1. The National Botanical Research Institute is located at

   (A) Dehradun (B) Gangtok
   (C) Kolkatta (D) Lucknow

2. Which among the following is considered as demerit of 'Engler and Prantl' system of classification?

   (A) Gymnosperms are part of dicotyledons
   (B) Gymnosperms are part of monocotyledons
   (C) Dicotyledons are placed before the monocotyledons
   (D) Dicotyledons are placed after the monocotyledons

3. A pendulous type of inflorescence

   (A) Catkin (B) Capitulum
   (C) Spike (D) Umbel

4. Atropine is obtained from the plant

   (A) Belladona (B) Neem
   (C) Periwinkle (D) Rauwolfia

5. Datura belongs to family

   (A) Paplionaceae (B) Malvaceae
   (C) Solanaceae (D) Asteraceae

6. Largest dicot family

   (A) Fabaceae (B) Malvaceae
   (C) Solanaceae (D) Asteraceae

7. Nodulated roots are characteristic of the family

   (A) Fabaceae (B) Lamiaceae
   (C) Orchidaceae (D) Poaceae

8. Which of the following are used as fodder?

   (A) *Melilotus indica* (B) *Medicago sativa*
   (C) *Trifolium alexandium* (D) All of the above

9. The system of classification provided by Whittekar is

(A) Natural classification (B) Artificial classification
(C) Five Kingdom classification (D) Three domain classification

10. Which of the following is NOT a gaseous type of cycle?

(A) Carbon cycle (B) Nitrogen cycle
(C) Phosphorus cycle (D) None of the above

11. In lichens sexual reproduction is performed by

(A) Only algae
(B) Only fungi
(C) Both algae and fungi
(D) No sexual reproduction takes place

12. Who proposed three domain classification?

(A) Bentham and Hooker (B) Takhtajan
(C) Carl Woese (D) Carl Linnaeus

13. Which of the following ferns is used as biofertilizer?

(A) *Marsilea* (B) *Equisetum*
(C) *Azolla* (D) *Selaginella*

14. Which of the following gene is used in the development of Bt Cotton?

(A) ERA1 (B) CRY1
(C) Barnase and Barnstar (D) HKT2

15. The square which shows the genetic make-up of F1 and F2 individuals from the parents is

(A) Punnet Square (B) Net Square
(C) Box Square (D) Poonit Square

16. What percentage of progeny will be diseased if both the parents are heterozygous for sickle cell anemia gene?

(A) 25% (B) 50%
(C) 75% (D) 100%

17. Chromosomal theory of inheritance was proposed by

(A) Watson and Crick
(B) Bateson and Punnet
(C) Sutton and Boveri
(D) Levin and Chargaff

18. Match the terms in column I to their descriptions in column II and choose the correct answer

Column I	Column II
(a) Dominance	(i) In heterzygous condition both the alleles expresses themselves fully
(b) Co-dominance	(ii) Many genes govern a single character
(c) Pleiotropy	(iii) In heterzygous condition only the dominant allele expresses itself
(d) Polygenic inheritance	(iv) A single gene influences many characters

(A) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)
(B) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)
(C) (a)-(iii), (b)-(ii), (c)-(i), (d)-(iv)
(D) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

19. Which of the following nitrogeneous base is not present in DNA?

(A) Adenine
(B) Uracil
(C) Cytosine
(D) Thymine

20. Which of the following RNA is involved in the synthesis of protein?

(A) SnRNA
(B) rRNA
(C) miRNA
(D) pRNA

21. Which of the following functions of DNA is essential for evolution?

(A) Replication
(B) Translation
(C) Transcription
(D) Mutation

22. Big holes in Swiss cheese are made by

(A) A bacterium that produces large amount of carbon dioxide gas
(B) A bacterium that produces large amounts of methane gas
(C) Mechanically by machines
(D) A metabolically active fungus that releases gases

23. When milk gets converted to curd by lactic acid bacteria it increase the concentration of this vitamin?

(A) Vitamin D
(B) Vitamin C
(C) Vitamin B_{12}
(D) Vitamin A

24. *Trichoderma* is a fungus useful for

(A) Indicating high levels of pollution
(B) Use as biological control of plant diseses
(C) Producing wide spectrum antibiotics
(D) Killing insects

25. Replication takes place inside

(A) Nucleus
(B) Cytoplasm
(C) Nucleolus
(D) Endoplasmic reticulum

26. Molecular clocks are based on the assumption that

(A) Mutations occur at a constant rate over time
(B) DNA replication is error-prone
(C) Genetic drift is the primary driver of evolution
(D) Evolution occurs only in protein-coding genes

27. Which of the aminoacid is correctly matched to its description?

(A) Glutamine: Contains a hydroxyl group in its side chain
(B) Serine: Can form disulphide bonds
(C) Cysteine: contains smallest side chain
(D) Isoleucine: Almost always found inside the center of the proteins

28. Eubacteria is referred to as

(A) Fungi
(B) Archaea
(C) Prokaryotes
(D) Eukaryotes

29. If the ratio of the number of non-synonymous to synonymous substitutions per site in protein coding gene is greater than one, it is an evidence of selection that is

(A) Positive
(B) Negative
(C) Neutral
(D) Random

30. Which is a nitrogenous base with the largest quantity in the cell?

(A) Guanine (B) Adenine
(C) Cytosine (D) Thymine

31. Adenine is a component of both DNA and RNA. In RNA, through hydrogen bonding, adenine pairs with which other nitrogenous base?

(A) Thymine (B) Uracil
(C) Cytosine (D) Guanine

32. How does gene duplication and divergence contribute to the evolution of biological diversity?

(A) It allows the development of new functions and adaptations
(B) It leads to the loss of genetic information
(C) It only occurs in eukaryotic organisms
(D) It creates identical copies of genes, enhancing stability

33. One copy of a gene is less under selective pressure when it is duplicated, enabling it to acquire mutations and perhaps even take on a new role. This process is an illustration of :

(A) Genetic drift (B) Homologous recombination
(C) Gene duplication and divergence (D) Molecular mimicry

34. The most commonly used molecular tool for phylogenetic analysis involves sequencing of :

(A) Mitochondrial DNA (B) Mitochondrial RNA
(C) Ribosomal RNA (D) Nuclear DNA

35. Evolution of multi-gene family occurs by

(A) Only one gene duplication
(B) Both duplication and unequal crossing over
(C) Random mutations
(D) Only unequal crossing over

36. Who proposed the neutrality theory of molecular evolution?

(A) Motoo Kimura (B) Theodosius Dobzhansky
(C) Frederick Sanger (D) Stephen Gould

37. Which species concept utilizes morphological molecular characters to distinguish between different kinds of species?

(A) Phylogenetic
(B) Evolutionary
(C) Ecological
(D) Biological

38. Which of the following is incorrect about haplontic life cycle?

(A) Gametophytes are the dominant phase in this life cycle
(B) Sporophytes are free-living
(C) Spores are haploid in nature and form gametophyte by mitotic division
(D) Zygote acts as sporophyte

39. Which of the following is NOT an example of CAM plants?

(A) Agave
(B) Moringa
(C) Pineapple
(D) Rice

40. What is special leaf anatomy of C4 plants known as?

(A) CAM anatomy
(B) Mesophyll anatomy
(C) Kranz anatomy
(D) PEP anatomy

41. Which of the following is common to both C3 and C4 plants?

(A) OAA
(B) Calvin cycle
(C) Photorespiration
(D) PGA

42. Which among the following is NOT true about vascular bundle in monocot stem?

(A) There is more than one bundle present
(B) Vascular bundles are open type
(C) They are surrounded by a sclerenchymatous sheath
(D) They are scattered

43. Cell wall of the true fungi (eumycota) is composed of

(A) Cellulose
(B) Cellulose + Chitin
(C) Chitin + Glucans + Glycoproteins
(D) Peptidoglycans

44. Genetic material in TMV is

(A) dsRNA (B) ssRNA
(C) dsDNA (D) ssDNA

45. Dolipore septum is found in

(A) Basidiomycetes (B) Deuteromycetes
(C) Ascomycetes (D) Zygomycetes

46. The technique used to measure the size of microspores, or similar small entities, by using the microscopes is

(A) Microtomy (B) Micrometry
(C) Sporometry (D) Spirometry

47. Hyperplasia is a condition that involves

(A) Increased cell division (B) Cell enlargement
(C) Decreased cell division (D) Programmed Cell Death

48. Example of internally seed borne fungal disease is

(A) Smut of Jowar (B) Smut of Ragi
(C) Loose Smut of wheat (D) Red rot of sugarcane

49. In slime moulds, the naked multinucleate mass of protoplasm is called

(A) Thallus (B) Plasmodium
(C) Mycelium (D) Hyphae

50. The organisms which derive their nutrients from dead organic matter are called

(A) Organophytes (B) Saprophytes
(C) Heterophytes (D) Neutrophytes

51. Nucleus of bacterial cell is called

(A) Nucein (B) Nucleolus
(C) Nucleoid (D) Pseudokaryon

52. The Bordeaux mixture was used for the first time for

(A) Powdery mildew of grape vines (B) Downey mildew of grape vines
(C) Damping of pea (D) Rust of wheat

53. In bacteria, genetic variability can be caused by

(A) Conjugation (B) Transformation
(C) Transduction (D) All of the above

54. VAM involves

(A) Bacteria (B) Algae
(C) Fungi (D) Virus

55. Mad cow disease is caused by

(A) Cows (B) Bacteria
(C) Prions (D) Citrons

56. The scientist credited with most of the work on rust diseases in India

(A) EJ Butler (B) KC Mehta
(C) Birbal Sahni (D) Salim Ali

57. One of the following is used as biocontrol agent

(A) Clostridium indicum (B) Pseudomonas florescence
(C) Bacillus subtilis (D) Albugo candida

58. Antibiotic that is widely used against plant pathogenic bacteria

(A) Streptomycin (B) Griseofulvin
(C) Erythromycin (D) None of the above

59. The fungus which is often used in genetic experiments

(A) *Aspergillus* (B) *Rhizopus*
(C) *Mucor* (D) *Neurospora*

60. When a fungus requires two hosts to complete its life cycle it is referred to as?

(A) Homothallic (B) Heterothallic
(C) Autoecious (D) Heteroecious

61. Mistletoe is a parasitic plant that attaches to the _____ of other plants.

(A) Root (B) Stem
(C) Seed (D) Leaf

62. Tulip festival celebrated here attracts lakhs of tourists every year

(A) Gangtok (B) Itanagar
(C) Srinagar (D) Delhi

63. Which city hosted the United Nations Conference on Environment and Development (UNCED) where the Convention on Biological Diversity (CBD) was opened for signature in 1992?

(A) New York City, USA (B) New Delhi, India
(C) Geneva, Switzerland (D) Rio de Janeiro, Brazil

64. The secondary tissue that gives rise to the bark of a tree is

(A) Xylem (B) Phloem
(C) Cork cambium (D) Vascular cambium

65. The secondary growth in plants occurs due to the activity of

(A) Apical meristem (B) Lateral meristem
(C) Intercalary meristem (D) Epidermal cells

66. The vascular cambium gives rise to which two types of secondary tissues?

(A) Epidermis and cortex (B) Parenchyma and collenchyma
(C) Cork and pith (D) Xylem and phloem

67. In which part of a woody plant would you find the periderm?

(A) Primary root (B) Young stem
(C) Leaf petiole (D) Apical system

68. Which tissue system plays a crucial role in wound healing and sealing off injured areas in plants?

(A) Vascular tissue (B) Ground tissue
(C) Meristematic tissue (D) Dermal tissue

69. The process of differentiation involves the activation of specific

(A) Genes (B) Hormones
(C) Enzymes (D) Chloroplast

70. The pericycle, a tissue found in the roots is responsible for the formation of

(A) Lateral roots (B) Root hairs
(C) Stomata (D) Epidermis

71. Which of the following types of cells are associated with radial walls and provide mechanical support to growing plant parts?

(A) Sclereids (B) Tracheids
(C) Vessel elements (D) Collenchyma cells

72. Most conspicuous annual rings form in which type of plants

(A) Temperate evergreen plants (B) Tropical deciduous plants
(C) Temperate deciduous plants (D) Tropical evergreen plants

73. Bottle cork is obtained from which tree

(A) *Betula vulgaris* (B) *Eucalyptus regnans*
(C) *Calotropis procera* (D) *Quercus suber*

74. In which of the following stems, lateral meristem is absent?

(A) Palm (B) *Bougainvillea*
(C) *Boerhavia* (D) *Mirabilis*

75. Abnormal secondary growth occurs in

(A) *Cucurbita* sp. (B) *Aster* sp.
(C) *Hordeum* sp. (D) *Dracaena* sp.

76. Consider the following statements in relation to 'torrefaction technology'

(a) It is the process of converting biomass into coal like material.

(b) It involves heating the biomass in low or in the absence of oxygen.

Choose the correct answer

(A) (a) only (B) (b) only

(C) Both (a) and (b) (D) None of the above

77. Which cellular organelle is thought to have originated from an ancient symbiotic relationship between a eukaryotic and a photosynthetic bacterium?

(A) Nucleus (B) Chloroplast

(C) Lysosome (D) Golgi apparatus

78. Which phenomenon allows a single gene to code for multiple protein isoforms by rearranging its exons during mRNA processing?

(A) Transcription (B) Translation

(C) Alternative splicing (D) Replication

79. What is the name of the protective structure that caps the ends of eukaryotic chromosomes, preventing their deterioration and contributing to cellular aging?

(A) Centriole (B) Nucleosome

(C) Telomere (D) Chromatid

80. Which phenomenon allows certain cells to differentiate and specialize into various cell types, even though they possess the same genetic information?

(A) Meiosis (B) Mitosis

(C) Apoptosis (D) Cell signalling

81. Which of the following are not found in plant cells?

(A) Mitochondria (B) Glyoxysomes

(C) Centrosomes (D) Golgi apparatus

82. Which of the following microscopy techniques relies on the specimen interfering with the wavelength of light to produce a high contrast image without the need for dyes or any damage to the sample?

(A) Conventional bright field light microscopy
(B) Phase contrast microscopy
(C) Electron microscopy
(D) Fluorescence microscopy

83. Match the marker enzyme with its appropriate subcellular fraction

	Marker enzyme		Subcellular fraction
(a)	Cytoplasm	(i)	Galactosyl Transferase
(b)	Peroxisome	(ii)	Glucose-6-phosphatase
(c)	Microsome	(iii)	Catalase
(d)	Golgi Apparatus	(iv)	Lactate dehydrogenase

Choose the correct answer

(A) (a)-(iv), (b)-(ii), (c)-(iii), (d)-(i)
(B) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)
(C) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)
(D) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

84. With respect to their surrounding membrane system, which of the following is the odd one out?

(A) Nucleus
(B) Endoplasmic reticulum
(C) Mitochondria
(D) Chloroplast

85. Transcription in bacteria is performed by which of the following enzymes?

(A) RNA-dependent RNA polymerase
(B) RNA-dependent DNA polymerase
(C) DNA-dependent RNA polymerase
(D) DNA-dependent DNA polymerase

86. Within the nucleus, the chromosomes are believed to occupy discrete territories. Which among the following promotes this segregation?

(A) Nuclear lamina
(B) Nuclear pore complexes
(C) Nuclear matrix
(D) Intermediate fibres

87. Which of the following is NOT a member of the GERL system of the cell?

(A) Golgi apparatus
(B) Ribosomes
(C) Lysosomes
(D) Endoplasmic reticulum

88. Which of the following statements concerning plant vacuoles are INCORRECT?

(A) The fluid contained within the central vacuole of mature plant cells is called the cell sap

(B) The membrane surrounding the central vacuole of the plant cell is known as tonoplast

(C) The turgor pressure within a mature plant cell is maintained by the fluid of cytosol

(D) Components of the central vacuole of a mature plant cell are synthesised in the RER and Golgi apparatus

89. Which of the following groups of proteins get associated with the kinases and are synthesised and degraded at specific points during the cell cycle?

(A) Cyclins (B) Cyclin dependent kinases

(C) Growth factor (D) Survival factor

90. Caspases are involved in which of the following processes?

(A) Atrophy (B) Necrosis

(C) Apoptosis (D) Accidental cell death

91. How does a somatic cell that has just completed the S phase of the cell cycle differ from the gamete of the same species with regard to its number of chromosomes and amount of DNA?

(A) It has same number of chromosomes but twice the amount of DNA

(B) It has twice the number of chromosomes and twice the amount of DNA

(C) It has twice the number of chromosomes and four times the amount of DNA

(D) It has four times the number of chromosomes and twice the amount of DNA

92. Following scientists propounded the cell theory

(A) Watson and Crick (B) Hooke and Brown

(C) Schwann and Schleiden (D) Darwin and Wallace

93. This condition is essential for a population to be in the Hardy-Weinberg equilibrium

(A) Random mating (B) No mutation

(C) Large population (D) All of the above

94. Which hormone is responsible for the growth of the shoot tip and inhibition of lateral bud growth?

(A) Gibberellin
(B) Auxin
(C) Abscisic acid
(D) Cytokinin

95. In some plant species, seeds require a specific period of cold temperature to break dormancy and germinate. This phenomenon is known as

(A) Scarification
(B) Imbibition
(C) Stratification
(D) Vernalisation

96. Which hormone is responsible for the promotion of fruit ripening and seed germination, as well as the inhibition of bud growth?

(A) Ethylene
(B) Auxin
(C) Abscisic acid
(D) Gibberellin

97. The method of DNA barcoding involves the sequencing of a specific gene region that is highly conserved across species. Which gene is commonly used for DNA barcoding in plants?

(A) rbcL
(B) ITS
(C) COX1
(D) mtDNA

98. Which of the following is NOT a correct pair?

(A) Alcohol - Nitrogenase
(B) Detergents - Lipase
(C) Textile - Amylase
(D) Fruit juice - Pectinase

99. A few normal tomato seedlings were placed in a dark room. After a few days, they were found to have turned white-coloured like albinos. Which of the following terms can be used to describe them?

(A) Defoilated
(B) Etiolated
(C) Embolised
(D) Mutated

100. Gibberellins can facilitate seed germination due to their influence on

(A) Synthesis of abscisic acid
(B) Rate of cell division
(C) Production of hydrolyzing enzymes
(D) Absorption of water through the hard seed coat

101. The proteinaceous part of maize endosperm is

(A) Peripheral layer (B) Scutellum

(C) Apophysis (D) Aleurone layer

102. The protective covering over radical during the germination of seeds is

(A) Coleoptile (B) Epithelium

(C) Coleorhiza (D) Suspensor

103. The scientist who deciphered the structure of nucleotide and also propounded the 'tetranucleotide hypothesis'

(A) Albrecht Kossel (B) Phoebus Levene

(C) Erwin Chargaff (D) Rosalind Franklin

104. Which of these compounds can induce seed dormancy?

(A) Abscisic acid (B) Ethylene

(C) Potassium nitrate (D) Gibberellins

105. In C3 and C4 plants, primary carboxylation takes place with the help of

(A) PEP carboxylase and pyruvate carboxylase

(B) RuBP carboxylase and PEP carboxylase

(C) PEP carboxylase and RuBP carboxylase

(D) RuBP carboxylase and pyruvate carboxylase

106. Peroxisomes are involved in which type of reactions pertaining especially to plants?

(A) Calvin Cycle (B) Glycolytic cycle

(C) Glyoxylate cycle (D) Bacterial photosynthesis

107. Macromolecule chitin is

(A) Phosphorus containing polysaccharide

(B) Nitrogen containing polysaccharide

(C) Sulfur containing polysaccharide

(D) Simple polysaccharide

108. The smallest unit of genetic material which produces a phenotypic effect on mutation is

(A) Muton (B) Gene
(C) Recon (D) Nucleic acid

109. When the activity of one gene is suppressed by the activity of a non-allelic gene, it is known as

(A) Pseudo dominance (B) Hypostasis
(C) Epistatis (D) Incomplete dominance

110. If a plant with a genotype AaBb is self-fertilized and A and B are not linked, the probability of getting AABB genotype will be

(A) 1/2 (B) 1/4
(C) 1/16 (D) 1/8

111. The volatile chemical produced by the actinomycetes which gives characteristic odour to earth, especially after the rains is

(A) Actinomin (B) Geosmin
(C) Weather bloom (D) Actin Dust

112. Which term represents the pair of contrasting characters?

(A) Heterozygous (B) Homozygous
(C) Codominant genes (D) Allelomorphs

113. The crossing of F1 to either of a parent is known as

(A) Test cross (B) F1 cross
(C) Back cross (D) None of the above

114. An exception to Mendel’s law is

(A) Independent assortment (B) Dominance
(C) Linkage (D) Purity of gametes

115. Mendel's findings were NOT rediscovered by which of the following?

(A) De Vries (B) Morgan
(C) Correns (D) Tschermark

116. Which of the following is a polycarpic plant?

(A) Cauliflower (B) Cabbage

(C) Apple (D) Carrot

117. Statement A : Long day plants require less exposure to light than the threshold period.

Statement B : Short day plants require more exposure to light than the threshold period.

(A) Both the statements are true but Statement B is not the correct explanation of statement A

(B) Statement A is true but statement B is false

(C) Statement B is true but statement A is false

(D) Both the statements are false

118. The site of perception of light/dark duration is

(A) Apical bud (B) Shoot apex

(C) Root apex (D) Leaves

119. Which of the following elements are required for synthesis of chlorophyll?

(A) Fe and Mg (B) Fe and Mn

(C) Co and Mg (D) Ca and Mg

120. This element is important component of the enzyme Nitrate reductase

(A) Mg (B) Mo

(C) Mn (D) Cu

121. Which of the following elements is essential for pollen germination?

(A) K (B) B

(C) I (D) N

122. Which of the following process is responsible for guttation in plants?

(A) Osmosis (B) Transpiration
(C) Photosynthesis (D) Root pressure

123. The best light for stomatal opening is

(A) Red (B) Green
(C) Blue (D) Yellow

124. Stomata open in night in the following plants

(A) Xerophytes (B) Mesophytes
(C) Succulents (D) Both (A) and (C) are correct

125. Biodiversity hotspots are

(A) Regions having very high temperature leading to loss of biodiversity
(B) Regions of great endemic biodiversity
(C) Regions having biodiversity specific to extreme hot conditions
(D) None of the above

126. Which of the following enzymes are NOT proteinaceous in nature?

(A) Isozyme (B) Ribozyme
(C) RuBP (D) Both (A) and (B)

127. Wavelength of light (in nm) at which photosynthetic activity is possible?

(A) 400-700 (B) 300-350
(C) 700-750 (D) 640-650

128. Which of the following are part of photosynthetic process?

(A) Blackman and Hill reactions (B) Kreb cycle
(C) E.M.P cycle (D) All of the above

129. Dwarfness in plants can be reversed by application of

(A) Auxins (B) Cytokinins

(C) Gibberellins (D) Abscisic Acid

130. Phosphorus and Nitrogen gets depleted in soil and need to be replenished by fertilizers. This is because phosphorus and nitrogen usually occur as

(A) Neutral ions

(B) Negatively charged ions

(C) Positively charged ions

(D) Ionic charge is not responsible for this depletion

131. Which of the following hormone is responsible for seed germination?

(A) Gibberellin (B) IAA

(C) 2,4-D (D) Cytokinin

132. The substrate for photorespiration is

(A) PGA (B) Phosphoglycolate

(C) 7 phospho-sedoheptulose (D) Glycine

133. 'Agent Orange' the leaf defoliator used by USA during Vietnam war was

(A) Ethylene

(B) 2,4-D and 2,4,5-T

(C) Nitric Acid

(D) 2,4,5-T, Nitric acid and ethylene

134. Greatest producer of organic matter in world are

(A) Crop plants (B) Amazon Forests

(C) Phytoplanktons of oceans (D) Terrestrial plants

135. Abscisic acid is associated with

(A) Leaf fall and seed dormancy
(B) Senescence
(C) Antagonist to GA
(D) All of the above

136. Montreal Protocol is related to

(A) Global warming
(B) Ozone gas depletion
(C) Biodiversity conservation
(D) Water pollution

137. Resupination is seen in which of the following plant family

(A) Malvaceae
(B) Cucurbitaceae
(C) Orchidaceae
(D) Fabaceae

138. In both transpiration and evaporation water is lost in the form of vapours, still the two differ as

(A) Both transpiration and evaporation are similar but the rate of water loss differs
(B) Transpiration is a physical process but evaporation is physiological process
(C) Transpiration is a physiological process but evaporation is physical process
(D) The transpiration takes place in plants but evaporation takes place in animals

139. Study of fossil plants is known as

(A) Palaeobotany
(B) Palynology
(C) Paleontology
(D) Archeology

140. Which of the following plant is known as living fossil?

(A) *Psilotum nudum*
(B) *Ginko biloba*
(C) *Riccia canaliculata*
(D) *Equisetum arvense*

141. Winged pollen grains are characteristic of

(A) *Cycas rumphii*
(B) *Gnetum gnemon*
(C) *Pinus roxburghii*
(D) *Marchantia polymorpha*

142. Iodine is obtained from members of

(A) Green algae (B) Red algae

(C) Blue green algae (D) Brown algae

143. A plant that produces spores, lacks seeds and has vascular system would be grouped among

(A) Bryophytes (B) Algae

(C) Pteridophytes (D) Gymnosperms

144. Endosperm is a product of

(A) Triple fusion

(B) Adventitious zygote

(C) Unfertilized male gamete

(D) Unfertilized female gamete

145. Microfilaments are composed of

(A) Actin (B) Tubulin

(C) Mysosin (D) Chitin

146. Chromatin refers to

(A) DNA molecule found in nucleus

(B) DNA associated with Proteins

(C) DNA associated with proteins as well as RNA

(D) RNA and DNA found in nucleus

147. The movement of leaves of Mimosa pudica is due to

(A) Chemonasty (B) Themonasty

(C) Seismonasty (D) Geonasty

148. Statement A : Phytoplanktons grow in abundance in the littoral Zone.

Statement B : Littoral zone is the open water zone and has abundant sunlight for photosynthesis.

(A) Both the statements are false

(B) Both the statements are true and Statement B is the true explanation of A

(C) Both the statements are true but Statement B is not the true explanation of A

(D) Statement A is false but statement B is true

149. Flax fibres are obtained from

(A) *Cannabis sativa* (B) *Cocos nucifera*

(C) *Crotolaria juncea* (D) *Linum usitatissimum*

150. The main enzyme involved in transcription is

(A) DNA polymerase (B) RNA polymerase

(C) DNA Ligase (D) DNA exonuclease

151. Which of the following is NOT true for Lichens?

(A) They are good indicators of air pollution

(B) Symbiotic association of algae and fungi

(C) Greatest source of Ca

(D) Are used as dyes

152. EcoRI, HindIII, Bam HI are examples of

(A) Plasmids (B) Toxins

(C) Restriction enzymes (D) Exonucleases

153. Golden rice is an example of

(A) Yellow coloured hybrid rice rich in vitamin A

(B) Genetically engineered rice

(C) Rice produced by micropropagation

(D) Naturally occurring vitamin rich rice variety growing in western ghats

154. Meristem culture helps in

(A) Developing disease resistant varieties
(B) Developing draught resistant varieties
(C) Developing virus free plants
(D) Genetically superior plants

155. Algal bloom caused due to the addition of excessive nutrients either from factories or leaching from overfertilised fields is

(A) Biomagnification (B) Eutrophication
(C) Bio-bloom (D) Algal nitrification

156. Kuno National Park that became host to the 'Project Cheetah' is situated in

(A) Gujarat (B) Maharashtra
(C) Madhya Pradesh (D) Uttar Pradesh

157. Which of the following plant family developes endosperm?

(A) Poaceae (B) Trapaceae
(C) Podostemaceae (D) Orchidaceae

158. Peat moss is obtained from

(A) *Funaria hygrometrica* (B) *Selaginella bryopteris*
(C) *Sphagnum khasianum* (D) *Solanum tuberosum*

159. Little leaf of brinjal is caused by

(A) Bacteria (B) Virus
(C) Mycoplasma (D) Nematodes

160. One of the following is not a constituent of 'Triphala' (ayurvedic medicine)

(A) *Emblica officinalis* (B) *Terminalia bellerica*
(C) *Terminalia chebula* (D) *Medicago sativa*

161. Maximum biodiversity is found in which ecosystem

(A) Temperate region (B) Tropical rainforest

(C) Arctic forests (D) Sub tropical forests

162. Leucoplasts are

(A) Red plastids (B) Green plastids

(C) Blue plastids (D) Colourless plastids

163. In which order you will perform the following steps during the preparation of herbarium

(i) Mounting

(ii) Collecting

(iii) Pressing

(iv) Filing

(v) Labelling

Choose the correct order

(A) (i), (ii), (iii), (iv), (v) (B) (ii), (i), (iii), (iv), (v)

(C) (ii), (iii), (i), (v), (iv) (D) (ii), (iii), (iv), (v), (i)

164. Members of which plant family show monoadelphous stamens are characteristic of

(A) Apocyanaceae (B) Malvaceae

(C) Liliaceae (D) Ranunculaceae

165. 'Heeng' used as condiment in indian cuisines is obtained from *Ferula asafoetida*. The plant used for this is

(A) Leaves (B) Root

(C) Buds (D) Stigma

166. Pectin found in cell wall of most plant cells is a

(A) Protein (B) Lipid

(C) Carbohydrate (D) Steroid

167. Which stain is used for observing chromosomes during mitosis and meiosis in the cell?

(A) Safranin (B) Methylene Blue

(C) Cotton Blue (D) Acetocarmine

168. Endospore formation helps to tide over unfavourable environment in

(A) Gram positive bacteria

(B) Gram negative bacteria

(C) Both Gram positive and negative bacteria

(D) Archaea

169. The main form of carbohydrate that is translocated through phloem

(A) Glucose (B) Glucose-6-phosphate

(C) Sucrose (D) Fructose

170. Which of the following terms describe a bacterium that has lost the ability to synthesize alanine?

(A) Hfr (B) f+

(C) Auxotrophic (D) Prototrophic

171. This process involves the transfer of fragments DNA molecule between two bacteria through a formation of tube

(A) Transduction (B) Transformation

(C) Translation (D) Conjugation

172. If a F^+ and F^- bacteria undergo complete conjugation, the final status of plasmid in both the bacteria will be

(A) Both will become F^+

(B) Both will become F^-

(C) F^+ will become F^- and F^- will become F^+

(D) F^+ will remain F^+ and F^- will remain F^-

173. Mitochondria and Chloroplast both are obtained from egg by the zygote. This is known as

(A) Cytoplasmic inheritance
(B) Biparental inheritance
(C) Homoplasmic inheritance
(D) Heteroplasmic inheritance

174. Which of the following is known as molecular motor?

(A) Kinesin
(B) Kinetin
(C) Keratin
(D) Lamin

175. Fluid mosaic model of plasma membrane by Singer and Nicolson does not include

(A) Phospholipid bilayer
(B) Extrinsic and intrinsic protein
(C) Lipids completely sandwiched between proteins
(D) Protein channels

176. How many of the following organelles are membranous?

Nucleus, ribosome, endoplasmic reticulum, nucleolus, centriole, golgi apparatus

(A) 6
(B) 3
(C) 4
(D) 5

177. How many of the following organelles are present in prokaryotes
Nucleus, ribosome, endoplasmic reticulum, nucleoid, mitochondria, golgi apparatus

(A) 1
(B) 2
(C) 3
(D) 0

178. What information can be obtained from interrupted mating of bacteria?

(A) DNA nucleotide sequence
(B) Order of genes on bacterial chromosome
(C) Bacterial recombination rates
(D) Plasmid homology

179. PCR amplifies DNA. What does PCR stand for

(A) Polymerase Change Reaction
(B) Polymerization Catalysing Reaction
(C) Polymerization Change Reaction
(D) Polymerase Chain Reaction

180. Which isotope was used for proving the semiconservative nature of DNA replication?

(A) Radioactive N14 isotope
(B) Heavy N15 isotope
(C) Radioactive N15 isotope
(D) Heavy N16 isotope

181. Which of the following is NOT true about Jumping genes?

(A) They are also known as Transposons
(B) They are present in human beings
(C) They are not present in prokaryotes
(D) They were discovered by Barbara McClintock

182. DNA polymerase used in PCR is isolated from

(A) Bacteriophages
(B) *Thermus aquaticus*
(C) *Saccharomyces cerevisiae*
(D) *E. coli*

183. 70S robosomes are made up of

(A) 50S and 30S subunits
(B) 40S and 30S subunits
(C) 50S and 20S subunit
(D) 60S and 10S subunit

184. Number of nuclear pores in a cell depends upon

(A) Transcriptional activity of the cell
(B) Size of the cell
(C) Hydration level of the cell
(D) DNA replication

185. *Triticum aestivum* is a

(A) Autopolyploid
(B) Allohexaploid
(C) Polyploid
(D) Diploid

186. He is father of Green Revolution in India

(A) Norman Borlaug
(B) Panchanand Maheshwari
(C) M. S. Swaminathan
(D) Birbal Sahni

187. Karyotyping is

(A) Arranging the homologous chromosomes of an individual in decreasing order of size
(B) Arranging the nuclei of cells of an organism in decreasing order of size
(C) To measure the ratio of cell to the size of nucleus
(D) To measure the size of normal nucleus with respect to size of nucleus of cancerous cells

188. Choose the INCORRECT statement with respect to Michaelis-Menten equation

(A) Michaelis Menten constant is enzyme concentration at which the enzyme reaction reaches half of its velocity (Vmax/2)
(B) Michaelis Menten constant is substrate concentration at which the enzyme reaction reaches half of its velocity (Vmax/2)
(C) Lower the Km, higher the affinity of the substrate for enzyme
(D) Vmax is reached when all the active sites of enzyme are saturated with substrate

189. Which of the following are correct with regard to competitive inhibition of enzyme?

(A) Inhibitor has similar molecular structure as of the substrate
(B) Inhibitor and substrate compete for the active site of the enzyme
(C) Binding of inhibitor to the active site decreases the rate of enzymatic reaction
(D) All of the above are correct

190. Which of the following is not a secondary messenger?

(A) cAMP
(B) AMP
(C) Diacyl glycerol
(D) Ca

191. Removal of anthers during hybridisation experiments is termed as

(A) Bagging
(B) Cybridisation
(C) Anthrinilisation
(D) Emasculation

192. Embryosac of angiosperms is made up of

(A) 8 cells
(B) 7 cells and 7 nuclei
(C) 7 cells and 8 nuclei
(D) Single cell 8 nuclei

193. Kinases are a group of enzymes

(A) That help in intramolecular rearrangement of molecules
(B) That make the molecule mobile by attaching it to kinesin protein
(C) That transfer the energy rich phosphate group to substrate molecule
(D) That attach water molecules to the substrate molecule

194. The mechanism of action of penicillin is by

(A) Inhibiting the RNA Polymerase thus inhibiting protein synthesis
(B) Inhibiting hydrolysis of peptidoglycan thus inhibiting transport across membrane
(C) Inhibiting TATA binding proteins and thus inhibiting protein synthesis
(D) Inhibiting transpeptidase thus inhibiting cell wall formation

195. The correct sequence of stages observed during Prophase I of meiosis is

(A) Leptotene, Zygotene, pachytene, diakinesis, diplotene
(B) Zygotene, Leptotene, Pachytene, diplotene, diakinesis
(C) Leptotene, Pachytene, Zygotene, diakinesis, diplotene
(D) Leptotene, Zygotene, Pachytene, diplotene, diakinesis

196. The histone proteins are rich in

(A) Negatively charged amino acids

(B) Positively charged amino acids

(C) Neutral aminoacids

(D) Aromatic Amino acids

197. Enzymes involved in RNA interference are

(A) DICER and RISC

(B) Cohesin and Adhesin

(C) RNA polymerase and Cohesin

(D) DNA polymerase and Adhesin

198. Pyruvate cannot undergo

(A) Citric acid cycle

(B) Lactic acid fermentation

(C) Ethanol fermentation

(D) Glycolysis

199. DNA denaturation results in

(A) Annealing of DNA strands

(B) Seperation of DNA strands

(C) Hypochromacity

(D) Decrease in DNA content

200. *Agrobacterium tumefaciencs* is used for transformation in plant tissue culture as

(A) *Agrobacterium* is a natural pathogen of plants

(B) Its T-DNA can be manipulated to include desired gene for transformation

(C) Before transformation pathogenic portion can be deleted from T-DNA of *Agrobacterium*

(D) All of the above

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