

BOTANY

101. All unicellular plants and animals with true nucleus are included in the group
- (1) Protista
 - (2) Monera
 - (3) Protozoa
 - (4) Prokaryotes
102. Find the odd one out
- (1) Thalamiflorae
 - (2) Disciflorae
 - (3) Inferae
 - (4) Heteromerae
103. Vascular cryptogams is the term used for
- (1) Algae
 - (2) Pteridophytes
 - (3) Gymnosperms
 - (4) Angiosperms
104. The herbarium specimens are poisoned by
- (1) COCl_2
 - (2) HNO_3
 - (3) NaOH
 - (4) HgCl_2
105. According to Woese, fungi were placed in domain
- (1) Bacteria
 - (2) Archae
 - (3) Eukarya
 - (4) Plantae
106. The idea of Binomial nomenclature was given by
- (1) Carolous Linnaeus
 - (2) Casper Bauhin
 - (3) John Ray
 - (4) Theophrastus
107. Classification based on numerous precisely delimited characters of equal weight and their comparison by an explicit method of grouping and use of mathematical tools is known as :
- (1) Kinetics
 - (2) Cladistics
 - (3) Phenetics
 - (4) Biosystematics
108. Dendrogram is related to
- (1) Cladistics
 - (2) Phenetic classification
 - (3) Alpha taxonomy
 - (4) Herbarium
109. What is the importance of the date 1st May 1753 ?
- (1) ICBN was established
 - (2) *Genera Plantarum* was published
 - (3) Date of publication of *Species Plantarum*
 - (4) Hierarchical classification was established
110. The suffix – oideae is used for which taxonomic category ?
- (1) Order
 - (2) Class
 - (3) Suborder
 - (4) Sub family
111. Which is true about the paratype?
- (1) Any nomenclatural specimen cited by author
 - (2) A nomenclatural specimen to replace the holotype, when latter is misplaced
 - (3) An original material which serves as nomenclatural specimen when holotype is misplaced
 - (4) Any other specimen cited by author along with holotype
112. The number of species that are known and described, ranges between
- (1) 1.8 – 1.9 million
 - (2) 1.6 – 1.7 million
 - (3) 1.7 – 1.8 million
 - (4) 0.5 – 1.2 million
113. The scientific name ensures that each organism has
- (1) Name
 - (2) Only one name
 - (3) Scientific name
 - (4) No vernacular name
114. In binomial nomenclature what is correct for second word?
- (1) Species starting from capital letter
 - (2) Genus starting from capital letter
 - (3) Species starting from small letter
 - (4) Genus starting from small letter
115. All taxonomic categories together constitute the
- (1) Taxonomic category
 - (2) Taxonomic hierarchy
 - (3) Cladogram
 - (4) Systematic
116. Basic category in plant classification is
- (1) Variety
 - (2) Subspecies
 - (3) Species
 - (4) Genus
117. National Botanical Research Institute is situated at
- (1) Howrah
 - (2) Lucknow
 - (3) New Delhi
 - (4) Bangalore
118. Which of the following does not contain chlorophyll ?
- (1) Fungi
 - (2) Algae
 - (3) Bryophyta
 - (4) Pteridophyta

119. One of the following has correct descending sequence of hierarchy :
- (1) Class, division, order, family
 - (2) Division, class, order, family
 - (3) Order, family, class, division
 - (4) Family, order, class, division
120. Seeds are characteristically found in
- (1) Bryophyta
 - (2) Pteridophytes
 - (3) Gymnosperms
 - (4) Spermatophytes
121. The word 'systematics' was given by
- (1) C. Linnaeus
 - (2) A.P. de Candolle
 - (3) Lamarch & Triveranus
 - (4) Hugo de Vries
122. Which are non seed-bearing vascular plants ?
- (1) Bryophyte
 - (2) Pteridophytes
 - (3) Gymnosperm
 - (4) Angiosperm
123. Family is intermediate category between
- (1) Phylum & order
 - (2) Order & Tribe
 - (3) Class & Order
 - (4) Variety & form
124. Which is not the kingdom given by Copeland?
- (1) Monera
 - (2) Protista
 - (3) Metathyta
 - (4) Fungi
125. The third name in trinomial nomenclature of plant is
- (1) Variety
 - (2) Tribes
 - (3) Sub-class
 - (4) None of these
126. In the word taxonomy (taxis + nomous), what does 'nomous' mean ?
- (1) Grouping
 - (2) Arrangement
 - (3) Study
 - (4) Rule
127. Carolus Linnaeus classified cryptogams, in his sexual system of classification, in
- (1) 2 classes
 - (2) 4 classes
 - (3) 1 class
 - (4) All classes
128. The characteristics which define a family are less general than those which define a / an
- (1) Genus
 - (2) Order
 - (3) Species
 - (4) Taxon
129. The place where natural and economical collection of living plants maintained for reference is known as
- (1) Museums
 - (2) Zoological parks
 - (3) Botanical garden
 - (4) National parks
130. The sequencing of DNA and chemical nature of protein have been used as the basis of classification by
- (1) Cytotaxonomist
 - (2) Karyotaxonomist
 - (3) Chemotaxonomist
 - (4) α -taxonomist
131. Two related species having distinct non-overlapping geographical area are
- (1) Sympatic species
 - (2) Allopatric species
 - (3) Taxonomic species
 - (4) Biological species
132. In taxonomic classification, the correct sequence is
- (1) order-class-family-tribe-genus-species
 - (2) class-order-family-tribe-genus-species
 - (3) class-order-tribe-family-genus-species
 - (4) order-family-class-tribes-genus-species
133. Least similar organisms will be found in
- (1) class
 - (2) genus
 - (3) family
 - (4) species
134. In Botanical nomenclature, if the name of species repeats unaltered the generic name, it is called
- (1) Tautonym
 - (2) Homonym
 - (3) Superfluous name
 - (4) Nomina generica conservenda
135. Size of herbarium sheet is approx
- (1) 25cm × 50cm
 - (2) 29cm × 41cm
 - (3) 15cm × 18cm
 - (4) 22cm × 38cm
136. Which of the following are included in Tracheophyta?
- (1) Algae and Fungi
 - (2) Pteridophyta, gymnosperms and angiosperms
 - (3) Gymnosperms and angiosperms
 - (4) Algae and bryophytes

137. Who placed gymnosperms in between Dicot and Monocot
- (1) Linnaeus
 - (2) Hutchinson
 - (3) Bentham and Hooker
 - (4) Bessey
138. Largest herbarium of world is of :
- (1) Berlin botanical garden
 - (2) Kew, Great Britain
 - (3) Paris, France
 - (4) Kolkata, India
139. Embryophyta includes
- (1) Algae and fungi
 - (2) Bryophyta and pteridophyta
 - (3) All the plants except thallophyta
 - (4) Angiosperm only
140. Which of the statements regarding the six principles of inheritance code of botanical nomenclature is correct?
- (1) The application of names of taxonomic groups(taxa) is determined by means of nomenclature type.
 - (2) The nomenclature of taxonomic group is based upon priority of publication
 - (3) Scientific names of taxonomic groups are treated as Latin regardless of their derivation
 - (4) All of the above
141. In Engler and Prantl's system of classification
- (1) Monocots precede dicots
 - (2) Dicots precede monocots
 - (3) Gymnosperms are placed in between dicots and monocots
 - (4) None of the above
142. Match the following and mark the correct answer
- | | |
|------------------------|-------------------------------------|
| I. John Hutchinson | A. The families of flowering plants |
| II. Theophrastus | B. Historia Plantarum |
| III. C.Linnaeus | C. Systema Naturae |
| IV. Bentham and Hooker | D. Genera Plantarum |
- (1) I-A, II-B, III-D, IV-C
 - (2) I-A, II-B, III-C, IV-D
 - (3) I-A, II-B, III-C, IV-D
 - (4) I-B, II-C, III-A, IV-D
143. Three domain classification was given by
- (1) Whittaker
 - (2) Copeland
 - (3) Haeckel
 - (4) Woese and Fox
144. Specimen used for the original publication by an author is called
- (1) Isotype
 - (2) Holotype
 - (3) Lectotype
 - (4) Syntype
145. In artificial system of classification organisms are classified on basis of
- (1) Group affinities
 - (2) Maximum genetic characters
 - (3) One or two characteristics
 - (4) All morphological characters
146. First botanical garden for the purpose of science and education was maintained in Athens by
- (1) Linnaeus
 - (2) Theophrastus
 - (3) Charak
 - (4) Pliny the elder
147. Which of the following is the largest botanical garden of the world ?
- (1) Main botanical garden, Moscow
 - (2) Royal botanical garden, Kew (London)
 - (3) Royal botanical garden, Ontario (Canada)
 - (4) Berlin botanical garden, Germany
148. According to Bentham and Hooker's classification which of following series are included in polypetalae?
- (1) Inferae and Bicarpellatae
 - (2) Thalamiflorae, Inferae and Bicarpellatae
 - (3) Inferae, Heteromerae and Bicarpellatae
 - (4) Thalamiflorae, Calyciflorae and Disciflorae
149. Which kingdom is sometimes referred to as the 'Garbage Can' of classification?
- (1) Monera
 - (2) Protista
 - (3) Animalia
 - (4) Fungi
150. According to Bentham and Hooker, dicotyledones are classified into
- (1) 3 classes and 14 series
 - (2) 3 subclasses and 14 series
 - (3) 2 subclasses and 33 orders
 - (4) 3 subclasses and 14 families

ZOOLOGY

151. Which of the following is/are not found in a prokaryotic cell?
(1) ribosome (2) plasma membrane
(3) mitochondria (4) (1) and (3)
152. Which of the following is not a similarity among the nucleus, chloroplasts, and mitochondria?
(1) They contain DNA
(2) They are bounded by a double phospholipid
(3) They can divide to reproduce themselves
(4) They are derived from the endoplasmic reticulum system
153. Ribosomes in the chloroplasts of eukaryotic cells are
(1) the same size and composition as in bacteria
(2) larger than in bacteria, but of similar composition
(3) smaller than in bacteria, & different in composition
(4) the same size but completely different in composition from the ribosomes in bacteria
154. The largest number of bound ribosomes most likely would be found in a cell
(1) with a high metabolic rate
(2) that produces secretory products
(3) with many cilia
(4) that produces steroids
155. Which structure is not considered to be part of the endomembrane system?
(1) peroxisome (2) smooth ER
(3) nuclear envelope (4) lysosome
156. A growing plant cell elongates primarily by
(1) increasing the number of vacuoles
(2) synthesizing more cytoplasm
(3) taking up water into its central vacuole
(4) synthesizing more cellulose
157. The innermost portion of a mature plant cell wall is the
(1) primary cell wall (2) secondary cell wall
(3) middle lamella (4) plasma membrane
158. Of the following, which is probably the most common route for membrane flow in the endomembrane system?
(1) rough ER → Golgi → lysosomes → vesicles → plasma membrane
(2) rough ER → transitional ER → Golgi → vesicles → plasma membrane
(3) nuclear envelope → rough ER → Golgi → smooth ER → lysosomes
(4) rough ER → vesicles → Golgi → smooth ER → plasma membrane
159. Proteins to be used within the cytosol are generally synthesized
(1) by ribosomes bound to rough ER
(2) by free ribosomes
(3) by the nucleolus
(4) within the Golgi apparatus
160. Plasmodesmata in plant cells are similar in function to
(1) desmosomes
(2) tight junctions
(3) gap junctions
(4) the extracellular matrix
161. Support for the fluid mosaic model of membrane structure comes from
(1) the freeze-fracture technique of electron microscopy
(2) the movement of proteins in hybrid cells
(3) the amphipathic nature of membrane proteins
(4) both (1) and (2)
162. The fluidity of membranes in a plant in cold weather may be maintained by
(1) increasing the number of phospholipids with saturated hydrocarbon tails
(2) activating a H^+ pump
(3) increasing the concentration of cholesterol in the membrane
(4) increasing the number of phospholipids with unsaturated hydrocarbon tails
163. A plant cell placed in a hypotonic environment will
(1) plasmolyze (2) shrivel
(3) become turgid (4) become flaccid
164. Exocytosis involves all of the following *except*
(1) ligands and coated pits
(2) the fusion of a vesicle with the plasma membrane
(3) a mechanism to transport carbohydrates to the outside of plant cells during the formation of cell walls
(4) a means of exporting large molecules

165. The proton pump in plant cells is the functional equivalent of an animal cell's
- (1) cotransport mechanism
 - (2) sodium–potassium pump
 - (3) contractile vacuole for osmoregulation
 - (4) receptor-mediated endocytosis of cholesterol
166. Pinocytosis involves
- (1) the fusion of a newly formed food vacuole with a lysosome
 - (2) receptor-mediated endocytosis and the formation of vesicles
 - (3) the pinching in of the plasma membrane around droplets of external fluid
 - (4) pseudopod extension as vesicles move along the cytoskeleton and fuse with the plasma membrane
167. During the period before equilibrium is reached, which molecule(s) will show net movement through the membrane?
- (1) water
 - (2) glucose
 - (3) sucrose
 - (4) water and glucose
168. Which of the following reactions is incorrectly paired with its location?
- (1) fermentation/cell cytosol
 - (2) glycolysis/cell cytosol
 - (3) substrate-level phosphorylation/cytosol and matrix
 - (4) Krebs cycle/cristae of mitochondrion
169. Which of the following is mismatched with its location?
- (1) light reactions–grana
 - (2) electron transport chain–thylakoid membrane
 - (3) Calvin cycle–stroma
 - (4) ATP synthetase–double membrane surrounding chloroplast
170. The smallest entity among the following is
- (1) Mycoplasma
 - (2) Virus
 - (3) Bacteria
 - (4) Cyanobacteria
171. Term ‘Sarcocodes’ was given by
- (1) Durjardin
 - (2) Purkinje
 - (3) H. Von Mohl
 - (4) None of these
172. Addition of new cell wall particles amongst the existing ones is called
- (1) deposition
 - (2) apposition
 - (3) intussusception
 - (4) aggregation
173. The two types of cellular organelles that transfer energy are
- (1) mitochondria and chloroplast
 - (2) chromoplast and leucoplast
 - (3) mitochondria and chromoplast
 - (4) chloroplast and leucoplast
174. In fluid mosaic model of plasma membrane
- (1) upper layer is non-polar and hydrophilic
 - (2) upper layer is polar and hydrophilic
 - (3) phospholipids form a bimolecular layer in middle part
 - (4) proteins from a middle layer
175. The synthesis of protein that have carbohydrates and lipid molecules attached is carried out by
- (1) only ribosome using especially modified amino acid and oligosaccharides and lipid attached
 - (2) ribosomes, the endoplasmic reticulum and lysosome
 - (3) ribosomes and enzyme found within both the endoplasmic reticulum and golgi apparatus
 - (4) enzymes outside the cell membrane as only pure protein molecules are able to be made within a cell
176. Which statement concerning living eukaryotic cells is false?
- (1) membranes control hydrophilic organic molecules pass into or out of the cell
 - (2) lysosomes and centrioles are each bounded by a single membrane
 - (3) membranes are usually fluid at 37°C
 - (4) membranes contain phospholipids and protein
177. A biologist dilutes blood cells with water on a glass slide and observes them through a microscope. The cell appear to burst. The biologist wants to observe these blood cells in a dilute solution without the cells bursting. He should investigate
- (1) other types of cells to see if the bursting continues
 - (2) the amount of salts in the water used to dilute the blood and the amount of salts in the blood plasma
 - (3) the age of the blood sample used by the biologist
 - (4) the chemical make-up of the cell membrane of the blood cells

178. Which one of the following pieces of evidence does not contradict the Davson-Danielli model of membrane structure?

- (1) lipids are arranged in a bilayer with hydrophobic groups in contact with each other
- (2) treatment of membranes with salts removes only a portion of the protein
- (3) freeze-fracture of membranes results in particle studded membrane faces, particles are rarely present and highly pure lipid membrane
- (4) proteins form a - helical structures with hydrophobic groups that interact with the fatty acid chains of lipids

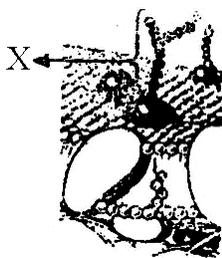
179. The correct order of increase in the size of the structures listed below is

- | | |
|----------------------------|------------------------------|
| (i) protein | (ii) virus |
| (iii) mitochondria | (iv) ribosomes |
| (1) (i), (iv), (ii), (iii) | (2) (ii), (i), (iii) or (iv) |
| (3) (ii), (iii), (i), (iv) | (4) (iii), (ii), (i), (iv) |

180. Smooth endoplasmic reticulum is specialized for the synthesis of lipids and steroids. The organelles are found predominantly in

- | | |
|---------------------|-----------|
| (1) pancreas | (2) ovary |
| (3) reticular cells | (4) blood |

181. Structure of plasma membrane is shown. Here 'X' indicates:



- | | |
|------------------------|----------------------|
| (1) glycoprotein | (2) cholesterol tail |
| (3) peripheral protein | (4) cytoskeleton |

182. For cell recognition molecular codes are formed by

- (1) carbohydrate
- (2) nucleotides
- (3) amino acids
- (4) protein

183. Which statement is CORRECT?

- (1) Endocytosis takes place in the endoplasmic reticulum elimination of waste products is carried out by the excretory system

- (2) During the process of endocytosis, particles enter the cytoplasm through a transient pore in the plasma membrane

- (3) During the process of exocytosis, vesicles in the cytoplasm pass through the plasma membrane and discharge their contents outside the cell

- (4) During the process of exocytosis, the plasma membrane increases in surface area

184. Which of the following molecules diffuse easily through a plasma membrane?

- | | |
|-------------------|------------------|
| (1) ethyl alcohol | (2) glucose |
| (3) amino acids | (4) pyruvic acid |

185. Extranuclear inheritance is a consequence of presence of genes in

- (1) endoplasmic reticulum and mitochondria
- (2) ribosomes and chloroplast
- (3) lysosomes and ribosomes
- (4) mitochondria and chloroplast

186. In 'Singler & Nicholson' model of plasma membrane the extrinsic proteins are

- (1) tightly associated with intrinsic protein and can be easily separated
- (2) loosely associated with intrinsic protein and can be easily separated
- (3) loosely associated with intrinsic protein and can't be easily separated
- (4) tightly associated with intrinsic protein and can't be easily separated

187. Match list I (stains) with list II (cellular entities) and select the correct answer using the codes given below the list:-

List I

- A. Methylene Blue
- B. Pyronin
- C. Janus Green B
- D. Eosin

List II

- (i) Cytoplasm
- (ii) Mitochondria
- (iii) Golgi complex
- (iv) Nucleolus

- | | |
|----------------------------|----------------------------|
| (1) A-iv, B-iii, C-i, D-ii | (2) A-iii, B-iv, C-ii, D-i |
| (3) A-iii, B-iv, C-i, D-ii | (4) A-iv, B-iii, C-ii, D-i |

188. The correct sequence of organelles without binding membrane and with single, double and triple binding membrane is

- (a) sphaerosomes (plant lysosomes)
 - (b) transposomes (in ovarian follicular cells)
 - (c) ribosomes
 - (d) mitochondria
- | | |
|----------------|----------------|
| (1) c, b, d, a | (2) b, a, d, c |
| (3) c, a, d, b | (4) b, d, c, a |

189. Mitochondria are absent in
- (1) green algae and WBC
 - (2) brown algae and RBC
 - (3) red algae, RBC and WBC
 - (4) blue green algae and RBC
190. Following are some characters to differentiate between prokaryotes and eukaryotes
- (i) prokaryotes lack nuclear membrane while the entire genetic material of eukaryotes is enclosed in the nucleus
 - (ii) peptidoglycan cell wall is characteristic of prokaryotes while it is absent in eukaryotes
 - (iii) prokaryotes are unicellular while eukaryotes are multicellular
 - (iv) chromosome of eukaryotes contain histones while that of prokaryotes lack histones
- (1) (i) & (iv) (2) (ii) & (iii)
(3) (i) & (ii) (4) (ii) & (iv)
191. Phospholipids are found in
- (1) most organism (2) all organism
 - (3) all eukaryotes and some prokaryotes
 - (4) only plants and animals
192. Which of the following characteristics are found in both chloroplast and mitochondria?
- (1) contain DNA (2) have membranes
 - (3) reproduce by binary fission (simple division)
- (1) (i) only (2) (iii) only
(3) (i), (ii) only (4) (ii), (iii) only
193. Which statement is CORRECT?
- (1) plastids are found in animal cells
 - (2) bacteria are the most abundant eukaryotic cells
 - (3) chromatin is found in the golgi apparatus
 - (4) plant cells contain mitochondria
194. Cytochromes are present
- (1) in the matrix
 - (2) in the outer membrane
 - (3) in the inner membrane
 - (4) between the outer and inner membranes
195. Which statement about plasma membranes is CORRECT?
- (1) membrane glycoproteins usually have their carbohydrate groups facing the cytoplasm
 - (2) the hydrophilic portion of phospholipids is oriented towards the inside of the phospholipid bilayer
 - (3) specific integral membrane proteins are always oriented in one specific direction in the plasma membrane
 - (4) the phospholipid composition of the inner and outer layer of the phospholipid bilayer is usually the same
196. Lysosomes are surrounded by how many membranes?
- (1) one (2) two
 - (3) three (4) four
197. Which of these is incorrect about ribosomes ?
- (1) They are submicroscopic particles made up of RNA and proteins
 - (2) They are attached to the endoplasmic reticulum through the ribophorins
 - (3) There can be aggregates of ribosomes (polyribosomes) on mRNA
 - (4) Sedimentation coefficients of ribosomes of bacteria, mitochondria and chloroplasts are the same as those of cytoplasmic ribosomes of eukaryotes
198. The outermost limiting layer of a typical cell of mycoplasma
- (1) cell wall (2) cell membrane
 - (3) slime layer (4) mucilaginous sheath
199. Which of the following is associated with the structure of golgi apparatus?
- (1) cristae (2) granum
 - (3) cisternae (4) quantasome
200. Protein packaging is done in
- (1) golgi apparatus
 - (2) ribosome
 - (3) endoplasmic reticulum
 - (4) nucleolus