A

19703 **120 MINUTES**

1. Viral reverse transcriptase copies the viral RNA to DNA in cytoplasm and then the DNA moves into the nucleus. This process occurs in the case of
   A) Poxviridae B) Rhabdoviridae
   C) Retroviridae D) Reoviridae

2. Adaptive immunity response is acquired after infection. Find the correct sequence of adaptive immunity response
   A) Pathogen enters→APC triggers B cells via T helper cell→Antibodies
   B) Pathogen enters→macrophage and dentritic cells recognize the antigen → engulf, process and present→APC interact with lymphocytes→ activate lymphocytes→adaptive immune response
   C) Pathogen enters→phagocytes became activated→trigger cytotoxic T cells→Nk cells kills infected cells
   D) Pathogen enters→mast cell degranulation→inflamation→immunity

3. Macdonald Pfitzer's law is related to the
   A) Progressive decrease in the cell size in diatoms during cell division
   B) Progressive increase in the cell size in diatoms during cell division
   C) Progressive decrease in the cell size during auxospore formation in Centrales
   D) Progressive decrease in the cell size during auxospore formation in Pennales

4. Many Rhodophyceae members can achieve high degree of thallus development. But some of them are unicellular. Identify a pair of unicellular red algae from the following.
   A) *Porphyridium* and *Chroothece*
   B) *Goniotrichum* and *Asterocyctis*
   C) *Porphyra* and *Chondrus*
   D) *Gracilaria* and *Gelidium*

5. Myxomycetes, the fungus like organisms are characterized by
   1. Wall less myxamoebae, swarm cells and plasmodium
   2. Spores with chitinous cell wall
   3. Spores with cellulose cell wall
   4. Fructifications with a thin wall called peridium which is often calcified and may contain cellulose

   A) 1, 2 & 4 B) 1, 3 & 4 C) 1 & 2 D) 1 & 4

6. Match the following

List I	**List II**
a. *Agaricus bisporous*	1. Puff ball
b. *Amanita phalloides*	2. Death cap
c. *Lycoperdon* sps.	3. Oyster mushroom
d. *Pleurotus sajor-caju*	4. Button mushroom

A) a- 1 b-2 c-3 d-4 B) a- 4 b-2 c-3 d-1
C) a-4 b-2 c-1 d-3 D) a -3 b-4 c-2 d-1

7. Cyphellae, Cephalodia, Isidia and Soredia are certain specialized structures associated with thalli of:
A) Certain Algae B) Some Fungi
C) Lichens D) Certain Bryophytes

8. The spore dispersal mechanism of *Funaria*?
A) Pseudo elaters B) elaters
C) Peristomial teeth D) No special mechanism

9. Which among the following is a pteridophyte without the differentiation into true leaves and roots?
A) *Azolla* B) *Marselia*
C) *Lepidodendron* D) *Rhynia*

10. Which of the following stelar types in Pteridophytes has leaf traces?
A) Protostele B) Siphonostele C) Dictyostele D) Both B and C

11. Which one of the following Gymnosperms is a profusely branching shrub?
A) *Ginkgo biloba* B) *Ephedra distachya*
C) *Gnetum gnemon* D) *Welwitschia mirabilis*

12. The general pollination mechanism in gymnosperms is:
A) Entomophily B) Anemophily C) Malacophily D) Chiropteriphily

13. The plant genus of Samara fruit type is:
A) *Acacia* B) *Capsella* C) *Dioscorea* D) *Calotropis*

14. Rule of priority of ICBN states that
A) The earliest applicable, properly published name is the correct one
B) Botanical nomenclature is independent of zoological nomenclature
C) Scientific names of taxonomic groups are treated as Latin regardless of their derivation
D) The application of names of taxonomic groups is determined by means of nomenclatural types

15. Hypanthodium is a special type of inflorescence seen in:

A) Dianthus B) Dorstenia C) Poinsettia D) Ficus

16. Match the following:

List I	List II
a. Nymphaeaceae	1. pollinia
b. Brassicaceae	2. trifid style
c Dipterocarpaceae	3. laminar stamen
d. Asclepiadaceae	4. siliqua

A) a- 3 b-1 c-4 d-2 B) a- 4 b-2 c-3 d-1

C) a-4 b-2 c-1 d-3 D) a-3 b-4 c-2 d-1

17. Head office of NBPGR is at:

A) New Delhi B) Mumbai C) Kolkata D) Chennai

18. Indigo is obtained from several species of *Indigofera.* In the plant the dye occurs as a colourless glycoside in the

A) seeds B) fruit C) leaves D) bark

19. Investigating plants used by societies in various parts of the world is known as Ethnobotany. The father of ethnobotany is

A) Richard Evans Schultes B) Jacques Cartier

C) Frank Cushing D) John William Harshberger

20. Match the following

List I	List II
a. Heart wood	1. Gymnosperms
b. Hard wood	2. Recently formed wood
c Sapwood	3. Angiosperms
d. Soft wood	4. Tyloses

A) a-3 b-1 c-4 d-2 B) a- 4 b-2 c-3 d-1

C) a-4 b-2 c-1 d-3 D) a-4 b-3 c-2 d-1

21. Many amphivasal vascular bundles are distributed in the ground tissue after the anomalous secondary thickening in the stem of

A) *Dracaena* B) *Boerhaavia* C) *Bignonia* D) *Mirabilis*

22. Fumaria type, Cucurbita type, Lathyrus type and Anemarrhena type are related to

A) Nodal anatomy B) Root-stem transition

C) Floral anatomy D) Anomalous secondary thickening

23. Match the following

List I	List II
a. Rotary microtome	1. diamond knife
b. Sledge microtome	2. for cutting frozen samples
c Cryotome	3. serial sections of paraffin embedded materials
d. Ultratome	4. to take sections of wood and hard materials

A) a- 3 b-1 c-4 d-2 B) a- 4 b-2 c-3 d-1
C) a-3 b-4 c-2 d-1 D) a-4 b-3 c-2 d-1

24. A technique that uses the process of sublimation to change a solvent in frozen state directly to vapour state

i. Cryosurgery & cryometry
ii. Freeze drying
iii. Lyophilization

A) i only B) ii only C) ii & iii only D) i & iii only

25. Which is the correct explanation for the binding of Coomassie Brilliant Blue to proteins?

A) It binds to proteins through ionic interactions between sulfonic acid groups and positive protein amine groups through Van der Waals attractions.
B) It binds to proteins through ionic interactions with peptide bonds
C) It binds to proteins through Van der Waals attractions between sulfonic acid groups and through ionic interactions to positive protein amine groups..
D) None of the above

26. Identify the non recurrent type of apomixis from the following

A) Adventive embryony B) Diplospory
C) Apospory D) Parthenogenesis

27 Sporopollenin is the major component of

A) Exine of pollen grains B) Intine of pollen grains
C) Pollenkitt D) Prokaryotic spores

28. Which of the following is not true about embryo rescue?

A) It is used to assist in the development of plant embryos that might not survive to become viable plants
B) Embryo rescue was first done by Guha and Maheswary
C) The most widely used embryo rescue procedure is embryo culture
D) It allows the development of many intergeneric hybrids

29. The integral protein complex, Cytochrome b6/f complex which connects Photosystem I and Photosystem II in plants is known as

A) Core complex B) F0- F1 complex
C) Rieske center D) Quantasomes

30. In which of the following subtype/s of C4 photosynthesis the oxaloacetate formed is reduced in the chloroplast to produce malate?

A) NADP- malic enzyme type B) NAD- malic enzyme type
C) PCK type D) Both A and B

31. The cation channels called shaker channels (K+ channels) in *Arabidopsis* is an example for

A) Water channels B) Voltage- gated channels
C) Electrogenic pumps D) Electroneutral pumps

32. Which of the following regarding apoplastic phloem loading is not correct?

A) Sucrose moves from a mesophyll cell into the cell wall adjoining a companion cell
B) Companion cells are with wall ingrowths
C) Sucrose is transported by a sucrose-proton symporter into the companion cell
D) From the companion cells sucrose diffuses through branched plasmodesmata into the sieve tube.

33. Find the correct statement with respect to the nitrogenase enzyme in biological nitrogen fixation

A) Component I of the enzyme is an Fe-protein(nitrogenase reductase)
B) Component II of the enzyme is a Mo-Fe protein (nitrogenase)
C) The enzyme is located in the cortical cells of the host plant in symbiotic nitrogen fixation
D) During enzyme activity the electron flow is from Fd→ component II→ component I→N_2 →NH_3

34. GS-GOGAT pathway in plants is associated with

A) Transport of the amides- glutamine and asparagine from the roots
B) Symbiotic nitrogen fixation
C) Fixation of ammonia
D) Conversion of nitrates to nitrites

35. Glycolate from photorespiration is the precursor for the formation of the amino acids

A) Glycine and serine B) Glutamine and arginine
C) Asparagine and glutamine D) Glycine and glutamine

36. The enzyme associated with cyanide insensitive respiration:

A) Succnic dehydrogenase B) Malate dehydrogenase
C) Pyruvate dehydrogenase D) External NAD (P)H dehydrogenase

37. Cytorrhysis refers to:
A) collapse of cell wall due to drying
B) Breakage of water columns under tension within the xylem
C) Membrane and protein destabilization
D) Ion toxicity

38. The photoreceptor protein which regulates high fluence blue light mediated hypocotyl and stem elongation, anthocyanin biosynthesis, stomatal opening, chloroplast movement and regulation of flowering time is:
A) Phytochrome A B) Phytochrome B
C) Cryptochrome D) Phototropin

39. Synthesis of the aromatic amino acids Phenyl alanine, Tyrosine and Tryptophan occurs through:
A) Terpenoid pathway B) Malonic acid pathway
C) Shikimate pathway D) Isoprenoid pathway

40. The Acid Growth hypothesis proposed by Rayle and Cleland (1970) and Hager, Menzel and Cross (1971) explains the mechanism of action of:
A) Auxins B) Gibberellins C) Cytokinins D) Abscisic acid

41. The reducing equivalents (NADPH) for the fixation of ammonia in roots are supplied by oxidation of carbohydrates through -------pathway.
A) Glycolysis B) Citric acid cycle
C) Cyanide resistant respiration D) Oxidative pentose phosphate pathway

42. The Proton gradient in mitochondria develops across the ----.
A) Matrix B) Inner membrane
C) Inter membrane space D) Outer membrane

43. Identify the simplest and most widely used method to determine the amount of protein or nucleic acid in a given solution:
A) Spectrophotometry B) Gas liquid chromatography
C) Nuclear magnetic resonance D) Mass spectroscopy

44. Match the following phytohormones in List I with their physiological functions in List II

List I	**List II**
a. Auxins	1. Stomatal closing during water stress
b. Gibberellins	2. Counteraction of apical dominance
c. Cytokinins	3. Root initiation
d. Abscisic acid	4. Stem elongation

A) a-1, b-3, c-2, d-4 B) a-1,b-3, c-4, d-2
C) a-3, b-1, c-2, d-4 D) a-3,b-4, c-2, d-1

45. Find out the incorrect statement with respect to C_3 type of carbon assimilation:
A) The CO_2 acceptor is a five carbon aldo compound
B) The first stable compound is 3-PGA
C) Photorespiration high
D) Eighteen ATP molecules utilized for the synthesis of one molecule of glucose

46. Rice is an example for a short day plant. Read the following statements regarding flowering in rice and point out the correct ones:
I) In rice the genes Heading- date1and Heading- date 3a control flowering
II) Rice plant flowers when the night exposure is 8- 10 hrs
III) The inhibition of flowering in rice is under the control of photo conversion of phytochrome from Pr to Pfr on exposure to red light
IV) A subsequent exposure to FR light which photo converts the pigment back to the physiologically inactive Pr form, restores the flowering response

A) I and II only B) I, II and III C) I, III and IV D) III and IV only

47. Yang cycle is specifically associated with the synthesis of:
A) Ethylene from ACC
B) ABA from xanthoxal
C) Methionine from S- adenosyl 5- methyl thioadenosine
D) Gibberellins from isopentenyl pyrophosphate

48. The most abundant transport protein in the plants is:
A) SLAC1 anion transporter associated with guard cells,
B) Triose phosphate-phosphate translocator of chloroplasts
C) Cation-H^+ antiporter
D) ZIP metal transporters which mediate uptake of Fe, Mn & Zn ions into plants

49. A specific function of the essential element Potassium is:
A) translocation of carbohydrates
B) oxygen evolution during photosynthesis
C) second messenger in metabolic regulation
D) stomatal movements

50. Identity the genes in *Arabidopsis thaliana* involved in mutation of floral organs which convert petals into sepals and stamens into carpels:
A) Apetala 1 and Apetala 2 B) Apetala 3 and Pistillata
C) Apetala 3 and Agamous D) Plena and Farinelli

51. The common measurement unit of water potential is:
A) Pixel B) Pascal C) Pi D) mol

52. The shape of the H_2O molecule is based upon the concepts of hybridization

A) Pyramidal B) Tetrahedral

C) Angular or bent D) Linear

53. How many hydrogen bonds are formed by the following DNA sequence?
5'-CGATCCTAAGGTT-3'

A) 16 B) 18 C) 21 D) 32

54. The major precursor for the biosynthesis of glucose in gluconeogenesis is

A) Propionate B) glucogenic amino acids

C) Pyruvate D) malate

55. Which amino acid can adopt phi and psi angles in all four quadrants of the Ramachandran plot?

A) alanine B) Glycine C) Lysine D) Aspartic acid

56. Identify the Omega- 3 family of fatty acid from the following

A) Linoleic acid B) Gamma –Linoleic acid

C) Arachidonic acid D) Docosahexaenoic acid

57. Match the following

List I		List II	
a	Saturated fatty acid	1	Sterculic acid
b	Unsaturated fatty acid	2	13-methyl-tetradecanoate acid
c	Branched chain fatty acid	3	Butyric acid
d	Cyclic fatty acid	4	Oleic acid

A) a-2, b-3, c-4, d-1 B) a-4, b-3, c-2, d-1

C) a-4, b-3, c-1, d-2 D) a-3, b-4, c-2 d-1

58. What is the final product of purine degradation in mammals?

A) Guanine B) Hypoxamine C) uric acid D) None of these

59. An important feature of Vitamin B1:

A) Sunshine vitamin B) Antibiotic vitamin

C) Antiaging factor D) Antinuritic factor

60. Receptor proteins that detect molecules outside the cell and activate internal signal transduction pathways and ultimately cellular responses are called ------.

A) Serpentine receptors B) Steroid receptors

C) Adhesion receptors D) Receptor enzymes

61. In competitive inhibition

A) Both Km and Vmax increase
B) Km increases Vmax normal
C) Km decreases Vmax normal
D) KM decreases Vmax increases

62. Identify the group which contain Essential amino acids only:
i.valine, leucine, isoleucine, methionine, lysine
ii. Alanine, Proline, Glycine, serine
iii.Glutamine, Aspargine, cysteine, serine, Glycine
iv. leucine, isoleucine, methionine, lysine, phenyl alanine

A) iii, & iv B) ii & iii C) i & iii D) i & iv

63. The proteins destined to be secreted move through the secretory pathway in the Sequence
A) mitochondria → Smooth endoplasmic reticulum →Rough endoplasmic reticulum→ Golgi cisternae → Secretory vesicle→ Cell surface
B) Smooth endoplasmic reticulum →Golgi transport vesicle → Golgi cisternae → Secretory vesicle → Cell surface
C) Rough endoplasmic reticulum → Golgi transport vesicle → Golgi Cisternae→ Secretory vesicle → Cell surface
D) Rough endoplasmic reticulum → Golgi Cisternae→ Golgi transport vesicle → Secretory vesicle → Cell surface

64. Many natural resins are used as mounting media for permanent slide preparations. Select the correct statement related to natural resins:
i. Canada balsam is an oleoresin extracted from the bark of *Abiesbalsamea*
ii. Canada balsam is soluble in xylene and harden very quickly.
iii. DPX is a natural resin
iv. Canada balsam has a refractive index of 1.54

A) i & iv B) ii & iii C) i & iii D) i & ii

65. Which of the following plant cells undergo programmed cell death to become functional?
A) Root cap cell B) Xylem vessel C) Guard cell D) Sieve tube

66. Which of the following provides morphological evidence of genetic recombination during meiosis?
A) Synapsis B) Chaismata
C) Terminalization D) Bivalent formation

67. According to the pressure flow hypothesis proposed by Ernst Munch

photosynthate movement from source to sink is driven by

A) Transpiration pull B) An osmotically generated pressure gradient
C) pH gradient D) ATP- dependent pressure flow pump

68. Choose the correct sequence of DNA replication
A) Recognition of origin of initiation point→Unwindling double helix→RNA priming→Synthesis of leading and lagging strand
B) Unwindling double helix→ Recognition of origin of initiation point→ RNA priming→Synthesis of leading and lagging strand
C) RNA priming→ Unwindling double helix→ Recognition of origin of initiation point→ synthesis of leading and lagging strand
D) Unwindling double helix→RNA priming→ Recognition of origin

69. The bending movement of cilia and flagella
A) are associated with microtubules and kinesins
B) are produced when dynein motors pull adjacent microtubule doublets past each other
C) involves dynein action on microfilaments
D) involves myosin action on intermediate filaments

70. Which among the following is not an example of transmembrane transport between different subcellular compartments?
A) Transport from stroma into thylakoid space
B) Transport from the cytoplasm into the lumen of the endoplasmic reticulum
C) Transport from endoplasmic reticulum into the Golgi complex
D) Transport from mitochondrial inter membrane space into the mitochondrial matrix

71. Balbiani rings occur in
A) Lamp brush chromosomes B) Polytene chromosomes
C) B chromosomes D) Autosomes

72. Which of the following experiments was not involved in identifying DNA as the genetic material?
A) Luria–Delbruck experiment
B) Experiment of Avery, Macleod and McCarthy
C) Griffith's experiment
D) Hershey-Chase experiment

73. Find out the characteristic specific to a composite transposon:
A) It can cause sequence changes within a genome by the movement to a new site
B) Its transposition may have direct effects on gene expression
C) It carries markers such as drug resistance in the central region
D) It has inverted terminal repeats

74. What is true about telomerase enzyme?

A) Telomeres are synthesized by telomerase enzyme
B) Telomerase is a ribonucleoprotein enzyme
C) In the absence of telomerase telomeres shorten during each cell division
D) All the above

75. Which of the following is true about RNA polymerases in eukaryotes?
A) RNA polymerase I produces rRNA, RNA polymerase II produces hnRNA and RNA polymerase III produces tRNA and other small RNAs
B) RNA polymerase I produces rRNA, RNA polymerase II produces and processes mRNA and RNA polymerase III produces tRNA
C) RNA polymerase I produces rRNA, RNA polymerase II produces hnRNA and RNA polymerase III produces only tRNA.
D) RNA polymerase I produces mRNA, RNA polymerase II produces tRNA and RNA polymerase III produces rRNA

76. Which of the following is not a DNA binding protein motif?
A) Copper finger motif B) Helix-turn-helix
C) Helix-loop-helix D) Leucine zippers

77. Which of the following is not a process in the processing of hnRNA?
A) Addition of methylated cap at the 5' end
B) RNA splicing
C) Polyadenylation of 3' end
D) Hammerhead formation

78. Identify the correct general features of genetic code:
A) The code is triplet, degenerate, nonoverlapping, commaless, ambiguous and universal
B) The code is triplet, degenerate, nonoverlapping, commaless, non-ambiguous and universal
C) The code is triplet, non-degenerate, non-overlapping, commaless, ambiguous and universal
D) The code is triplet, degenerate, overlapping, commaless, non-ambiguous and universal

79. The lac operon has three structural genes z, y and a. Which of the following is not true about them?
A) Gene lac Z codes for the enzyme β Galactosidase
B) Gene lac Y codes for the enzyme β Galactose permease
C) Gene lac A codes for the enzyme β Galactose transacetylase
D) Gene lac Z codes for the enzyme α Galactosidase

80. In RNA silencing

A) dsRNA inhibits expression of a gene
B) hnRNA inhibits expression of a gene
C) snRNA inhibits expression of a gene
D) ssRNA inhibits expression of a gene

81. Polydactyly in humans is produced by a dominant gene P. Consider the following statements and find which is **not** true.
A) Some heterozygous Pp individuals are not polydactylous
B) In the same person polydactyly is expressed differently in hands and feet
C) Polydactyly has 100% penetrance
D) Polydactyly has variable expressivity

82. Besides monohybrid crosses and dihybrid crosses Mendel performed test crosses also. A test cross is the:
A) mating of an incompletely known genotype to a genotype which is homozygous recessive at all the loci under consideration
B) mating of an incompletely known genotype to a genotype which should be completely homozygous recessive.
C) mating of an incompletely known genotype to a genotype which is completely homozygous dominant
D) mating of an incompletely known genotype to any one of the parents

83. Map distance between genes a and b is 20 while distance between a and c is 8 map units. Genes c and b are 12 map units apart. Then which of the following statement is true?
A) Total length of the genetic map is 20 map units
B) Total length of the genetic map is 28 map units
C) The gene sequence is acb
D) A and C are true

84. Gene pool is:
A) The hypothetical pool of all the alleles of all the loci in the gametes produced by a Mendelian population from which the next generation will arise
B) Pool of all the alleles of all the loci in all the individuals of a species
C) Pool of all the alleles of all the loci in a Mendelian population which are completely transmitted to the next generation
D) Pool of all the alleles of all the loci in all the individuals of a species which are transmitted to the next generation

85. A random mating population of 1000 individuals has 960 individuals of dominant phenotype with respect to a diallelic Mendelian locus with complete dominance. What is the frequency of the recessive allele of the locus in the population?
A) 0.8 B) 0.4 C) 0.2 D) 0.02

86. Live attenuated vaccines contain:

A) A weakened form of the germ that causes a disease
B) The killed version of the germ that causes a disease
C) Specific pieces of the germ — like its protein, sugar, or capsid
D) A toxin made by the germ that causes a disease.

87. The mode of energy flow in the eco system is -----.
A) Unidirectional B) Multidirectional
C) Bidirectional D) Circular

88. The correct sequence of Sewage treatment process is:
A) Chlorination→aeration→release into natural waters
B) Particulate settling→aeration→break down of organic matter→chlorination→reverse osmosis→release into natural water
C) Break down of organic matter→aeration→release into natural waters
D) Chlorination→ break down of organic matter→ aeration→ Particulate settling→ release into natural waters

89. Identify the ozone-depleting substances (ODSs) from the following:
A) PAN B) SO_2
C) Chlorofluro carbon D) None of these

90. Species that occur in different geographical regions separated by barriers are called
A) Allopatric B) Sympatric C) Peripatric D) Sibling

91. Author of *Ecology, Community and Lifestyle*:
A) Aldo Leopold B) Rachel Carson
C) James Lovelock D) Arne Naess

92. Which of the following methods is most efficient in converting polluted water into drinking water?
A) Bioremediation B) Reverse osmosis
C) Osmosis D) Chlorination

93. Identify the bio indicator of SO_2 pollution from the following:
A) Orchids B) Water hyacinth
C) Lichen D) *Aloe vera*

94. What is meant by alpha diversity?
A) The diversity within a particular area or ecosystem
B) A comparison of diversity between ecosystems
C) Geographic-scale species diversity
D) Global species diversity

95. Which of the following radioactive isotope can cause bone cancer?
A) Cobalt-60 B) Radium-226
C) Thorium-232 D) Strontium-90

96. Which of the following is **not** true about CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora)?

A) CITES is an international agreement between governments
B) CITES was drafted as a result of a resolution adopted in 1963 at a meeting of members of IUCN
C) On 1 July 1975 CITES entered in force
D) CITES has been among the conservation agreements with the lowest membership

97. Which is key characteristic of organic farming?

A) Protecting the long term fertility of soils by maintaining organic matter levels
B) Nitrogen self-sufficiency through the use of biological nitrogen fixation
C) Weed, disease and pest control relying primarily on crop rotation and natural predators
D) All the above

98. Biogas is:

A) Pure methane
B) Methane and carbon dioxide
C) A mixture of gases containing mainly methane and carbon dioxide
D) None of the above

99. Which of the following is **not** a plant commonly found in the tropical evergreen forests of Malabar?

A) *Dipterocarpus indicus* B) *Hopea parviflora*
C) *Vateria indica* D) *Rhododendron nilgiricum*

100. Which of the following cannot be considered as a palaeoendemic?

A) *Ginkgo biloba* (restricted to China and Japan)
B) *Sequoia sempervirens* (confined to coastal valleys of California, U.S.A.)
C) *Metasequoia* (Confined to Single valley in China)
D) *Bombax malabarica* (Bombacaceae)

101. According to the Big-bang theory present universe originated about -----.

A) 13.7 billion years ago B) 4.5 billion years ago
C) 4.6 billion years ago D) 13.7 trillion years ago

102. A book written by Alfred Russel Wallace:

A) *The Descent of Man, and Selection in Relation to Sex*
B) *The Malay Archipelago*
C) *The Expression of the Emotions in Man and Animals*
D) *On the Origin of Species*

103. Which of the following uses the mutation rate of biomolecules to deduce the time in prehistory when two or more life forms diverged?

A) Neutral theory of molecular evolution
B) Molecular clock hypothesis
C) Concerted evolution
D) C-value paradox

104. Which is the true statement about DNA sequencing techniques?
A) The first-generation methods enabled sequencing of clonal DNA populations
B) The second-generation massively increased throughput by parallelizing many reactions
C) The third-generation methods allow direct sequencing of single DNA molecules
D) All the above

105. Haploid produced from a diploid species (2n=2x)

A) Mono haploid B) Dihaploid
C) Trihaploid D) Doubled haploid

106. The most abundant genetic diversity in the genomes is revealed by:
A) RFLP B) RAPD C) AFLP D) SNP

107. The GM crop Golden Rice was genetically modified to produce almost 20 times more beta-carotene. The foreign gene for beta-carotene accumulation were derived from:
A) the daffodil *Narcissus pseudonarcissus* and the bacterium *Erwinia uredovora*
B) carrot *Daucus carota*
C) carrot *Daucus carota* and the bacterium *Erwinia uredovora*
D) the bacterium *Erwinia uredovora*

108. Select the correct statement regarding the peptides in the Ramachandran Plot:
A) The sequence of the peptide can be deducted
B) It is not possible to conclude whether a peptide adopts entirely helix or entirely sheet conformation
C) Peptides that are unstructured will have all the backbone dihedral angles in th disallowed regions
D) The occurrence of a beta-turn conformation in a peptide can be deducted.

109. In pruning care should be taken to avoid
A) Cutting at internodes B) Cutting in dry season
C) Cutting in flowering season D) All the above

110. What is a terrarium?
A) A miniature garden grown in glass vessels, bottles and dishes
B) A garden in the terrace
C) A method of terrace cultivation
D) All the above

111. ------ is not a practice in Bonsai Culture.
A) Tap root pruning B) Wiring
C) Frequent fertilizing D) Aging

112. According to Vavilov's Centers of Origin concept Rice, Chick pea and Coconut originated in the:
A) Asia Minor Centre B) Hindustan Centre
C) Central American Centre D) South American Centre

113. Plant Ideotype is an ideal model plant type. Identify the feature of ideotype breeding
A) The breeder must define the ideotype to be developed:
B) Yield is not the basis of selection
C) It may involve introgression of desirable genes from unimproved gene pool
D) All the above

114. If disease resistance in a crop is pathotype-specific and controlled by major genes it is called:
A) Vertical resistance B) Horizontal resistance
C) Tolerance D) None of the above

115. Which of the following is a disease caused by an alga?
A) False smut of paddy B) Red rust of tea
C) Coffee rust D) Yellow vein mosaic of ladies finger

116. Phytosanitary certificate is associated with:
A) Seed certification B) Glass house cultivation
C) Plant quarantine D) Animal quarantine

117. The mean, median and mode are same in:
A) Right skewed distribution B) Left skewed distribution
C) Normal distribution D) None of the above

118. The electron optics involves:
A) Glass lenses B) Quartz lenses
C) Diamond lenses D) Magnetic lenses

119. Which of the following cell cycle checkpoints is mainly associated with DNA damage and chromosome duplication?
A) Phase G1 B) Phase G2 C) Phase G0 D) Phase M

120. Genome annotation is:
A) The process of identifying the locations of *genes* and all of the coding regions in a genome and determining their function.
B) An explanation of the context of the specific genome sequencing
C) An aspect of structural genomics
D) An aspect of pharmacogenomics