

BOTANY

101. Which of the following is considered as a direct evidence for DNA as the genetic material?
- (1) bacterial transformation experiments by Frederick Griffith
 - (2) It is located on chromosomes
 - (3) The quantity of DNA found in a diploid cell is approximately twice of that in a haploid cell
 - (4) DNA is stable and its constituent atoms are not exchanged as rapidly as those of other cell molecules
102. Which of the following is incorrect regarding the structure of DNA
- (1) Purine and pyrimidine components occur in equal amounts in a molecule
 - (2) The total molar amount of adenine in any specimen of DNA is always equal to that of thymine
 - (3) Deoxyribose sugar is a five carbon sugar
 - (4) Combination of a base with a sugar molecule is called nucleotide
103. Which of the following is not a requirement for synthesis of charged tRNA ?
- (1) Mg^{2+}
 - (2) Amino acid
 - (3) Ribose sugar
 - (4) Enzyme amino acyl synthetase
104. Which of the following bases are double ring structure
- (1) Adenine
 - (2) Cytosine
 - (3) Both
 - (4) None
105. The adjacent nucleotides are connected together by
- (1) 3 hydrogen bonds
 - (2) 2 hydrogen bonds
 - (3) phosphodiester bonds
 - (4) glycosidic bonds
106. The larger subunit of ribosome combines with 40-S-mRNA-tRNA met complex in prokaryotes using
- (1) IF I
 - (2) IF II
 - (3) IF I and GTP
 - (4) IF I and Ca^{2+}
107. The two strands of DNA uncoil by the breakdown of hydrogen bonds when treated with
- (1) high temperature
 - (2) alkali
 - (3) acid
 - (4) all of these
108. RFI during termination of polypeptide synthesis in prokaryotes is specific for
- (1) UAA and UAG
 - (2) UAA and UGA
 - (3) UGA and UAG
 - (4) UAA and AUG
109. In DNA replication, the okazaki fragments on the lagging strand are joined together by
- (1) DNA ligase
 - (2) DNA polymerase
 - (3) Primase
 - (4) Helicase
110. A mRNA molecule is produced by
- (1) Replication
 - (2) Transcription
 - (3) Duplication
 - (4) Translation
111. One species DNA differs from other in its
- (1) Phosphate group
 - (2) Base sequence
 - (3) Sugars
 - (4) All of these
112. Chargaff's rule states that
- (1) $A + T = G + C$
 - (2) $A + G = T + C$
 - (3) $A = G, T = C$
 - (4) $A = C, T = G$
113. Which of the classes of RNA molecules carries the amino acids that are added to the growing polypeptide chain?
- (1) rRNA
 - (2) tRNA
 - (3) mRNA
 - (4) Primary mRNA transcript
114. Which of the following antibiotics inhibits translocation of mRNA along ribosome ?
- (1) Streptomycin
 - (2) Tetracycline
 - (3) Neomycin
 - (4) Erythromycin
115. If one strand of DNA has the base sequence AAGCAA, the complimentary strand has which of the following sequences?
- (1) UUCGUU
 - (2) TTCGTT
 - (3) AAGCAA
 - (4) UTCGTU
116. An intervening sequence in a eukaryotic gene that is not an active part of the gene is called a
- (1) exon
 - (2) intron
 - (3) replicon
 - (4) none of these

117. The phenomenon known as wobble refers to
- (1) the movement of multiple ribosomes along the same mRNA
 - (2) the shifting of the reading frame in a deletion or insertion mutation
 - (3) the ability of tRNA to pair with different codon that may differ in the third base
 - (4) the movement of tRNA from the A to the P site
118. How many structural genes are present in lac operon of *E. coli*
- (1) one
 - (2) two
 - (3) three
 - (4) four
119. Which of the following operates in a catabolic pathway
- (1) induction
 - (2) repression
 - (3) both
 - (4) none of these
120. The tryptophan operon comprises how many structural genes?
- (1) three
 - (2) four
 - (3) five
 - (4) six
121. In tryptophan operon which of the following is required to control operator gene?
- (1) regulator gene only
 - (2) regulator gene and corepressor
 - (3) regulator and aporepressor
 - (4) none of these
122. A gene of operon which synthesizes a repressor protein is
- (1) regulator gene
 - (2) operator gene
 - (3) structural gene
 - (4) promoter gene
123. New strand of DNA are formed in the direction.
- (1) 5' to 3'
 - (2) 4' to 3'
 - (3) 3' to 3'
 - (4) 2' to 3'
124. In case glucose level in the medium containing *E. coli* decreases, the lac-operon starts functioning due to increase in level of
- (1) β -galactosidase
 - (2) Repressor
 - (3) Lactose
 - (4) c-AMP
125. The genes that shuffle from one location to another are called
- (1) walking genes
 - (2) running genes
 - (3) jumping genes
 - (4) none of above
126. Which of the following organisms shows overlapping gene codes ?
- (1) Coliphage T₄
 - (2) ϕ X174
 - (3) λ -phage
 - (4) Paramecium
127. The more correct statement is
- (1) one gene-one enzyme
 - (2) one gene-one protein
 - (3) one gene-one polypeptide
 - (4) one gene-one nucleotide
128. The transfer of genetic material from one cell to another by a phage is
- (1) transduction
 - (2) transcription
 - (3) transformation
 - (4) conjugation
129. The enzyme that cleaves DNA at specific sites producing sticky ends is known as
- (1) cleaving enzyme
 - (2) lysing enzyme
 - (3) endonuclease
 - (4) restriction endonuclease
130. Reverse transcription was studied by
- (1) Temin and Baltimore
 - (2) Smith
 - (3) Jacob
 - (4) Wastson and Krick
131. *Escherichia coli* hydrolyses lactose to glucose by
- (1) β - galactosidase
 - (2) permease
 - (3) transacetylase
 - (4) all the above
132. Genetic information of DNA is coded in the
- (1) coding sequence
 - (2) base pairing
 - (3) sequence of nucleotides
 - (4) proportion of each base
133. The pattern of protein binding on DNA can be studied by
- (1) Electron microscope
 - (2) Ultracentrifugation
 - (3) X-ray crystallography
 - (4) Light microscope
134. DNA was first discovered as nuclein by
- (1) Ochoa
 - (2) Robert Koch
 - (3) Miescher
 - (4) Fleming

135. Exact replication of DNA is possible due to
- (1) DNA is enclosed in membrane
 - (2) base pairing rule
 - (3) mitosis
 - (4) genetic code
136. DNA polymerase enzyme is required for the synthesis of
- (1) DNA from RNA
 - (2) RNA from RNA
 - (3) RNA from DNA
 - (4) DNA from DNA
137. In DNA replication, which type of enzyme unwinds the helix ?
- (1) Helicase
 - (2) Primase
 - (3) Topoisomerase
 - (4) DNA polymerase
138. Enzyme necessary for transcription is
- (1) DNA polymerase
 - (2) RNA polymerase
 - (3) Endonuclease
 - (4) Topoisomerase
139. Number of amino acids in a polypeptide chain is 150. The number of mRNA bases required is
- (1) 50
 - (2) 100
 - (3) 150
 - (4) 450
140. There are 64 codons in genetic code dictionary because
- (1) There are 64 amino acids to be coded
 - (2) Genetic code is triplet
 - (3) There are 44 meaningless and 20 codons for amino acids.
 - (4) There are 64 types of t RNA's found in the cell
141. Initiation of polypeptide chain in protein synthesis is induced by
- (1) glycine
 - (2) leucine
 - (3) lysine
 - (4) methionine
142. Chaperons help in
- (1) Formation of ribosomal tRNA complex
 - (2) Stabilisation of polypeptide chain
 - (3) Splicing of mRNA
 - (4) Activation of initiation factors
143. In mRNA, AUG is the initiating codon and UAA UAG and UGA are terminating codons, therefore the polypeptide cannot be synthesised beyond any of these triplets to the end of mRNA, then which one of the following mRNA can be translated completely ?
- (1) AUG AGG UAU UUC UGA CUC
 - (2) AUG UAU UUC UGC CUG GUU
 - (3) AUG UUC UCC UGG UAA UAU
 - (4) AUG UUG UCC UGA UGG UAU
144. Which of the following provide initial attachment site for mRNA on smaller unit of ribosome ?
- (1) 18 S rRNA
 - (2) 16 S rRNA
 - (3) 5 S rRNA
 - (4) 23 S rRNA
145. Anticodon is associated with
- (1) r RNA
 - (2) DNA
 - (3) mRNA
 - (4) t RNA
146. Snurps help in forming
- (1) tRNA – amino acyl synthetase complex
 - (2) mRNA – tRNA complex
 - (3) Spliceosome
 - (4) Cap of mRNA
147. DNA strand participating in transcription is called
- (1) Coding strand
 - (2) Template strand
 - (3) Recon
 - (4) Operon
148. 'Operon' consists of
- (1) a unit of recombination on chromosomes
 - (2) a unit of genetic material responsible for mutations
 - (3) a smallest unit of genetic material
 - (4) a cluster of associated genes on chromosomes that participate in regulating transcription and includes regulatory gene, promoter site and structural genes.
149. Tryptophan (trp) operon is
- (1) inducible system
 - (2) repressible system
 - (3) three structural genes control it
 - (4) controlled by regulator gene
150. Sigma factor of RNA polymerase recognises _____ region of DNA.
- (1) S.D. sequence
 - (2) TATA box
 - (3) CAAT sequence
 - (4) GC sequence

ZOOLOGY

151. Neuroglia in nervous system is a type of
(1) Vascular tissue (2) Epithelial tissue
(3) Muscular tissue (4) Connective tissue
152. Which of the following acts as antibody to help in body defence ?
(1) Prothrombin (2) Immunoglobulin
(3) Globulin (4) Albumin
153. Sebaceous gland of skin is
(1) Holocrine (2) Merocrine
(3) Apocrine (4) Heterocrine
154. Pseudostratified ciliated columnar epithelium usually occurs as the lining of
(1) Nephron (2) Trachea
(3) Respiratory tract (4) Blood vessel
155. Nissle granules are found in
(1) Axon and cyton (2) Dendrite and cyton
(3) Telodendrite (4) In whole neuron
156. Each nerve fibre in a nerve is surrounded by a layer of connective tissue, known as
(1) Epineurium (2) Perineurium
(3) Endoneurium (4) Exoneurium
157. Myelin sheath in cells is synthesised by
(1) Microglia (2) Oligodendrocytes
(3) Schwann cells (4) Neuroglia
158. Find the incorrect match :
(1) Leukemia – abnormal increase in WBC count
(2) Monocyte – largest in number
(3) Amphibian RBC – largest among vertebrates
(4) Osteoclast – destroy bone
159. Mammary glands are
(1) apocrine (2) holocrine
(3) merocrine (4) endocrine
160. Which one of the following cellular components of the blood is responsible for the production of antibodies?
(1) Thrombocyte (2) Lymphocyte
(3) Monocyte (4) Erythrocyte
161. Which of the following is present in the alveoli of lungs ?
(1) Simple columnar epithelium
(2) Simple cuboidal epithelium
(3) Simple squamous epithelium
(4) Sensory epithelium
162. Epithelium differs from connective tissue and supporting tissue by the presence of more
(1) Intercellular substance
(2) Cellular substance
(3) Stored material (4) Nucleoli
163. Adipose tissue is found in
(1) Hump of camel (2) Blubber of whale
(3) Subcutaneous tissue in man
(4) All of these
164. Which of the following statements about muscle is true ?
(1) Smooth muscle is multinucleate
(2) Differentiated smooth muscle cells retain the ability to undergo cell division
(3) Cardiac muscle is voluntary
(4) None of these
165. Transitional epithelium lacks
(1) Germinative layer (2) Basement membrane
(3) Many layers (4) Both (1) & (2)
166. Which of the following statements regarding brown fat is correct ?
(1) It is directly innervated by the parasympathetic nervous system
(2) It is poorly vascularized
(3) It produces heat through the uncoupling of the electron transport chain from oxidative phosphorylation
(4) It functions in unilocular energy storage
167. Squamous cells are
(1) Thin, flattened and tile-like
(2) High and wide
(3) Column-shaped
(4) Cells which bear cilia
168. Branched tubular glands are found in
(1) Crypts of lieberkahn (2) Gastric gland
(3) Sebaceous gland (4) Sudorific gland
169. The skeletal tissue present in the external ear or pinna of a mammal is in the nature of
(1) Hyaline cartilage (2) Elastic cartilage
(3) Fibrous cartilage (4) Calcified cartilage
170. Humerus and femur are
(1) Investing bone (2) Cartilage bone
(3) Selanoid bone (4) None of these

171. Nissl granules are present and their work is
- (1) in neuron and help in nutrition and excretion
 - (2) in blood and help in coagulation
 - (3) in sarcoplasm and help in contraction
 - (4) in neuron and help in protein synthesis
172. Nucleus and mitochondria are absent in
- (1) Epithelial cells
 - (2) RBCs of frog
 - (3) Young mammalian RBCs
 - (4) Mature mammalian RBCs
173. The epithelium forming peritoneal lining of coelom is
- (1) Cuboidal
 - (2) Squamous
 - (3) Columnar
 - (4) Glandular
174. In 'Ancient mummies', still arteries are intact because of well preserved
- (1) Collagen fibres
 - (2) Elastic fibre
 - (3) Reticular fibre
 - (4) None of these
175. Axons serve to
- (1) bring impulse to cytons
 - (2) take away impulse from cytons
 - (3) bring blood to heart
 - (4) none of these
176. Endothelium lining a blood vessel is formed of
- (1) Ciliated epithelium
 - (2) Columnar epithelium
 - (3) Cuboidal epithelium
 - (4) Simple squamous epithelium
177. A tissue in which matrix is the source of structural and functional performance is
- (1) Muscular
 - (2) Nervous
 - (3) Epithelial
 - (4) Connective
178. An epithelial tissue which has thin flat cells arranged edge to edge so as to appear like closely packed tiles, is found to be present at
- (1) Inner lining of cheeks
 - (2) Outer surface of ovary
 - (3) Inner lining of fallopian tubes
 - (4) Inner lining of stomach
179. Agranulocytes are
- (1) Monocytes and Eosinophils
 - (2) Basophils and Neutrophils
 - (3) Lymphocytes and Basophils
 - (4) Lymphocytes and Monocytes
180. Platelets occur in
- (1) Invertebrate and vertebrates
 - (2) Mammals only
 - (3) All vertebrates
 - (4) Only higher mammals and birds
181. Smooth muscles occur in
- (1) Uterus
 - (2) Artery
 - (3) Vein
 - (4) All of the above
182. In embryonic stage, RBCs develop from
- (1) Liver and kidney
 - (2) Liver and spleen
 - (3) Spleen and kidney
 - (4) Liver and pancreas
183. The tube which joins pharynx with the middle ear possesses
- (1) Hyaline cartilage
 - (2) Bone
 - (3) Elastic cartilage
 - (4) Fibrocartilage
184. Vitamin C deficiency results in
- (1) organ fibrosis
 - (2) formation of unstable collagen helices
 - (3) decreased breakdown of collagen
 - (4) stimulation of prolyl hydroxylase
185. Canaliculi of bone cells
- (1) Allow the passage of blood
 - (2) Allow the passage of lymph
 - (3) Are collagen fibres
 - (4) Are solid fibres
186. During the formation of long bones
- (1) Ossification mass is in the periphery
 - (2) Cartilaginous mass lies in the centre
 - (3) Cartilage matrix is dissolved by osteoblasts
 - (4) Osteoblasts from the ossification centre
187. Myeloblast is the
- (1) Myelin-secreting cell
 - (2) Forerunner of RBC
 - (3) Platelet-forming cell
 - (4) Granulocyte-forming cells
188. Intercalated discs are found :
- (1) in striped muscles
 - (2) at the junction of muscles and nerves
 - (3) in cardiac muscles
 - (4) between neurons

189. Connective tissue is
- (1) ectodermal in origin without intercellular spaces
 - (2) mesodermal in origin without intercellular spaces
 - (3) ectodermal in origin with intercellular spaces
 - (4) mesodermal in origin with intercellular spaces
190. Serum is
- (1) blood without corpuscles
 - (2) blood without fibrinogen
 - (3) otherwise called as plasma
 - (4) blood without fibrinogen and corpuscles
191. Sodium oxalate is an anticoagulant because
- (1) It binds calcium
 - (2) It destroys thrombokinase
 - (3) It increases the activity of heparin
 - (4) It stops the release of thrombokinase
192. In the roots of hair we find
- (1) Striated muscles
 - (2) Single-unit smooth muscles
 - (3) Multi-unit smooth muscles
 - (4) No muscles
193. You are required to draw blood from a patient and to keep it in a test tube for analysis of blood corpuscles and plasma. You are also provided with the following four types of test tubes. Which of them will you not use for the purpose ?
- (1) Chilled test tube
 - (2) Test tube containing heparin
 - (3) Test tube containing sodium oxalate
 - (4) Test tube containing calcium bicarbonate
194. The major constituent of connective tissue is
- (1) lipid
 - (2) collagen
 - (3) cholesterol
 - (4) carbohydrate
195. Vagina, oesophagus and urethra contain which type of tissue ?
- (1) ciliated epithelium
 - (2) columnar epithelium
 - (3) simple squamous epithelium
 - (4) stratified squamous epithelium
196. Which of the following statements are wrong ?
- (i) Leucocytes disintegrate in the spleen and liver
 - (ii) RBC, WBC and blood platelets are produced by bone marrow
 - (iii) Neutrophils bring about destruction and detoxification of toxins of protein origin.
 - (iv) The important function of lymphocytes is to produce antibodies
- (1) (i) and (ii) only (2) (i) and (iv) only
(3) (i) and (iii) only (4) (ii) and (iii) only
197. Four healthy people in their twenties got involved in injuries resulting in damage and death of few cells of the following. Which of the cells are least likely to be replaced by new cells ?
- (1) Neurons
 - (2) Liver cells
 - (3) Osteocytes
 - (4) Malpighian layer of the skin
198. The tissue which forms the basic structure of lymphoid organs, liver etc., is
- (1) elastic tissue
 - (2) areolar tissue
 - (3) lymphoid tissue
 - (4) reticular tissue
199. Contractile tissue have the following features :
- (i) Mesodermal in origin
 - (ii) They contain stretch receptors
 - (iii) Rhythmic contractions are seen in them
 - (iv) They do not fatigue during the life of the animal
- Which of the above are characteristics of sphincters?
- (1) All the four
 - (2) Only (i), (ii) and (iii)
 - (3) Only (i), (ii) and (iv)
 - (4) Only (i), (iii) and (iv)
200. The muscles surrounding the pupil of human eye are
- (1) striated and voluntary
 - (2) striated and involuntary
 - (3) unstriated and voluntary
 - (4) unstriated and involuntary