

Part - C (Biology)

- 101.** In old trees the greater part of secondary xylem is dark brown and resistant to insect attack due to
- (a) secretion of secondary metabolites and their deposition in the lumen of vessels
- (b) deposition organic compounds like tannins and resins in the central layers of stem
- (c) deposition of suberin and aromatic substances in the outer layer of stem
- (d) deposition of tannins, gum resin and aromatic substances in the peripheral layers of stem
- (e) presence of parenchyma cells, functionally active xylem elements and essential oils

Choose the correct answer from the options given below

- (1) (d) and (e) only (2) (b) and (d) only
 (3) (a) and (b) only (4) (c) and (d) only

Ans: [3]

- 102.** Read the following statements and choose the set of correct statements:
- (a) Euchromatin is loosely packed chromatin
- (b) Heterochromatin is transcriptionally active
- (c) Histone octamer is wrapped by negatively charged DNA in nucleosome
- (d) Histones are rich in lysine and arginine
- (e) A typical nucleosome contains 400 bp of DNA helix

- (1) (b), (c) only (2) (a), (c), (e) only
 (3) (b), (d), (e) only (4) (a), (c), (d) only

Ans: [4]

- 103.** Which one of the following statements is not true regard gel electrophoresis technique?
- (1) The presence of chromogenic substrate gives blue coloured DNA bands on the gel
- (2) Bright orange coloured bands DNA can be observed in the gel when exposed to UV light
- (3) The process of extraction of separated DNA strands from gel is called elution
- (4) The separated DNA fragments are stained by using ethidium bromide

Ans: [1]

- 104.** Exoskeleton of arthropods is composed of
- (1) Chitin (2) Glucosamine
 (3) Cutin (4) Cellulose

Ans: [1]

- 105.** Match List I with List II

List I	List II
(a) Manganese	(i) Activates the enzyme catalase
(b) Magnesium	(ii) Required for pollen germination
(c) Boron	(iii) Activates enzymes of respiration
(d) Iron	(iv) Functions in splitting of water during photosynthesis

Choose the correct answer from the options given below:

- (1) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)
 (2) (a)-(iii), (b)-(i), (c)-(ii), (d)-(iv)
 (3) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)
 (4) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

Ans: [4]

- 106.** DNA polymorphism forms the basis of
- (1) Both genetic mapping and DNA finger printing
- (2) Translation
- (3) Genetic mapping
- (4) DNA finger printing

Ans: [1]

- 107.** The gaseous plant growth regulator is used in plants to
- (1) help overcome apical dominance
- (2) kill dicotyledonous weeds in the fields
- (3) speed up the malting process
- (4) promote root growth and root hair formation to increase the absorption surface

Ans: [4]

108. Given below are two statements

Statement I :

The primary CO₂ acceptor in C₄ plants is phosphoenolpyruvate and is found in the mesophyll cells.

Statement II :

Mesophyll cells of C₄ plants lack RuBisCo enzyme.

In the light of the above statements, choose the correct answer from the options given below:

- (1) Statement I is correct but Statement II is incorrect
- (2) Statement I is incorrect but Statement II is correct
- (3) Both Statement I and Statement II are correct
- (4) Both Statement I and Statement II are incorrect

Ans: [3]

109. Habitat loss and fragmentation, over exploitation, alien species invasion and co-extinction are causes for

- (1) Biodiversity loss (2) Natality
- (3) Population explosion (4) Competition

Ans: [1]

110. Production of Cucumber has increased manifold in recent years. Application of which of the following phytohormones has resulted in this increased yield as the hormone is known to product female flower in the plants

- (1) Ethylene (2) Cytokinin
- (3) ABA (4) Gibberellin

Ans: [1]

111. The appearance of recombination nodules on homologous chromosomes during meiosis characterises

- (1) Sites at which crossing over occurs
- (2) Terminalization
- (3) Synaptonemal complex
- (4) Bivalent

Ans: [1]

112. Which of the following is not a method of *ex situ* conservation

- (1) Micropropagation (2) Crypreservation
- (3) *In vitro* fertilisation (4) National Parks

Ans: [4]

113. Which one of the following produces fixing nodules on the roots of *Alnus*?

- (1) *Rhodospirillum* (2) *Beijernickia*
- (3) *Rhizobium* (4) *Frankia*

Ans: [4]

114. Which one of the following statements cannot be connected to Predation?

- (1) Both the interacting species are negatively impacted
- (2) It is necessitated by nature to maintain the ecological balance
- (3) It helps in maintaining species diversity in a community
- (4) It might lead to extinction of a species

Ans: [1]

115. The device which can remove particulate matter present in the exhaust from a thermal power plant is

- (1) Eletrostatic Precipitator
- (2) Catalytic Converter
- (3) STP
- (4) Incinerator

Ans: [1]

116. Identify the incorrect statement related to Pollination

- (1) Flowers produce foul odours to attract flies and beetles to get pollinated
- (2) Moths and butterflies are the most dominant pollinating agents among insects
- (3) Pollination by water is quite rare in flowering plants
- (4) Pollination by wind is more common amongst abiotic pollination

Ans: [2]

117. Which one of the following plants does not show plasticity?

- (1) Buttercup (2) Maize
- (3) Cotton (4) Coriander

Ans: [2]

118. What amount of energy is released from glucose during lactic acid fermentation?

- (1) About 10% (2) Less than 7%
- (3) Approximately 15% (4) More than 18%

Ans: [2]

119. “Girdling Experiment” was performed by Plant Physiologists to identify the plant tissue through which:

- (1) for both water and food transportation
- (2) osmosis is observed
- (3) water is transported
- (4) food is transported

Ans: [1]

120. Which one of the following plants shows vexillary aestivation and diadelphous stamens?

- (1) *Allium capa*
- (2) *Solanum mgrum*
- (3) *Colchicum automnale*
- (4) *Pisum sativum*

Ans: [4]

121. Read the following statements about the vascular bundles

- (a) In roots, xylem and phloem in a vascular bundle are arranged in an alternate manner along the different radii
- (b) Conjoint closed vascular bundles do not possess cambium
- (c) In open vascular bundles, cambium is present in between xylem and phloem
- (d) The vascular bundles of dicotyledonous stem possess endarch protoxylem
- (e) In monocotyledonous roots, usually there are more than six xylem bundles present

Choose the correct answer from the options given below

- (1) (a), (b), (c) and (d) only
- (2) (a), (c), (d) and (e) only
- (3) (a), (b) and (d) only
- (4) (b), (c), (d) and (e) only

Ans: [4]

122. Which one of the following never occurs during mitotic cell division?

- (1) Pairing of homologous chromosomes
- (2) Coiling and condensation of the chromatids
- (3) Spindle fibres attach to kinetochores of chromosome
- (4) Movement of centrioles towards opposite poles

Ans: [1]

123. Given below are two statements:

Statement I:

Cleistogamous flowers are invariably autogamous.

Statement II:

Cleistogamy is disadvantageous as there is not chance for cross pollination.

In the light of the above statements, choose the correct answer from the options given below:

- (1) Statement I is correct but Statement II is incorrect
- (2) Statement I is incorrect but Statement II is correct
- (3) Both Statement I and Statement II are correct
- (4) Both Statement I and Statement II are incorrect

Ans: [3]

124. Identify the correct set of statements

- (a) The leaflets are modified into pointed hard thorns in Citrus and *Bougainvillea*
- (b) Axillary buds form slender and spirally coiled tendrils in cucumber and pumpkin
- (c) Stem is flattened and fleshy in *Opuntia* and modified to perform the function of leaves
- (d) *Rhizophora* shows vertically upward growing roots that help to get oxygen for respiration
- (e) Subaerially growing stems in grasses and strawberry help in vegetative propagation

Choose the correct answer from the options given below:

- (1) (b), (c), (d) and (e) only
- (2) (a), (b), (d) and (e) only
- (3) (b) and (c) only
- (4) (a) and (d) only

Ans: [1]

125. XO type sex determination can be found in

- (1) Grasshoppers
- (2) Monkeys
- (3) *Drosophilla*
- (4) Birds

Ans: [1]

126. Hydrocolloid carrageen is obtained from

- (1) Rhodophyceae only
- (2) Phaeophyceae only
- (3) Chlorophyceae and Phaeophyceae
- (4) Phaeophyceae and Rhodophyceae

Ans: [1]

127. Which of the following is not observed during apoplastic pathway?
- (1) The movement is aided by cytoplasmic streaming
 - (2) Apoplast is continuous and does not provide any barrier to water movement
 - (3) Movement of water occurs through intercellular spaces and wall of the cells
 - (4) The movement does not involve crossing of cell membrane

Ans: [1]

128. Given below are two statements: one is labelled as Assertion (A): and the other is labelled as Reason (R)

Assertion (A)

Polymerase chain reaction is used in DNA amplification.

Reason (R)

The ampicillin resistant gene is used as a selectable marker to check transformation.

In the light of the above statements, choose the correct answer from the options given below:

- (1) (A) is correct but (R) is not correct
- (2) (A) is not correct but (R) is correct
- (3) Both (A) and (R) are correct and (R) is the correct explanation of (A)
- (4) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

Ans: [4]

129. Which one of the following is not true regarding the release of energy during ATP synthesis through chemiosmosis? It involves

- (1) Movement of protons across the membrane to the stroma
- (2) Reduction of NADP to NADPH₂ on the stroma side of the membrane
- (3) Breakdown of proton gradient
- (4) Breakdown of electron gradient

Ans: [4]

130. The flowers are Zygomorphic in

- | | |
|-------------------|-------------------|
| (a) Mustard | (b) Gulmohar |
| (c) <i>Cassia</i> | (d) <i>Datura</i> |
| (e) Chilly | |

Choose the correct answer from the options given below

- (1) (d), (e) only
- (2) (c), (d), (e) only
- (3) (a), (c), (e) only
- (4) (b), (c) only

Ans: [4]

131. Given below are two statements

Statement I

Mendel studied seven pairs of contrasting traits in pea plants and proposed the Laws of Inheritance.

Statement II

Seven characters examined by Mendel in his experiment on pea plants were seed shape and colour, flower colour, pod shape and colour, flower position and stem height

In the light of the above statements, choose the correct answer from the options given below:

- (1) Statement I is correct but Statement II is incorrect
- (2) Statement I is incorrect but Statement II is correct
- (3) Both Statement I and Statement II are correct
- (4) Both Statement I and Statement II are incorrect

Ans: [3]

132. What is net gain of ATP when each molecule of glucose is converted to two molecules of pyruvic acid?

- | | |
|----------|-----------|
| (1) Two | (2) Eight |
| (3) Four | (4) Six |

Ans: [1]

133. Given below are two statements:

Statement I

Decomposition is a process in which the detritus is degraded into simpler substances by microbes.

Statement II

Decomposition is faster if the detritus is rich in lignin and chitin.

In the light of the above statements, choose the correct answer from the options given below:

- (1) Statement I is correct but Statement II is incorrect
- (2) Statement I is incorrect but Statement II is correct
- (3) Both Statement I and Statement II are correct
- (4) Both Statement I and Statement II are incorrect

Ans: [1]

134. The process of translation of mRNA to proteins begins as soon as

- (1) Both the subunits join together to bind with mRNA
- (2) The tRNA is activated and the larger subunit of ribosome encounters mRNA
- (3) The small subunit of ribosome encounters mRNA
- (4) The larger subunit of ribosome encounters mRNA

Ans: [3]

135. Which of the following is incorrect matched?

- (1) *Porphyra* - Floridian Starch
- (2) *Volvox* - Starch
- (3) *Ectocarpus* - Fucoxanthin
- (4) *Ulothrix* - Mannitol

Ans: [4]

Section-B

136. Given below are two statements: one is labelled as Assertion (A): and the other is labelled as Reason (R)

Assertion (A)

Mendel's law of Independent assortment does not hold good for the genes that are located closely on the same chromosome.

Reason (R)

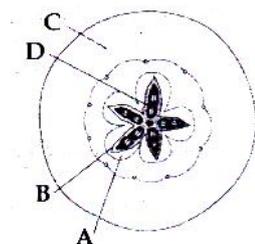
Closely located genes assort independently.

In the light of the above statements, choose the correct answer from the options given below:

- (1) (A) is correct but (R) is not correct
- (2) (A) is not correct but (R) is correct
- (3) Both (A) and (R) are correct and (R) is the correct explanation of (A)
- (4) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

Ans: [1]

137. Which part of the fruit, labelled in the given figure makes it a false fruit?



- (1) C → Thalamus (2) D → Seed
- (3) A → Mesocarp (4) B → Endocarp

Ans: [1]

138. Which one of the following will accelerated phosphorous cycle?

- (1) Weathering of rocks
- (2) Rain fall and storms
- (3) Burning of fossil fuels
- (4) Volcanic activity

Ans: [1]

139. The entire fleet of buses in Delhi were converted to CNG from diesel. In reference to this which one of the following statements is false?

- (1) It is cheaper than diesel
- (2) It can not be adulterated like diesel
- (3) CNG burns more efficiency than diesel
- (4) The same diesel engine is used in CNG buses making the cost of conversion low

Ans: [4]

140. What is the role of large bundle sheath cells found around the vascular bundles in C₄ plants?

- (1) To enable the plant to tolerate high temperature
- (2) To protect the vascular tissue from high light intensity
- (3) To provide the site for photorespiratory pathway
- (4) To increase the number of chloroplast for the operation of Calvin cycle

Ans: [4]

141. Transposons can be used during which one of the following?

- (1) Autoradiography
- (2) Gene sequencing
- (3) Polymerase Chain Reaction
- (4) Gene silencing

Ans: [4]

142. Which of the following occurs due to the presence of autosome linked dominant trait?

- (1) Haemophilia (2) Thalessemia
- (3) Sickle cell anaemia (4) Myotonic dystrophy

Ans: [4]

143. Match List I with List II

List I	List II
(a) Metacentric chromosome	(i) Centromere situated close to the end forming one extremely short and one very long arms
(b) Acrocentric chromosome	(ii) Centromere at the terminal end
(c) Sub-metacentric	(iii) Centromere in the middle forming two equal arms of chromosomes
(d) Telocentric chromosome	(iv) Centromere slightly away from the middle forming one shorter arm and one longer arm

Choose the correct answer from the options given below:

- (1) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)
 (2) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)
 (3) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)
 (4) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)

Ans: [3]

144. Read the following statements on lipids and find out correct set of statements

- (a) Lecithin found in the plasma membrane is a glycolipid
 (b) Saturated fatty acids possess one or more $C=C$ bonds
 (c) Gingly oil has lower melting point, hence remains as oil in winter
 (d) Lipids are generally insoluble in water but soluble in some organic solvents
 (e) When fatty acid is esterified with glycerol, monoglycerides are formed

Choose the correct answer from the options given below

- (1) (c), (d) and (e) only (2) (a), (b) and (d) only
 (3) (a), (b) (4) (a), (d) and (e) only

Ans: [1]

145. Addition of more solutes in a given solution will

- (1) make its water potential zero
 (2) not affect the water potential at all
 (3) raise its water potential
 (4) lower its water potential

Ans: [4]

146. Match List I with List II

List I	List II
(a) <i>Spirogyra</i>	(i) Dominant diploid sporophyte vascular plant, with highly reduced male or female gametophyte
(b) Fern	(ii) Dominant haploid free-living gametophyte
(c) <i>Funaria</i>	(iii) Dominant diploid sporophyte alternating with reduced gametophyte called prothallus
(d) <i>Cycas</i>	(iv) Dominant haploid leafy gametophyte alternating with partially dependent multicellular sporophyte

Choose the correct answer from the options given below:

- (1) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)
 (2) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)
 (3) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)
 (4) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

Ans: [4]

147. While explaining interspecific interaction of population, (+) sign is assigned for beneficial interaction, (-) sign is assigned for detrimental interaction and (0) for neutral interaction. Which of the following interactions can be assigned (+) for species and (-) for another species involved in the interaction?

- (1) Commensalism (2) Competition
 (3) Predation (4) Amensalism

Ans: [3]

148. In the following palindromic base sequences of DNA, which one can be cut easily by particular restriction enzyme?

- (1) 5' CTCAGT 3'; 3' GAGTCA 5'
 (2) 5' GTATTC 3'; 3' CATAAG 5'
 (3) 5' GATACT 3'; 3' CTATGA 5'
 (4) 5' GAATTC 3'; 3' CTTAAG 5'

Ans: [4]

149. If a geneticist uses the blind approach for sequencing the whole genome of an organism, followed by assignment of function to different segments, the methodology adopted by him is called as

- (1) Expressed sequence tags
- (2) Bioinformatics
- (3) Sequence annotation
- (4) Gene mapping

Ans: [3]

150. The anatomy of springwood shows some peculiar features. Identify the correct set of statements about springwood.

- (a) It is also called as the earlywood.
- (b) In spring season cambium produces xylem elements with narrow vessels
- (c) It is lighter in colour
- (d) The springwood along with autumnwood shows alternate concentric rings forming annual rings
- (e) It has lower density

Choose the correct answer from the options given below

- (1) (a), (b) and (d) only
- (2) (c), (d) and (e) only
- (3) (a), (b), (d) and (e) only
- (4) (a), (c), (d) and (e) only

Ans: [4]

Part - C (Zoology)

151. Which of the following statements are true for spermatogenesis but do not hold true for Oogenesis?

- (a) It results in the formation of haploid gametes
- (b) Differentiation of gamete occurs after the completion of meiosis
- (c) Meiosis occurs continuously in a mitotically dividing stem cell population
- (d) It is controlled by the Luteinizing hormone (LH) and Follicle Stimulating Hormone (FSH) secreted by the anterior pituitary

Choose the most appropriate answer from the options given below:

- (1) (b), (d), and (e) only
- (2) (b), (c) and (e) only
- (3) (c) and (e) only
- (4) (b) and (c) only

Ans: [2]

152. Given below are two statements:

Statement I:

Fatty acids and glycerols cannot be absorbed into the blood.

Statement II:

Specialized lymphatic capillaries called lacteals carry chylomicrons into lymphatic vessels and ultimately into the blood.

In the light of the above statements, choose the correct answer from the options given below:

- (1) Statement I is correct but Statement II is incorrect
- (2) Statement I is incorrect but Statement II is correct
- (3) Both Statement I and Statement II are correct
- (4) Both Statement I and Statement II are incorrect

Ans: [3]

153. Breeding crops with higher levels of vitamins and minerals or higher proteins and healthier fats is called

- (1) Bio-fortification (2) Bio-accumulation
- (3) Bio-magnification (4) Bio-remediation

Ans: [1]

154. In an *E.coli* strain *i* gene gets mutated and its product can not bind the inducer molecule. If growth medium is provided with lactose, what will be the outcome?

- (1) *z*, *y*, *a* genes will not be translated
- (2) RNA polymerase will bind the promoter region
- (3) Only *z* gene will be transcribed
- (4) *z*, *y*, *a* genes will be transcribed

Ans: [1]

155. Which of the following is present between the adjacent bones of the vertebral column

- (1) Areolar tissue
- (2) Smooth muscle
- (3) Intervertebral discs
- (4) Cartilage

Ans: [4]

156. Given below are two statements

Statement I

Autoimmune disorder is a condition where body defense mechanism recognizes its own cells as foreign bodies:

Statement II

Rheumatoid arthritis is a condition where body does not attack self cells.

In the light of the above statements, choose the correct answer from the options given below:

- (1) Statement I is correct but Statement II is incorrect
- (2) Statement I is incorrect but Statement II is correct
- (3) Both Statement I and Statement II are correct
- (4) Both Statement I and Statement II are incorrect

Ans: [1]

157. At which stage of life the oogenesis process is initiated?

- (1) Birth
- (2) Adult
- (3) Puberty
- (4) Embryonic development stage

Ans: [4]

158. Select the incorrect statement with reference to mitosis
- (1) Chromosome decondense at telophase
 - (2) Splitting of centromere occurs at anaphase
 - (3) All the chromosome lie at the equator at metaphase
 - (4) Spindle fibres attach to centromere of chromosome

Ans: [4]

159. *In-situ* conservation refers to
- (1) Conserve only endangered species
 - (2) Conserve only extinct species
 - (3) Protect and conserve the whole ecosystem
 - (4) Conserve only high risk species

Ans: [3]

160. Which of the following functions is not performed by secretions from salivary glands?
- (1) Lubrication of oral cavity
 - (2) Digestion of disaccharides
 - (3) Control bacterial population in mouth
 - (4) Digestion of complex carbohydrates

Ans: [2]

161. Given below are two statements: one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Osteoporosis is characterised by decreased bone mass and increased chances of fractures.

Reasons (R) : Common cause of osteoporosis is increased levels of estrogen.

In the light of the above statements, choose the most appropriate answer from the options given below:

- (1) (A) is correct but (R) is not correct.
- (2) (A) is not correct but (R) is correct.
- (3) Both (A) and (R) are correct and (R) is the correct explanation of (A).
- (4) Both (A) and (R) are correct but (R) is not the correct explanation of (A).

Ans: [1]

162. Given below are two statements:

Statement-I : The coagulum is formed of network of threads called thrombins.

Statement-II : Spleen is the graveyard of erythrocytes.

In the light of the above statements, choose the most appropriate answer from the options given below:

- (1) Statement I is correct but statement II is incorrect.
- (2) Statement I is incorrect but statement II is correct.
- (3) Both statement I and statement II are correct.
- (4) Both statement I and statement II are incorrect.

Ans: [2]

163. Given below are two statements:

Statement-I : Mycoplasma can pass through less than 1 micron filter size.

Statement-II : Mycoplasma are bacteria with cell wall.

In the light of the above statements, choose the most appropriate answer from the options given below.

- (1) Statement I is correct but statement II is incorrect.
- (2) Statement I is incorrect but statement II is correct.
- (3) Both statement I and statement II are correct.
- (4) Both statement I and statement II are incorrect.

Ans: [1]

164. Tegmina in cockroach, arises from

- (1) Metathorax
- (2) Prothorax and Mesothorax
- (3) Prothorax
- (4) Mesothorax

Ans: [4]

165. Given below are two statements: one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : All vertebrates are chordates but all chordates are not vertebrates.

Reason (R) : Notochord is replaced by vertebral column in the adult vertebrates.

In the light of the above statements, choose the most appropriate answer from the options given below:

- (1) (A) is correct but (R) is not correct.
- (2) (A) is not correct but (R) is correct.
- (3) Both (A) and (R) are correct and (R) is the correct explanation of (A).
- (4) Both (A) and (R) are correct but (R) is not the correct explanation of (A).

Ans: [3]

166. Nitrogenous waste is excreted in the form of pellet

- (1) *Hippocampus* (2) *Pavo*
 (3) *Ornithorhynchus* (4) *Salamandra*

Ans: [2]

167. A dehydration reaction links two glucose molecules to produce maltose. If the formula for glucose is

- (1) $C_{12}H_{22}O_{11}$ (2) $C_{12}H_{24}O_{11}$
 (3) $C_{12}H_{20}O_{10}$ (4) $C_{12}H_{24}O_{12}$

Ans: [1]

168. Regarding Meiosis, which of the statements is INCORRECT?

- (1) Pairing of homologous chromosomes and recombination occurs in Meiosis-I.
 (2) Four haploid cells are formed at the end of Meiosis-II.
 (3) There are two stages in Meiosis, Meiosis-I and II.
 (4) DNA replication occurs in S phase of Meiosis-II.

Ans: [4]

169. Under normal physiological conditions in human being every 100 mL of oxygenated blood can deliver ____ mL of O_2 to the tissues.

- (1) 4 mL (2) 10 mL
 (3) 2 mL (4) 5 mL

Ans: [4]

170. Given below are two statements:

Statement-I: The release of sperms into the seminiferous tubules is called spermiation.

Statement-II : Spermiogenesis is the process of formation of sperms from spermatogonia.

In the light of the above statements, choose the most appropriate answer from the options given below:

- (1) Statement I is correct but statement II is incorrect.
 (2) Statement I is incorrect but statement II is correct.
 (3) Both statement I and statement II are correct.
 (4) Both statement I and statement II are incorrect.

Ans: [4]

171. In the taxonomic categories which hierarchical arrangement in ascending order is CORRECT in case of animals?

- (1) Kingdom, Order, Class, Phylum, Family, Genus, Species
 (2) Kingdom, Order, Phylum, Class, Family, Genus, Species
 (3) Kingdom, Phylum, Class, Order, Family, Genus, Species
 (4) Kingdom, Class, Phylum, Family, Order, Genus, Species

Ans: [3]

172. Identify the microorganism which is responsible for the production of an immunosuppressive molecule cyclosporin A:

- (1) *Aspergillus niger*
 (2) *Streptococcus cerevisute*
 (3) *Trichoderma polysporum*
 (4) *Clostridium butylicum*

Ans: [3]

173. Lippe's loop is a type of contraceptive used as

- (1) Non-Medicated IUD (2) Copper releasing IUD
 (3) Cervical barrier (4) Vault barrier

Ans: [1]

174. If the length of a DNA molecule is 1.1 metres, what will be the approximate number of base pairs?

- (1) 3.3×10^6 bp (2) 6.6×10^6 bp
 (3) 3.3×10^9 bp (4) 6.6×10^9 bp

Ans: [3]

175. Detritivores breakdown detritus into smaller particles. This process is called:

- (1) Humification (2) Decomposition
 (3) Catabolism (4) Fragmentation

Ans: [4]

176. Which of the following is NOT a connective tissue?

- (1) Cartilage (2) Neuroglia
 (3) Blood (4) Adipose tissue

Ans: [2]

177. Which of the following is CORRECT match for disease and its symptoms?

- (1) Myasthenia gravis - Genetic disorder resulting in weakening and paralysis of skeletal muscle
- (2) Muscular dystrophy - An auto immune disorder causing progressive degeneration of skeletal muscle
- (3) Arthritis - Inflamed joints
- (4) Tetany - high Ca^{2+} level causing rapid spasms

Ans: [3]

178. Which of the following statements with respect to Endoplasmic reticulum is INCORRECT?

- (1) In prokaryotes only RER are present
- (2) SER are the sites for lipid synthesis
- (3) RER has ribosomes attached to ER
- (4) SER is devoid of ribosomes

Ans: [1]

179. In gene therapy of Adenosine Deaminase (ADA) deficiency, the patient requires periodic infusion of genetically engineered lymphocytes because:

- (1) Lymphocytes from patient's blood are grown in culture, outside the body.
- (2) Genetically engineered lymphocytes are not immortal cells.
- (3) Retroviral vector is introduced into these lymphocytes.
- (4) Gene isolated from marrow cells producing ADA is introduced into cells at embryonic stages.

Ans: [2]

180. Natural selection where more individuals acquire specific character value other than the mean character value, leads to

- (1) Disruptive change (2) Random change
- (3) Stabilising change (4) Directional change

Ans: [4]

181. Given below are two statements:

Statement-I : Restriction endonucleases recognise specific sequence to cut DNA known as palindromic nucleotide sequence.

Statement-II : Restriction endonucleases cut the DNA strand a little away from the centre of the palindromic site.

In the light of the above statements, choose the most appropriate answer from the options given below.

- (1) Statement I is correct but statement II is incorrect.
- (2) Statement I is incorrect but statement II is correct.
- (3) Both statement I and statement II are correct.
- (4) Both statement I and statement II are incorrect.

Ans: [3]

182. If '8' *Drosophila* in a laboratory population of '80' died during a week, the death rate in the population is _____ individuals per *Drosophila* per week.

- (1) 1.0 (2) Zero
- (3) 0.1 (4) 10

Ans: [3]

183. In which of the following animals, digestive tract has a additional chambers like crop and gizzard?

- (1) *Catla*, *Columba*, *Crocodilus*
- (2) *Pavo*, *Psittacula*, *Corvus*
- (3) *Corvus*, *Columba*, *Chameleon*
- (4) *Bufo*, *Balaenoptera*, *Bangarus*

Ans: [2]

184. Identify the asexual reproductive structure associated with *Penicillium*:

- (1) Gemmules (2) Buds
- (3) Zoospores (4) Conidia

Ans: [4]

185. Which of the following is NOT the function of conducting part of respiratory system?

- (1) Temperature of inhaled air is brought to body temperature
- (2) Provides surface for diffusion of O_2 and CO_2
- (3) It clears inhaled air from foreign particles
- (4) Inhaled air is humidified

Ans: [2]

- 186.** Which of the following statements is NOT true?
- (1) Homology indicates common ancestry
 - (2) Flippers of penguins and dolphins are a pair of homologous organs
 - (3) Analogous structures are a result of convergent evolution
 - (4) Sweet potato and potato is an example of analogy

Ans: [2]

- 187.** Which of the following are NOT the effects of Parathyroid hormone?
- (a) Stimulates the process of bone resorption
 - (b) Decreases Ca^{2+} level in blood
 - (c) Reabsorption of Ca^{2+} by renal tubules
 - (d) Decreases the absorption of Ca^{2+} from digested food
 - (e) Increases metabolism of carbohydrates

Choose the most appropriate answer from the options given below:

- (1) (a) and (e) only (2) (b) and (c) only
- (3) (a) and (c) only (4) (b), (d) and (e) only

Ans: [4]

- 188.** Select the INCORRECT statement regarding synapses:
- (1) Chemical synapses use neurotransmitters
 - (2) Impulse transmission across a chemical synapse is always faster than that across an electrical synapse.
 - (3) The membranes of presynaptic and postsynaptic neurons are in close proximity in an electrical synapse.
 - (4) Electrical current can flow directly from one neuron into the other across the electrical synapse.

Ans: [2]

- 189.** Match List-I with List-II with respect to methods of Contraception and their respective actions.

List-I	List-II
(a) Diaphragms	(i) Inhibit ovulation and implantation
(b) Contraceptive Pills	(ii) Increase phagocytosis of sperm within uterus
(c) Intra Uterine Devices	(iii) Absence of Menstrual cycle and ovulation following parturition
(d) Lactational Amenorrhoea	(iv) They cover the cervix blocking the entry of sperms

Choose the CORRECT answer from the options given below:

- (1) (a) - (ii), (b) - (iv), (c) - (i), (d) - (iii)
- (2) (a) - (iii), (b) - (ii), (c) - (i), (d) - (iv)
- (3) (a) - (iv), (b) - (i), (c) - (iii), (d) - (ii)
- (4) (a) - (iv), (b) - (i), (c) - (ii), (d) - (iii)

Ans: [4]

- 190.** Select the INCORRECT statement with respect to acquired immunity.

- (1) Anamnestic response is due to memory of first encounter.
- (2) Acquired immunity is non-specific type of defense present at the time of birth.
- (3) Primary response is produced when our body encounters a pathogen for the first time.
- (4) Anamnestic response is elicited on subsequent encounters with the same pathogen.

Ans: [2]

191. Statements related to human insulin are given below. Which statement(s) is(are) CORRECT about genetically engineered insulin?

- (a) pro-hormone insulin contain extra stretch of C-peptide
- (b) A-peptide and B-peptide chains of insulin were produced separately in *E.coli*, extracted and combined by creating disulphide bond between them.
- (c) Insulin used for treating Diabetes was extracted from Cattles and Pigs.
- (d) Pro-hormone insulin needs to be processed for converting into a mature and functional hormone.
- (e) Some patients develop allergic reactions to the foreign insulin.

Choose the most appropriate answer from the options given below:

- (1) (c) and (d) only (2) (c), (d) and (e) only
- (3) (a), (b) and (d) only (4) (b) only

Ans: [3]

192. Match List-I with List-II.

List-I	List-II
(Biological Molecules)	(Biological functions)
(a) Glycogen	(i) Hormone
(b) Globulin	(ii) Biocatalyst
(c) Steroids	(iii) Antibody
(d) Thrombin	(iv) Storage product

Choose the CORRECT answer from the options given below:

- (1) (a) - (ii), (b) - (iv), (c) - (iii), (d) - (i)
- (2) (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
- (3) (a) - (iii), (b) - (ii), (c) - (iv), (d) - (i)
- (4) (a) - (iv), (b) - (ii), (c) - (i), (d) - (iii)

Ans: [2]

193. Which of the following is NOT a desirable feature of a cloning vector?

- (1) Presence of single restriction enzyme site
- (2) Presence of two or more recognition sites
- (3) Presence of origin of replication
- (4) Presence of a marker gene

Ans: [2]

194. Ten *E.coli* cells with ¹⁵N – dsDNA are incubated in medium containing ¹⁴N nucleotide. After 60 minutes, how many *E.coli* cells will have DNA totally free from ¹⁵N ?

- (1) 60 cells (2) 80 cells
- (3) 20 cells (4) 40 cells

Ans: [1]

195. Which one of the following statements is CORRECT?

- (1) Blood moves freely from atrium to the ventricle during joint diastole.
- (2) Increased ventricular pressure causes closing of the semilunar valves.
- (3) The atrio-ventricular node (AVN) generates an action potential to stimulate atrial contraction.
- (4) The tricuspid and the bicuspid valves open due to the pressure exerted by the simultaneous contraction of the atria.

Ans: [1]

196. The recombination frequency between the genes a and c is 5%, b and c is 15%, b and d is 9%, a and b is 20%, c and d is 24% and a and d is 29%. What will be the sequence of these genes on a linear chromosome?

- (1) a, b, c, d (2) a, c, b, d
- (3) a, d, b, c (4) d, b, a, c

Ans: [2]

197. Which of the following is a CORRECT statement?

- (1) Slime moulds are saprophytic organisms classified under Kingdom Monera.
- (2) Mycoplasma have DNA, Ribosome and cell wall
- (3) Cyanobacteri are a group of autotrophic organisms classified under Kingdom Monera.
- (4) Bacteria are exclusively heterotrophic organisms.

Ans: [3]

198. Given below are two statements:

Statement-I : In a scrubber the exhaust from the thermal plant is passed through the electric wires to charge the dust particles.

Statement-II : Particulate matter (PM 2.5) can not be removed by scrubber but can be removed by an electrostatic precipitator.

In the light of the above statements, choose the most appropriate answer from the options given below:

- (1) Statement I is correct but statement II is incorrect.
- (2) Statement I is incorrect but statement II is correct.
- (3) Both statement I and statement II are correct.
- (4) Both statement I and statement II are incorrect.

Ans: [2]

199. If a colour blind female marries a man whose mother was also colour blind, what are the chances of her progeny having colour blindness?

- (1) 75%
- (2) 100%
- (3) 25%
- (4) 50%

Ans: [2]

200. Match List-I with List-II.

List-I	List-II
(a) Bronchioles	(i) Dense Regular Connective Tissue
(b) Goblet cell	(ii) Loose Connective Tissue
(c) Tendons	(iii) Glandular Tissue
(d) Adipose Tissue	(iv) Ciliated Epithelium

Choose the CORRECT answer from the options given below:

- (1) (a) - (ii), (b) - (i), (c) - (iv), (d) - (iii)
- (2) (a) - (iii), (b) - (iv), (c) - (ii), (d) - (i)
- (3) (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
- (4) (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)

Ans: [3]