	Algae
	c	**Fungi**	d	None
609)	The certified seed of wheat must have purity-------.			
	a	80%	b	85%
	c	90%	d	**98%**
610)	The moisture seed of wheat must have purity --------			
	a	0-5%	b	**10-12%**
	c	6-9%	d	13-15%
611)	The test performed for judging the qualities of seeds are			
	a	Purity and germination	b	Seed length and weed seed
	c	Moisture content	d	**a+b+c**

612)	The quantity of agricultural and horticultural seed up to a maximum of -------- kg of seed size of *Triticum* species or larger is called seed lot			
	a	10000 kg	b	15000 kg
	c	20000 kg	d	**25000 kg**
613)	Seed is stored in dry conditions primarily to check the g			
	a	Insects	b	Rodents
	c	**Moulds**	d	None
614)	Hard seed are those which have seed coat impervious to			
	a	**water**	b	oxygen
	c	water and oxygen	d	light
615)	The scar left on the seed on the place of detachment from the seed stalk is called			
	a	epicotyle	b	**hypocotyl**
	c	coleoptile	d	hilum
616)	The process of mechainically scarring seed coat is			
	a	stratification	b	scarification
	c	after ripening	d	none
617)	The stratification treatment is given to a seed at			
	a	High temperature	b	Low temperature
	c	High temp high humidity	d	**None**
618)	Separating seeds from ears of wheat			
	a	threshing	b	winnowing
	c	harvesting	d	
619)	**Seeds which are included in pure seeds**			
	a	Soybean	b	**Wheat**
	c	Maize	d	Oat
620)	Hard seeds are throne which have seed coat impervious to			
	a	**Water**	b	Oxygen
	c	Water and Oxygen	d	Light
621)	The technique deals with seed quality and testing			
	a	Seed processing	b	**Seed certification**
	c	Seed technology	d	none
622)	study which deals with laws and regulation of seed quality			
	a	Seed production	b	Seed certification
	c	Seed distribution	d	None of the above
623)	The seed which is stored under very cooled conditions for a long period of time is called as			
	a	Basic seed	b	**Pre basic seed**
	c	Foundation seed	d	Germ plasm seed
624)	some seeds may not germinate in convention requirements or with special treatment			
	a	**dormant**	b	hard seed
	c	viable	d	dead
625)	ability of seed to germinate and produce seedlings is called			
	a	Growth	b	**development**
	c	viability	d	None of the above
626)	Study of functions of seeds and its part			
	a	**Seed testing**	b	Seed identification
	c	Seed physiology	d	None of above
627)	Separating grain or seed from chef is known as			
	a	Winnowing	b	**Threshing**
	c	Harvesting	d	None of the above
628)	Size of seed directly related to:			

	a	More temperature	b	**Source-sink relationship**
	c	More photosynthetic activity	d	Photoperiod
629)	Protein content in oilseed crops:			
	a	Increase with increase in nitrogenous fertilizer	b	**Decrease N fertilizer**
	c	Increase N fertilizer and decrease P fertilizer	d	All of the above
630)	Use of seed is not allowed in organic farming.			
	a	Chemically treated	b	Genetically engineered
	c	Transgenic	d	**None of these**
631)	In salt affected soil process of imbibition in seed is limited due to			
	a	Osmosis	b	Diffusion
	c	**Ex-osmosis**	d	None of the above
632)	In seeds the process of ex-osmosis normally take place in			
	a	Waterlogged soil	b	**Salt affected soil**
	c	Eroded soil	d	Reclaimed soil
633)	Damping off of seedling is caused by			
	a	*Albugo candida*	b	***Pythium debaryanum***
	c	*Sclerospora graminicola*	d	*Peeronospora parasitica*
634)	Standard moisture contents for healthy seeds is			
	a	18%	b	14%
	c	**12%**	d	08%
635)	The initial seed obtain from selected individual plants of a particular variety is			
	a	**Nucleus seed**	b	Foundation seed
	c	Breeder seed	d	Primary seed
636)	The standard purity in register seed should be			
	a	92%	b	93%
	c	96%	d	**98%**
637)	Pre-emergence damping off in case of seedling disease, encourage by:			
	a	High temperature	b	**Low temperature**
	c	Optimum temperature	d	Very high temperature
638)	During inoculation, _____should adhere well to the seed.			
	a	Inoculum	b	**Peat**
	c	Sugar	d	Broth
639)	Breeder seed is the progeny of			
	a	Foundation seed	b	Registered seed
	c	**Nucleus seed**	d	Certified seed
640)	Certification is not required for:			
	a	Nucleus seed	b	**Breeder seed**
	c	Foundation seed	d	Certified seed
641)	Improved seed includes:			
	a	Nucleus seed	b	Breeder seed
	c	Foundation seed	d	**All of the above**
642)	In Bhindi, production of foundation seed needs an isolation distance of:			
	a	100 meters	b	50 meters
	c	**200 meters**	d	3 meters
643)	Seed coat is derived from:			
	a	**Testa**	b	Embryo
	c	Endosperm	d	Nucellus
644)	In sunflower, production of foundation seed requires an isolation distance of (meters):			
	a	**400**	b	800

	c	200	d	100
645)	In wheat, production of foundation seed needs an isolation distance of:			
	a	**Three meters**	b	Five meters
	c	Ten meters	d	Twenty meters
646)	Physical purity of 95% is permissible for the foundation and certified seed of:			
	a	Soya bean	b	Groundnut
	c	Spinach	d	**Carrot**
647)	Production of breeder seed in cotton requires an isolation distance of:			
	a	20 meters	b	30 meters
	c	**50 meters**	d	75 meters
648)	Seed certification requires:			
	a	An improved variety	b	Genetic purity
	c	Physical purity	d	**All of the above**
649)	Seed meant for generation distribution to the farmers for commercial crop production refers to:			
	a	Foundation seed	b	Breeder seed
	c	Certified seed	d	Nucleus seed
650)	Freedom from inert matter and defective seeds:			
	a	Genetic purity	b	**Physical purity**
	c	Defective purity	d	Normal purity
651)	International Crop Improvement Association (ICIA) in classified seed into different categories:			
	a	1964	b	**1946**
	c	1963	d	1972
652)	Seed is a:			
	a	Immature embryo	b	**Mature embryo**
	c	Developed embryo	d	Undeveloped embryo
653)	Cotyledons in gymnosperms are called:			
	a	Embryo	b	Integuments
	c	**Mega-gametophyte**	d	Endosperm
654)	Cotyledons in monocots are called:			
	a	**Endosperm**	b	Mega-gametophyte
	c	Embryo	d	Integuments
655)	Seed moisture varies from crop to crop in ranges from:			
	a	15-20%	b	30-40%
	c	1-2%	d	**9-12%**
656)	Pure Live Seed (PLS) is related to:			
	a	Physical purity	b	Genetic purity
	c	**Germination percentage**	d	Contamination
657)	In flowering plants a second seed coat is known as:			
	a	Integument	b	Aleurone layer
	c	**Tegamen**	d	Inner ventral scale
658)	Seed drying is very important to maintain its–			
	a	**Viability and vigor**	b	Protein content
	c	Oil content	d	Chemical composition
659)	For seed samples kept in an incubator for germination test, light is–			
	a	Always essential	b	Never essential
	c	**Not harmful**	d	Harmful
660)	Seedless in fruits is called as–			
	a	. Parthenogensis	b	**Parthenocarpy**
	c	Apomixis	d	None
661)	Possible reasons for seed dormancy is–			
	a	Presence of pathogens	b	Cracking of hulls

	c	**Immature embryo**	d	Green distoration
662)	During the germination of seeds, the seed coat ruptures due to			
	a	**massive imbibition of water**	b	differentiation of cotyledons
	c	a sudden increase in cell division	d	massive glycolysis in cotyledons and endosperm
663)	Seed dormancy allows the plants to			
	a	develop healthy seeds	b	reduce viability
	c	**overcome unfavorable climatic conditions**	d	prevent deterioration of seeds
664)	The protective covering over radical during the germination of seeds is			
	a	Coleoptile	b	Epithelium
	c	Suspensor	d	**Coleorhiza**
665)	Which of these compounds can induce seed dormancy?			
	a	Potassium nitrate	b	**ABA**
	c	Gibberellins	d	Ethylene
666)	An albuminous seed showing hypogeal germination is			
	a	bean	b	castor
	c	gram	d	**maize**
667)	Seed is ……..?			
	a	Developed ovary after fertilization	**b**	Developed egg after fertilization
	c	**Transformed ovary after fertilization**	d	None of the above
668)	The seed of sunflower is called_____?			
	a	Samara	b	**Achene**
	c	Caryopsis	d	Phyxis
669)	The _____ of fungus is called thallus.			
	a	**Vegetative body**	b	Root
	c	Seed	d	Fruit
670)	Seeds of 2 or more crops is mixed before sowing in--------			
	a	Intercropping	b	Relay cropping
	c	**Mixed cropping**	d	None