FINAL NEET(UG)–2022 EXAMINATION

(Held On Sunday 17th JULY, 2022)

BIOLOGY — TEST PAPER WITH ANSWER

Section - A (Biology : Botany)

101. 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 root, usually there are more than six xylem bundles present

Choose the **correct answer** from the options given below :

(1) (b), (c), (d) and (e) only

(2) (a), (b), (c) and (d) only

(3) (a), (c), (d) and (e) only

(4) (a), (b) and (d) only

Ans. (Bonus)

102. 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) (a) and (d) Only

(2) (b), (c),(d) and (e) Only

(3) (a), (b), (d) and (e) Only

(4) (b) and (c) Only

Ans. (2)

103. The appearance of recombination nodules on homologous chromosomes during meiosis characterizes:

(1) Bivalent

(2) Sites at which crossing over occurs

(3) Terminalization

(4) Synaptonemal complex

Ans. (2)

104. Read the following statements and choose the set of **correct** statements:

(a) Euchromatin is loosely packed chromatin

(b) Heterochromatin is transcriptionally active

(c) Histone octomer 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

Choose the **correct answer** from the options given below:

(1) (a), (c), (d) Only (2) (b),(e) Only

(3) (a),(c),(e) Only (4) (b), (d), (e) Only

Ans. (1)

105. Given below are two statements :

Statement I:

The primary CO_2 acceptor in C_4 plants is phosphoenolpyruvate and is found in the mesophyll cells.

Statement II:

Mesophyll cells of C_4 plants lack RuBisCo enzyme.

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

(1) Both **Statement I** and **Statement II** are incorrect

(2) **Statement I** is correct but **Statement II** is incorrect

(3) **Statement I** is incorrect but **Statement II** is correct

(4) Both **Statement I** and **Statement II** are correct

Ans. (4)

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

Ans. (3)

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

Ans. (2)

108. Habitat loss and fragmentation, over exploitation, alien species invasion and co-extinction are causes for:
(1) Competition
(2) Biodiversity loss
(3) Natality
(4) Population explosion

Ans. (2)

109. 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 produce female flowers in the plants:
(1) Gibberellin (2) Ethylene
(3) Cytokinin (4) ABA

Ans. (2)

110. What is the net gain of ATP when each molecule of glucose is converted to two molecules of pyruvic acid ?
(1) Six (2) Two
(3) Eight (4) Four

Ans. (2)

111. Given below are two statements:

Statement I:

Cleistogamous flowers are invariably autogamous

Statement II:

Cleistogamy is disadvantageous as there is no chance for cross pollination.

In the light of the above statements, choose the correct answer from the options given below:
(1) Both **Statement I** and **Statement II** are incorrect
(2) **Statement I** is correct but **Statement II** is incorrect
(3) **Statement I** is incorrect but **Statement II** is correct
(4) Both **Statement I** and **Statement II** are correct

Ans. (4)

112. Hydrocolloid carrageen is obtained from :
(1) Phaeophyceae and Rhodophyceae
(2) Rhodophyceae only
(3) Phaeophyceae only
(4) Chlorophyceae and Phaeophyceae

Ans. (2)

113. "Girdling Experiment" was performed by Plant Physiologists to identify the plant tissue through which:
(1) food is transported
(2) for both water and food transportation
(3) osmosis is observed
(4) water is transported

Ans. (1)

114. Which of the following is **incorrectly** matched ?
(1) *Ulothrix* - Mannitol
(2) *Porphyra* - Floridian Starch
(3) *Volvox* - Starch
(4) *Ectocarpus* - Fucoxanthin

Ans. (1)

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

Ans. (2)

116. 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) - (iii),(c) - (ii), (d) - (i)

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

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

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

Ans. (1)

117. The process of translation of mRNA to proteins begins as soon as :

(1) The larger subunit of ribosome encounters mRNA

(2) Both the subunits join together to bind with mRNA

(3) The tRNA is activated and the larger subunit of ribosome encounters mRNA

(4) The small subunit of ribosome encounters mRNA

Ans. (4)

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

(1) Incinerator

(2) Electrostatic Precipitator

(3) Catalytic Convertor

(4) STP

Ans. (2)

119. The flowers are Zygomorphic in:

(a) Mustard

(b) Gulmohar

(c) *Cassia*

(d) *Datura*

(e) Chilly

Choose the **correct answer** from the options given below:

(1) (b), (c) Only (2) (d), (e) Only

(3) (c), (d), (e) Only (4) (a), (b), (c) Only

Ans. (1)

120. 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) Both **(A)** and **(R)** are correct but **(R)** is not the correct explanation of **(A)**

(2) **(A)** is correct but **(R)** is not correct

(3) **(A)** is not correct but **(R)** is correct

(4) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

Ans. (1)

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

(1) It might lead to extinction of a species

(2) Both the interacting species are negatively impacted

(3) It is necessitated by nature to maintain the ecological balance

(4) It helps in maintaining species diversity in a community

Ans. (2)

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

(1) Movement of centrioles towards opposite poles

(2) Pairing of homologous chromosomes

(3) Coiling and condensation of the chromatids

(4) Spindle fibres attach to kinetochores of chromosomes

Ans. (2)

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

(1) National Parks

(2) Micropropagation

(3) Cryopreservation

(4) *In vitro* fertilization

Ans. (1)

124. 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) Both **Statement I** and **Statement II** are incorrect

(2) **Statement I** is correct but **Statement II** is incorrect

(3) **Statement I** is incorrect but **Statement II** is correct

(4) Both **Statement I** and **Statement II** are correct

Ans. (4)

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

(1) Coriander

(2) Buttercup

(3) Maize

(4) Cotton

Ans. (3)

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

(1) More than 18%

(2) About 10%

(3) Less than 7%

(4) Approximately 15%

Ans. (3)

127. The gaseous plant growth regulator is used in plants to :

(1) promote root growth and root hair formation to increase the absorption surface

(2) help overcome apical dominance

(3) kill dicotyledonous weeds in the fields

(4) speed up the malting process

Ans. (1)

128. Which of the following is **not** observed during apoplastic pathway ?

(1) The movement does not involve crossing of cell membrane

(2) The movement is aided by cytoplasmic streaming

(3) Apoplastic is continuous and does not provide any barrier to water movement

(4) Movement of water occurs through intercellular spaces and wall of the cells.

Ans. (2)

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

(1) Breakdown of electron gradient

(2) Movement of protons across the membrane to the stroma

(3) Reduction of NADP to $NADPH_2$ on the stroma side of the membrane

(4) Breakdown of proton gradient

Ans. (1)

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

(1) *Pisum sativum*

(2) *Allium cepa*

(3) *Solanum nigrum*

(4) *Colchicum autumnale*

Ans. (1)

131. 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) Both **Statement I** and **Statement II** are incorrect

(2) **Statement I** is correct but **Statement II** is incorrect

(3) **Statement I** is incorrect but **Statement II** is correct

(4) Both **Statement I** and **Statement II** are correct

Ans. (2)

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

(1) *Frankia*

(2) *Rhodospirillum*

(3) *Beijernickia*

(4) *Rhizobium*

Ans. (1)

133. Exoskeleton of arthropods is composed of:

(1) Cellulose

(2) Chitin

(3) Glucosamine

(4) Cutin

Ans. (2)

134. XO type of sex determination can be found in:

(1) Birds

(2) Grasshoppers

(3) Monkeys

(4) *Drosophila*

Ans. (2)

135. In old trees the greater part of secondary xylem is dark brown and resistant to insect attack due to:

(a) secretion of secondary metabolities and their deposition in the lumen of vessels.

(b) deposition of 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) (c) and (d) Only

(2) (d) and (e) Only

(3) (b) and (d) Only

(4) (a) and (b) Only

Ans. (4)

Section-B (Biology : Botany)

136. 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)-(i),(b)-(iii),(c)-(ii),(d)-(iv)

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

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

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

Ans. (4)

137. 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) The same diesel engine is used in CNG buses making the cost of conversion low

(2) It is cheaper than diesel

(3) It can not be adulterated like diesel

(4) CNG burns more efficiently than diesel

Ans. (1)

138. 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) Gingely 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) (a), (d) and (e) only

(2) (c), (d) and (e) only

(3) (a), (b) and (d) only

(4) (a), (b) and (c) only

Ans. (2)

139. 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),(c),(d) and (e) Only

(2) (a), (b) and (d) Only

(3) (c), (d) and (e) Only

(4) (a),(b),(d) and (e) Only

Ans. (1)

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

(1) Gene silencing

(2) Autoradiography

(3) Gene sequencing

(4) Polymerase Chain Reaction

Ans. (1)

141. 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) Both **(A)** and **(R)** are correct but **(R)** is not the correct explanation of **(A)**

(2) **(A)** is correct but **(R)** is not correct

(3) **(A)** is not correct but **(R)** is correct

(4) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

Ans. (2)

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

(1) 5' G A A T T C 3'; 3' C T T A A G 5'

(2) 5' C T C A G T 3'; 3' G A G T C A 5'

(3) 5' G T A T T C 3'; 3' C A T A A G 5'

(4) 5' G A T A C T 3'; 3' C T A T G A 5'

Ans. (1)

143. Which one of the following will accelerate phosphorus cycle ?

(1) Volcanic activity

(2) Weathering of rocks

(3) Rain fall and storms

(4) Burning of fossil fuels

Ans. (2)

144. Match the plant with the kind of life cycle it exhibits:

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

Choose the **correct answer** from the options given below:

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

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

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

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

Ans. (1)

145. 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 one species and (–) for another species involved in the interaction ?

(1) Amensalism

(2) Commensalism

(3) Competition

(4) Predation

Ans. (4)

146. Addition of more solutes in a given solution will :

(1) lower its water potential

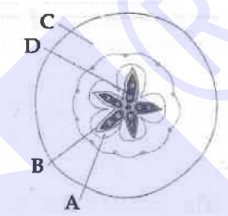
(2) make its water potential zero

(3) not affect the water potential at all

(4) raise its water potential

Ans. (1)

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



(1) B → Endocarp

(2) C → Thalamus

(3) D → Seed

(4) A → Mesocarp

Ans. (2)

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

(1) Myotonic dystrophy

(2) Haemophilia

(3) Thalessemia

(4) Sickle cell anaemia

Ans. (1)

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) Gene mapping

(2) Expressed sequence tags

(3) Bioinformatics

(4) Sequence annotation

Ans. (4)

150. What is the role of large bundle shealth cells found around the vascular bundles in C_4 plants ?

(1) To increase the number of chloroplast for the operation of Calvin cycle

(2) To enable the plant to tolerate high temperature

(3) To protect the vascular tissue from high light intensity

(4) To provide the site for photorespiratory pathway

Ans. (1)

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BIOLOGY

TEST PAPER WITH ANSWER

Section - A (Biology : Zoology)

151. Nitrogenous waste is excreted in the form of pellet or paste by :

(1) *Salamandra*

(2) *Hippocampus*

(3) *Pavo*

(4) *Ornithorhynchus*

Ans. (3)

152. Select the **incorrect** statement with reference to mitosis:

(1) Spindle fibres attach to centromere of chromosomes.

(2) Chromosomes decondense at telophase.

(3) Splitting of centromere occurs at anaphase.

(4) All the chromosomes lie at the equator at metaphase.

Ans. (1)

153. 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.

Reason (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) Both **(A)** and **(R)** are correct but **(R)** is not the correct explanation of **(A)**

(2) **(A)** is correct but **(R)** is not correct

(3) **(A)** is not correct but **(R)** is correct

(4) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

Ans. (2)

154. Under normal physiological conditions in human being every 100 ml of oxygenated blood can deliver _____ml of O_2 to the tissues.

(1) 5ml (2) 4 ml

(3) 10 ml (4) 2 ml

Ans. (1)

155. A dehydration reaction links two glucose molecules to produce maltose. If the formula for glucose is $C_6H_{12}O_6$ then what is the formula for maltose ?

(1) $C_{12}H_{24}O_{12}$ (2) $C_{12}H_{22}O_{11}$

(3) $C_{12}H_{24}O_{11}$ (4) $C_{12}H_{20}O_{10}$

Ans. (2)

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

(1) *Bufo, Balaenoptera, Bangarus*

(2) *Catla, Columba, Crocodilus*

(3) *Pavo, Psittacula, Corvus*

(4) *Corvus, Columba, Chameleon*

Ans. (3)

157. 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) Both **Statement I** and **Statement II** are incorrect

(2) **Statement I** is correct but **Statement II** is incorrect

(3) **Statement I** is incorrect but **Statement II** is correct

(4) Both **Statement I** and **Statement II** are correct

Ans. (2)

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

(1) Directional change

(2) Disruptive change

(3) Random change

(4) Stabilising change

Ans. (1)

159. Which of the following statements with respect to Endoplasmic Reticulum is **incorrect?**

(1) SER is devoid of ribosomes

(2) In prokaryotes only RER are present

(3) SER are the sites for lipid synthesis

(4) RER has ribosomes attached to ER

Ans. (2)

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

(1) Cartilage

(2) Areolar tissue

(3) Smooth muscle

(4) Intercalated discs

Ans. (1)

161. Which of the following functions is **not** performed by secretions from salivary glands?

(1) Digestion of complex carbohydrates

(2) Lubrication of oral cavity

(3) Digestion of disaccharides

(4) Control bacterial population in mouth

Ans. (3)

162. 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 be transcribed

(2) *z*, *y*, *a* genes will not be translated

(3) RNA polymerase will bind the promoter region

(4) Only *z* gene will get transcribed

Ans. (2)

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

(1) Conidia

(2) Gemmules

(3) Buds

(4) Zoospores

Ans. (1)

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

(1) 6.6×10^9 bp

(2) 3.3×10^6 bp

(3) 6.6×10^6 bp

(4) 3.3×10^9 bp

Ans. (4)

165. Which of the following is **not** a connective tissue?

(1) Adipose tissue (2) Cartilage

(3) Neuroglia (4) Blood

Ans. (3)

166. 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) Both **Statement I** and **Statement II** are incorrect

(2) **Statement I** is correct but **Statement II** is incorrect

(3) **Statement I** is incorrect but **Statement II** is correct

(4) Both **Statement I** and **Statement II** are correct

Ans. (4)

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

(1) Fragmentation (2) Humification

(3) Decomposition (4) Catabolism

Ans. (1)

168. 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 Luteinising hormone (LH) and Follicle Stimulating Hormone (FSH) secreted by the anterior pituitary

(e) It is initiated at puberty

Choose the **most appropriate** answer from the options given below:

(1) (b) and (c) only (2) (b), (d) and (e) only

(3) (b), (c) and (e) only (4) (c) and (e) only

Ans. (3)

169. 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 **most appropriate** answer from the options given below:

(1) Both **Statement I** and **Statement II** are incorrect

(2) **Statement I** is correct but **Statement II** is incorrect

(3) **Statement I** is incorrect but **Statement II** is correct

(4) Both **Statement I** and **Statement II** are correct

Ans. (4)

170. 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) 10

(2) 1.0

(3) zero

(4) 0.1

Ans. (4)

171. 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) Both **Statement I** and **Statement II** are incorrect

(2) **Statement I** is correct but **Statement II** is incorrect

(3) **Statement I** is incorrect but **Statement II** is correct

(4) Both **Statement I** and **Statement II** are correct

Ans. (3)

172. Tegmina in cockroach, arises from:

(1) Mesothorax

(2) Metathorax

(3) Prothorax and Mesothorax

(4) Prothorax

Ans. (1)

173. In the taxonomic categories which hierarchial arrangement in ascending order is **correct** in case of animals ?

(1) Kingdom, Class, Phylum, Family, Order, Genus, Species

(2) Kingdom, Order, Class, Phylum, Family, Genus, Species

(3) Kingdom, Order, Phylum, Class, Family, Genus, Species

(4) Kingdom, Phylum, Class, Order, Family, Genus, Species

Ans. (4)

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

(1) *Clostridium butylicum*

(2) *Aspergillus niger*

(3) *Streptococcus cerevisiae*

(4) *Trichoderma polysporum*

Ans. (4)

175. Which of the following is **not** the function of conducting part of respiratory system ?

(1) Inhaled air is humidified

(2) Temperature of inhaled air is brought to body temperature

(3) Provides surface for diffusion of O_2 and CO_2

(4) It clears inhaled air from foreign particles

Ans. (3)

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

(1) Vault barrier

(2) Non–Medicated IUD

(3) Copper releasing IUD

(4) Cervical barrier

Ans. (2)

177. 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) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(2) **(A)** is correct but **(R)** is not correct

(3) **(A)** is not correct but **(R)** is correct

(4) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

Ans. (4)

178. 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) Both **Statement I** and **Statement II** are incorrect

(2) **Statement I** is correct but **Statement II** is incorrect

(3) **Statement I** is incorrect but **Statement II** is correct

(4) Both **Statement I** and **Statement II** are correct

Ans. (2)

179. Regarding Meiosis, which of the statements is **incorrect** ?

(1) DNA replication occurs in S phase of Meiosis-II

(2) Pairing of homologous chromosomes and recombination occurs in Meiosis-I

(3) Four haploid cells are formed at the end of Meiosis-II

(4) There are two stages in Meiosis, Meiosis-I and II

Ans. (1)

180. *In-situ* conservation refers to:

(1) Conserve only high risk species

(2) Conserve only endangered species

(3) Conserve only extinct species

(4) Protect and conserve the whole ecosystem

Ans. (4)

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

(1) Embryonic development stage

(2) Birth

(3) Adult

(4) Puberty

Ans. (1)

182. Which of the following is a **correct** match for disease and its symptoms ?

(1) Tetany - high Ca^{2+} level causing rapid spasms.

(2) Myasthenia gravis - Genetic disorder resulting in weakening and paralysis of skeletal muscle

(3) Muscular dystrophy - An auto immune disorder causing progressive degeneration of skeletal muscle

(4) Arthritis - Inflammed joints

Ans. (4)

183. 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 **most appropriate** answer from the options given below:

(1) Both **Statement I** and **Statement II** are incorrect

(2) **Statement I** is correct but **Statement II** is incorrect

(3) **Statement I** is incorrect but **Statement II** is correct

(4) Both **Statement I** and **Statement II** are correct

Ans. (2)

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

(1) Gene isolated from marrow cells producing ADA is introduced into cells at embryonic stages

(2) Lymphocytes from patient's blood are grown in culture, outside the body.

(3) Genetically engineered lymphocytes are not immortal cells.

(4) Retroviral vector is introduced into these lymphocytes.

Ans. (3)

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

(1) Bio-remediation (2) Bio-fortification

(3) Bio-accumulation (4) Bio-magnification

Ans. (2)

Section - B (Biology : Zoology)

186. Which one of the following statements is **correct** ?

(1) The tricuspid and the bicuspid valves open due to the pressure exerted by the simultaneous contraction of the atria

(2) Blood moves freely from atrium to the ventricle during joint diastole.

(3) Increased ventricular pressure causes closing of the semilunar valves.

(4) The atrio-ventricular node (AVN) generates an action potential to stimulate atrial contraction

Ans. (2)

187. Select the **incorrect** statement regarding synapses:

(1) Electrical current can flow directly from one neuron into the other across the electrical synapse.

(2) Chemical synapses use neurotransmitters

(3) Impulse transmission across a chemical synapse is always faster than that across an electrical synapse.

(4) The membranes of presynaptic and postsynaptic neurons are in close proximity in an electrical synapse.

Ans. (3)

188. Select the **incorrect** statement with respect to acquired immunity.

(1) Anamnestic response is elicited on subsequent encounters with the same pathogen.

(2) Anamnestic response is due to memory of first encounter.

(3) Acquired immunity is non-specific type of defense present at the time of birth.

(4) Primary response is produced when our body encounters a pathogen for the first time.

Ans. (3)

189. Match **List -I** with **List -II**.

List-I (Biological Molecules)	**List-II (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)-(iv), (b)-(ii), (c)-(i), (d)-(iii)

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

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

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

Ans. (3)

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

List-1	**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 Amenorrhea	(iv) They cover the cervix blocking the entry of sperms

Choose the **correct answer** from the options given below:

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

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

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

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

Ans. (1)

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

(1) 40 cells

(2) 60 cells

(3) 80 cells

(4) 20 cells

Ans. (2)

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

(1) d, b, a, c

(2) a, b, c, d

(3) a, c, b, d

(4) a, d, b, c

Ans. (3)

193. 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) Both **Statement I** and **Statement II** are incorrect

(2) **Statement I** is correct but **Statement II** is incorrect

(3) **Statement I** is incorrect but **Statement II** is correct

(4) Both **Statement I** and **Statement II** are correct

Ans. (1)

194. 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) (b)only

(2) (c) and (d) only

(3) (c), (d) and (e) only

(4) (a), (b) and (d) only

Ans. (1)

195. Which of the following statements is **not** true ?

(1) Sweet potato and potato is an example of analogy

(2) Homology indicates common ancestry

(3) Flippers of penguins and dolphins are a pair of homologous organs

(4) Analogous structures are a result of convergent evolution

Ans. (3)

196. Which of the following is **not** a desirable feature of a cloning vector ?

(1) Presence of a marker gene

(2) Presence of single restriction enzyme site

(3) Presence of two or more recognition sites

(4) Presence of origin of replication

Ans. (3)

197. 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)-(i), (b)-(ii), (c)-(iii), (d)-(iv)

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

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

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

Ans. (4)

198. Which of the following is a **correct** statement ?

(1) Bacteria are exclusively heterotrophic organisms.

(2) Slime moulds are saprophytic organisms classified under Kingdom Monera.

(3) Mycoplasma have DNA, Ribosome and cell wall

(4) Cyanobacteria are a group of autotrophic organisms classified under Kingdom Monera.

Ans. (4)

199. 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) (b), (d) and (e) only (2) (a) and (e) only

(3) (b) and (c) only (4) (a) and (c) only

Ans. (1)

200. 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) 50% (2) 75%

(3) 100% (4) 25%

Ans. (3)