

**Part - C (Biology)**

91. Double fertilization is exhibited by
- (1) Gymnosperms (2) Algae
(3) Fungi (4) Angiosperms

Ans: [4]

92. Which of the following are found in extreme saline conditions?
- (1) Archaeobacteria (2) Eubacteria
(3) Cyanobacteria (4) Mycobacteria

Ans: [1]

93. Select the mismatch
- (1) Frankia - Alnus
(2) Rhodospirillum - Mycorrhiza
(3) Anabaena - Nitrogen fixer
(4) Rhizobium - Alfalfa

Ans: [2]

94. What is the criterion for DNA fragments movement on agarose gel during gel electrophoresis ?
- (1) The larger the fragment size, the farther it moves
(2) The smaller the fragment size, the farther it moves
(3) Positively charged fragments move to farther end
(4) Negatively charged fragments do not move

Ans: [2]

95. Attractants and rewards are required for :
- (1) Anemophily (2) Entomophily
(3) Hydrophily (4) Cleistogamy

Ans: [2]

96. Which of the following is made up of dead cells ?
- (1) Xylemparenchyma
(2) Collenchyma
(3) Phellem
(4) Phloem

Ans: [3]

97. Which cells of 'Crypts of Lieberkuhn' secrete antibacterial lysozyme ?
- (1) Argentaffin cells
(2) Paneth cells
(3) Zymogen cells
(4) Kupffer cells

Ans: [2]

98. Adult human RBCs are enucleate. Which of the following statement(s) is/are most appropriate explanation for this feature ?
- (a) They do not need to reproduce
(b) They are somatic cells
(c) They do not metabolize
(d) All their internal space is available for oxygen transport
- Options:
(1) Only(d) (2) Only(a)
(3) (a), (c) and (d) (4) (b) and (c)

Ans: [1]

99. The hepatic portal vein drains blood to liver from:
- (1) Heart (2) Stomach
(3) Kidneys (4) Intestine

Ans: [4]

100. The final proof for DNA as the genetic material came from the experiments of:
- (1) Griffith
(2) Hershey and Chase
(3) Avery, McCleod and McCarty
(4) Hargobind Khorana

Ans: [2]

101. Which among the following are the smallest living cells, known without a definite cell wall, pathogenic to plants as well as animals and can survive without oxygen ?
- (1) Bacillus (2) Pseudomonas
(3) Mycoplasma (4) Nostoc

Ans: [3]

102. Which of the following options gives the correct sequence of events during mitosis ?
- (1) condensation → nuclear membrane disassembly → crossing over → segregation → telophase
(2) condensation → nuclear membrane disassembly → arrangement at equator → centromere division → segregation telophase
(3) condensation → crossing over → nuclear membrane disassembly → segregation → telophase
(4) condensation → arrangement at equator → centromere division → segregation → telophase

Ans: [2]



103. Which one of the following statements is correct; with reference to enzymes ?

- (1) Apoenzyme = Holoenzyme + Coenzyme
- (2) Holoenzyme = Apoenzyme + Coenzyme
- (3) Coenzyme = Apoenzyme + Holoenzyme
- (4) Holoenzyme = Coenzyme + Co-factor

Ans: [2]

104. During DNA replication, Okazaki fragments are used to elongate :

- (1) The leading strand towards replication fork.
- (2) The lagging strand towards replication fork.
- (3) The leading strand away from replication fork.
- (4) The lagging strand away from the replication fork.

Ans: [4]

105. Which of the following are not polymeric ?

- (1) Nucleic acids
- (2) Proteins
- (3) Polysaccharides
- (4) Lipids

Ans: [4]

106. The region of Biosphere Reserve which is legally protected and where no human activity is allowed is known as:

- (1) Core zone
- (2) Buffer zone
- (3) Transition zone
- (4) Restoration zone

Ans: [1]

107. A dioecious flowering plant prevents both:

- (1) Autogamy and xenogamy
- (2) Autogamy and geitonogamy
- (3) Geitonogamy and xenogamy
- (4) Geitonogamy and xenogamy

Ans: [2]

108. A temporary endocrine gland in the human body is :

- (1) Pineal gland
- (2) Corpus cardiacum
- (3) Corpus luteum
- (4) Corpus allatum

Ans: [3]

109. Match the following sexually transmitted diseases (Column - I) with their causative agent (Column - II) and select the correct option.

Column - I	Column - II
(a) Gonorrhoea	(i) HIV
(b) Syphilis	(ii) Neisseria
(c) Genital Warts	(iii) Treponema
(d) AIDS	(iv) Human Papilloma - Virus

Options :

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

Ans: [1]

110. Transplantation of tissues/organs fails often due to non-acceptance by the patient's body. Which type of immune-response is responsible for such rejections ?

- (1) Autoimmune response
- (2) Cell - mediated immune response
- (3) Hormonal immune response
- (4) Physiological immune response

Ans: [2]

111. Spliceosomes are not found in cells of:

- (1) Plants
- (2) Fungi
- (3) Animals
- (4) Bacteria

Ans: [4]

112. An example of colonial alga is:

- (1) Chlorella
- (2) Volvox
- (3) Ulothrix
- (4) Spirogyra

Ans: [2]

113. Which of the following represents order of 'Horse'

- (1) Equidae
- (2) Perissodactyla
- (3) Caballus
- (4) Ferus

Ans: [2]

114. Which of the following cell organelles is responsible for extracting energy from carbohydrates to form ATP?

- (1) Lysosom
- (2) Ribosom
- (3) Chloroplast
- (4) Mitochondria

Ans: [4]



115. The process of separation and purification of expressed protein before marking is called

- (1) Upstream processing
- (2) Downstream processing
- (3) Bioprocessing
- (4) Postproduction processing

Ans: [2]

116. Mycorrhizae are the example of

- (1) Fungistasis
- (2) Amensalism
- (3) Antibiosis
- (4) Mutualism

Ans: [4]

117. Viroids differ from viruses in having

- (1) DNA molecules with protein coat
- (2) DNA molecules without protein coat
- (3) RNA molecules with protein coat
- (4) RNA molecules without protein coat

Ans: [4]

118. Root hairs develop from the region of

- | | |
|----------------|---------------------------|
| (1) Maturation | (2) Elongation |
| (3) Root cap | (4) Meristematic activity |

Ans: [1]

119. Coconut fruit is

- | | |
|-----------|-------------|
| (1) Drupe | (2) Berry |
| (3) Nut | (4) Capsule |

Ans: [1]

120. Plants which produce characteristic pneumatophores and show vivipary belong to :

- | | |
|------------------|-----------------|
| (1) Mesophytes | (2) Halophytes |
| (3) Psammophytes | (4) Hydrophytes |

Ans: [2]

121. Which one of the following is related to Ex-situ conservation of threatened animals and plants ?

- (1) Wildlife Safari parks
- (2) Biodiversity hot spots
- (3) Amazon rainforest
- (4) Himalayan region

Ans: [1]

122. Select the mismatch:

- | | | |
|---------------|---|---------------|
| (1) Pinus | - | Dioecious |
| (2) Cycas | - | Dioecious |
| (3) Salvia | - | Heterosporous |
| (4) Equisetum | - | Homosporous |

Ans: [1]

123. Which of the following facilitates opening of stomatal aperture ?

- (1) Contraction of outer wall of guard cells
- (2) Decrease in turgidity of guard cells
- (3) Radial orientation of cellulose microfibrils in the cell wall of guard cells
- (4) Longitudinal orientation of cellulose microfibrils in the cell wall of guard cells

Ans: [3]

124. The association of histone H1 with a nucleosome indicates:

- (1) Transcription is occurring.
- (2) DNA replication is occurring.
- (3) The DNA is condensed into a Chromatin Fibre.
- (4) The DNA double helix is exposed.

Ans: [3]

125. DNA fragments are:

- (1) Positively charged
- (2) Negatively charged
- (3) Neutral
- (4) Either positively or negatively charged depending on their size

Ans: [2]

126. Capacitation occurs in :

- (1) Rete testis
- (2) Epididymis
- (3) Vas deferens
- (4) Female Reproductive tract

Ans: [4]

127. Which ecosystem has the maximum biomass ?

- (1) Forest ecosystem
- (2) Grassland ecosystem
- (3) Pond ecosystem
- (4) Lake ecosystem

Ans: [1]



128. A disease caused by an autosomal primary non-disjunction is:

- (1) Down's Syndrome
- (2) Klinefelter's Syndrome
- (3) Turner's Syndrome
- (4) Sickle Cell Anemia

Ans: [1]

129. Life cycle of *Ectocarpus* and *Fucus* respectively are:

- (1) Haplontic, Dipontic
- (2) Dipontic, Haplodiplontic
- (3) Haplodiplontic, Dipontic
- (4) Haplodiplontic, Haplontic

Ans: [3]

130. If there are 999 bases in an RNA that codes for a protein with 333 amino acids, and the base at position 901 is deleted such that the length of the RNA becomes 998 bases, how many codons will be altered ?

- (1) 1
- (2) 1
- (3) 33
- (4) 333

Ans: [3]

131. The pivot joint between atlas and axis is a type of

- (1) fibrous joint
- (2) cartilaginous joint
- (3) synovial joint
- (4) saddle joint

Ans: [3]

132. A gene whose expression helps to identify transformed cell is known as

- (1) Selectable marker
- (2) Vector
- (3) Plasmid
- (4) Structural gene

Ans: [1]

133. Presence of plants arranged into well defined vertical layers depending on their height can be seen best in

- (1) Tropical Savannah
- (2) Tropical Rain Forest
- (3) Grassland
- (4) Temperate Forest

Ans: [2]

134. The genotypes of a Husband and Wife were $I^A I^B$ and $I^A i$

Among the blood types of their children, how many different genotypes and phenotypes are possible?

- (1) 3 genotypes ; 3 phenotypes
- (2) 3 genotypes ; 4 phenotypes
- (3) 4 genotypes ; 3 phenotypes
- (4) 4 genotypes ; 4 phenotypes

Ans: [3]

135. Zygotic meiosis is characteristics of

- (1) Marchantia
- (2) Fucus
- (3) Funaria
- (4) Chlamydomonas

Ans: [4]

136. Which of the following is correctly matched for the product produced by them ?

- (1) Acetobacter aceti: Antibiotics
- (2) Methanobacterium : Lactic acid
- (3) Penicillium notatum : Acetic acid
- (4) Saccharomyces cerevisiae : Ethanol

Ans: [4]

137. Frog's heart when taken out of the body continues to beat for sometime.

Select the best option from the following statements.

- (a) Frog is a poikilotherm.
- (b) Frog does not have any coronary circulation.
- (c) Heart is "myogenic" in nature.
- (d) Heart is autoexcitable. Options:

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

Ans: [4]

138. Which statement is wrong for Krebs' cycle ?

- (1) There are three points in the cycle where NAD^+ is reduced to $NADH + H^+$
- (2) There is one point in the cycle where FAD^+ is reduced to $FADH^+$
- (3) During conversion of succinyl CoA to succinic acid, a molecule of GTP is synthesised
- (4) The cycle starts with condensation of acetyl group (acetyl CoA) with pyruvic acid to yield citric acid

Ans: [4]

139. In case of poriferans, the spongocoel is lined with flagellated cells called:

- (1) ostia
- (2) oscula
- (3) choanocytes
- (4) mesenchymal cells

Ans: [3]

140. Which of the following RNAs should be most abundant in animal cell?

- (1) r-RNA
- (2) t-RNA
- (3) m-RNA
- (4) mi-RNA

Ans: [1]



141. Which among these is the correct combination of aquatic mammals?

- (1) Seals, Dolphins, Sharks
- (2) Dolphins, Seals, *Trygon*
- (3) Whales, Dolphins, Seals
- (4) *Trygon*, Whales, Seals

Ans: [3]

142. With reference to factors affecting the rate of photosynthesis, which of the following statements is not correct?

- (1) Light saturation for CO_2 fixation occurs at 10% of full sunlight
- (2) Increasing atmospheric, CO_2 concentration up to 0.05% can enhance CO_2 fixation rate
- (3) C_3 plants respond to higher temperatures with enhanced photosynthesis while C_4 plants have much lower temperature optimum
- (4) Tomato is a greenhouse crop which can be grown in CO_2 - enriched atmosphere for higher yield

Ans: [3]

143. Asymptote in a logistic growth curve is obtained when

- (1) The value of 'r' approaches zero
- (2) $K = N$
- (3) $K > N$
- (4) $K < N$

Ans: [2]

144. Out of 'X' pairs of ribs in humans only 'Y' pairs are true ribs. Select the option that correctly represents values of X and Y and provides their explanation.

- (1) $X = 12, Y = 7$ True ribs are attached dorsally to vertebrateal column and ventrally to the sternum
- (2) $X = 12, Y = 5$ True ribs are attached dorsally to vertebrateal column and sternum on the two ends
- (3) $X = 24, Y = 7$ True ribs are dorsally attached to vertebral column but are free on ventral side
- (4) $X = 24, Y = 12$ True ribs are attached dorsally to vertebral column but are free on ventral side

Ans: [1]

145. The DNA fragments separated on an agarose gel can be visualised after staining with

- (1) Bromopheno blue
- (2) Acetocarmine
- (3) Aniline blue
- (4) Ethidium bromide

Ans: [4]

146. Functional megaspore in an angiosperm develop into

- (1) Ovule
- (2) Endosperm
- (3) Embryo sac
- (4) Embryo

Ans: [3]

147. Among the following characters, which one was not considered by Mendel in his experiments on pea?

- (1) Stem - Tall or Dwarf
- (2) Trichomes - Glandular or non-glandular
- (3) Seed-Green or Yellow
- (4) Pod - Inflated or Constricted

Ans: [2]

148. Lungs are made up air-filled sacs the alveoli. They do not collapse even after forceful expiration because of

- (1) Residual Volume
- (2) Inspiratory Reserve Volume
- (3) Tidal Volume
- (4) Expiratory Reserved Volume

Ans: [1]

149. GnRH, a hypothalamic hormone, needed reproduction, acts on

- (1) anterior pituitary gland and stimulates secretion of LH and oxytocin
- (2) anterior pituitary gland and stimulates secretion of LH and FSH
- (3) posterior pituitary gland and stimulate secretion of oxytocin and FSH
- (4) posterior pituitary gland and stimulate secretion of LH and relaxin

Ans: [2]

150. In *Bougainvillea* thorns are the modifications of:

- (1) Stipules
- (2) Adventitious root
- (3) Stem
- (4) Leaf

Ans: [3]



151. Which one from those given below is the period for Mendel's hybridization experiments?

- (1) 1856-1863 (2) 1840-1850
(3) 1857-1869 (4) 1870-1877

Ans: [1]

152. Good vision depends on adequate intake of carotene rich food.

Select the best option from the following statements

- (a) Vitamin A derivatives are formed from carotene.
(b) The photopigments are embedded in membrane discs of the inner segment.
(c) Retinal is a derivative of Vitamin A.
(d) Retinal is a light absorbing part of all the visual photopigments.

Options:

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

Ans: [3]

153. Which one of the following statements is not valid for aerosols?

- (1) They are harmful to human health
(2) They alter rainfall and monsoon patterns
(3) They cause increased agricultural productivity
(4) They have negative impact on agricultural land

Ans: [3]

154. A decrease in blood pressure/ volume will not cause the release of:

- (1) Renin
(2) Atrial Natriuretic Factor
(3) Aldosterone
(4) ADH

Ans: [2]

155. Homozygous purelines in cattle can be obtained by:

- (1) mating of related individuals of same breed.
(2) mating of unrelated individuals of same breed.
(3) mating of individuals of different breed
(4) mating of individuals of different species.

Ans: [1]

156. The vascular cambium normally gives rise to .

- (1) Phelloderm
(2) Primary phloem
(3) Secondary xylem
(4) Periderm

Ans: [3]

157. Which of the following statements is correct?

- (1) The ascending limb of loop of Henle is impermeable to water.
(2) The descending limb of loop of Henle is impermeable to water.
(3) The ascending limb of loop of Henle is permeable to water.
(4) The descending limb of loop of Henle is permeable to electrolytes.

Ans: [1]

158. Fruit and leaf drop at early stages can be prevented by the application of:

- (1) Cytokinins (2) Ethylene
(3) Auxins (4) Gibberellic acid

Ans: [3]

159. A baby boy aged two years is admitted to play school and passes through a dental check - up. The dentist observed that the boy had twenty teeth. Which teeth were absent?

- (1) Incisors (2) Canines
(3) Pre-molars (4) Molars

Ans: [3]

160. An important characteristic that Hemichordates share with Chordates is :

- (1) absence of notochord
(2) ventral tubular nerve cord
(3) pharynx with gill slits
(4) pharynx without gill slits

Ans: [3]

161. Artificial selection to obtain cows yielding higher milk output represents :

- (1) stabilizing selection as it stabilizes this character in the population.
(2) directional as it pushes the mean of the character in one direction.
(3) disruptive as it splits the population into two, one yielding higher output and the other lower output
(4) stabilizing followed by disruptive as it stabilizes the population to produce higher yielding cows.

Ans: [2]

162. Select the correct route for the passage of sperms in male frogs

- (1) Testes → Bidder's canal → Kidney
→ Vasa efferentia → Urinogenital duct
→ Cloaca
(2) Testes → Vasa efferentia → Kidney
→ Seminal Vesicle → Urinogenital duct
→ Cloaca



- (3) Testes → Vasa efferentia →
Bidder's canal → Ureter → Cloaca
- (4) Testes → Vasa efferentia → Kidney
→ Bidder's canal → Urinogenital duct
→ Cloaca

Ans: [3]

163. Which of the following options best represents the enzyme composition of pancreatic juice?
- (1) amylase, peptidase, trypsinogen, rennin
(2) amylase, pepsin, trypsinogen, maltase
(3) peptidase, amylase, pepsin, rennin
(4) lipase, amylase, trypsinogen, procarboxypeptidase

Ans: [4]

164. Phosphoenol pyruvate (PEP) is the primary CO₂ acceptor in :
- (1) C₃ plants (2) C₄ plants
(3) C₂ plants (4) C₃ and C₄ plants

Ans: [2]

165. The morphological nature of the edible part of coconut is :
- (1) Perisperm (2) Cotyledon
(3) Endosperm (4) Pericarp

Ans: [3]

166. Anaphase Promoting Complex (APC) is a protein degradation machinery necessary for proper mitosis of animal cells. If APC is defective in a human cell, which of the following is expected to occur?
- (1) Chromosomes will not condense
(2) Chromosomes will be fragmented
(3) Chromosomes will not segregate
(4) Recombination of chromosome arms will occur

Ans: [2]

167. MALT constitutes about _____ percent of the lymphoid tissue in human body.
- (1) 50% (2) 20%
(3) 70% (4) 10%

Ans: [1]

168. Receptor sites for neurotransmitters are present on :
- (1) membranes of synaptic vesicles
(2) pre-synaptic membrane
(3) tips of axons
(4) post-synaptic membrane

Ans: [4]

169. Hypersecretion of Growth Hormone in adults does not cause further increase in height, because :
- (1) Growth Hormone becomes inactive in adults.
(2) Epiphyseal plates close after adolescence
(3) Bones lose their sensitivity to Growth Hormone in adults
(4) Muscle fibres do not grow in size after birth

Ans: [2]

170. Alexander Von Humbolt described for the first time :
- (1) Ecological Biodiversity
(2) Laws of limiting factor
(3) Species area relationships
(4) Population Growth equation

Ans: [3]

171. Myelin sheath is produced by :
- (1) Schwann Cells and Oligodendrocytes
(2) Astrocytes and Schwann Cells
(3) Oligodendrocytes and Osteoclasts
(4) Osteoclasts and Astrocytes

Ans: [1]

172. In case of a copule where the male is having a very low sperm count, which technique will be suitable for fertilisation?
- (1) Intrauterine transfer
(2) Gamete intracytoplasmic fallopian transfer
(3) Artificial Insemination
(4) Intracytoplasmic sperm injection

Ans: [3]

173. Which of the following components provides sticky character to the bacterial cell?
- (1) Cell wall
(2) Nuclear membrane
(3) Plasma membrane
(4) Glycocalyx

Ans: [4]

174. DNA replication in bacteria occurs
- (1) During S phase
(2) Within nucleolus
(3) Prior to fission
(4) Just before transcription

Ans: [3]



175. The function of copper ions in copper releasing IUD's is
- (1) The suppress sperm motility and fertilising capacity of sperms
 - (2) They inhibit gametogenesis
 - (3) They make uterus unsuitable for implantation
 - (4) They inhibit ovulation

Ans: [1]

176. Which of the following is sewage treatment removes suspended solids?
- (1) Tertiary treatment
 - (2) Secondary treatment
 - (3) Primary treatment
 - (4) Sludge treatment

Ans: [3]

177. The water potential of pure water is
- (1) Zero
 - (2) Less than zero
 - (3) More than zero but less than one
 - (4) More than one

Ans: [1]

178. Identify the wrong statement in context of heartwood
- (1) Organic compounds are deposited in it
 - (2) It is highly durable
 - (3) It conducts water and minerals efficiently
 - (4) It comprised dead elements with highly lignified walls

Ans: [3]

179. Thalassaemia and sickle cell anemia are caused due to a problem in globin molecule synthesis. Select the correct statement
- (1) Both are due to a qualitative defect in globin chain synthesis
 - (2) Both are due to a quantitative defect in globin chain synthesis
 - (3) Thalassaemia is due to less synthesis of globin molecules
 - (4) Sickle cell anemia is due to a quantitative problem of globin molecules

Ans: [3]

180. Flowers which have single ovule in the ovary and are packed into inflorescence are usually pollinated by
- | | |
|-----------|---------|
| (1) Water | (2) Bee |
| (3) Wind | (4) Bat |

Ans: [3]