

BIOLOGY

101. How many mitotic divisions are needed for a single cell to make 128 cells?
(a) 7 (b) 14
(c) 28 (d) 64
102. The water potential and osmotic potential of pure water are
(a) 100 and 200 (b) Zero and 100
(c) 100 and zero (d) Zero and zero
103. Test cross is a cross between
(a) Hybrid \times Dominant parent
(b) Hybrid \times Recessive parent
(c) Hybrid \times Hybrid parent
(d) Two distantly related species
104. Cyclosporine-A an immunosuppressive drug is produced by
(a) *Aspergillus niger*
(b) *Monascus purpureus*
(c) *Penicillium notatum*
(d) *Trichoderma polysporum*
105. Correct order is
(a) Palaeozoic, Archaeozoic, Coenozoic
(b) Archaeozoic, Palaeozoic, Proterozoic
(c) Palaeozoic, Mesozoic, Coenozoic
(d) Mesozoic, Archaeozoic, Proterozoic
106. The fruit which develops from inflorescence is called
(a) Achene (b) Berry
(c) Etaerio (d) Composite fruit
107. During cell division, the spindle fibres attach to the chromosome at a region called
(a) Chromocentre
(b) Kinetochore
(c) Centriole
(d) Chromomere
108. Arrange the following in the ascending order of Linnaean hierarchy.
(a) Kingdom-Order-Species-Genus-Class-Family-Phylum
(b) Kingdom-Family-Genus-Species-Class-Phylum-Order
(c) Kingdom-Phylum-Class-Order-Family-Genus-Species
(d) Species-Genus-Family-Order-Class-Phylum-Kingdom
109. Select the correct match from the following:
(a) *Rhizopus*-Basidiomycetes
(b) *Alternaria*-Zygomycetes
(c) *Penicillium*-Ascomycetes
(d) *Ustilago*-Deuteromycetes
110. Zonula adherens is a kind of
(a) Filament (b) Desmosome
(c) Membrane (d) Mesosome
111. How many molecules of oxygen can bind to a molecule of haemoglobin?
(a) One (b) Two
(c) Three (d) Four
112. Which of the following statements are true/false?
I. Trimerous condition of floral whorl is characteristics of dicotyledons.
II. *Adiantum* is also called walking fern.
III. In gymnosperms, the vascular system consists of xylem without vessels and phloem with companion cells.
IV. *Riccia* and *Marchantia* are liverworts.
(a) I and II are true and III and IV are false.
(b) I and III are true and IV and II are false.
(c) I and IV are true and II and III are false.
(d) II and IV are true and I and III are false.
113. At what stage of the cell cycle are histone proteins synthesized in a eukaryotic cell?
(a) During G₂- stage of prophase
(b) During S-phase
(c) During entire prophase
(d) During telophase
114. Protochlorophyll differs from chlorophyll in lacking
(a) 2 H- atoms in one of its pyrrole rings
(b) 2 H- atoms in two of its pyrrole rings
(c) 4 H- atoms in one of its pyrrole rings
(d) 4 H- atoms in two of its pyrrole rings
115. In a plant, which is growing in magnesium deficient but urea rich soil
(a) Leaves will turn yellow
(b) Leaves will etiolate
(c) Stem will bend down
(d) Leaves will turn darker green

116. What is the first derived product of pyruvic acid after it enters into mitochondria for respiration?
 (a) Citric acid (b) Acetyl Co-A
 © Isocitric acid (d) Oxaloacetic acid
117. Viper venom affects
 (a) Circulatory system
 (b) Nervous system
 (c) Respiratory system
 (d) None of these
118. The net glomerular filtration rate is an average adult is
 (a) 75 mL min^{-1} (b) 50 mL min^{-1}
 (c) 125 mL min^{-1} (d) 100 mL min^{-1}
119. Which one of the following is a sesamoid bone?
 (a) Pelvis (b) Patella
 (c) Pterygoid (d) Pectoral girdle
120. In photosystem –I the first electron acceptor is
 (a) Cytochrome
 (b) Plastocyanin
 (c) An iron – sulphur protein
 (d) Ferredoxin
121. Patient suffering from cholera are given a saline drip because
 (a) Na^+ ions help in stopping nerve impulse and hence, sensation of pain
 (b) Na^+ ions help in the retention of water in the body tissues
 (c) NaCl is an important component of energy supply.
 (d) NaCl furnishes most of the fuel required for cellular activity
122. A cross section at the midpoint of the middle piece of a human sperm will show
 (a) Centriole, mitochondria and $9 + 2$ arrangement of microtubules
 (b) Centriole and Mitochondria
 (c) Mitochondria and $9 + 2$ arrangement of microtubules
 (d) $9 + 2$ arrangement of microtubules only
123. $\text{Na}^+ - \text{K}^+$ pump is found in membranes of many cells, like nerve cells. It works against electrochemical gradient and involve an integral protein ATPase. For each molecule of ATP used
 (a) 3 ions of Na^+ are pumped out and 2K^+ are taken in
 (b) 3 ions of Na^+ are taken in and 2K^+ are pumped out
 (c) 2 ions of Na^+ are thrown out and 3K^+ are absorbed
 (d) 3 ions of K^+ are absorbed, 3Na^+ are pumped out
124. Path of relax action is
 (a) Receptor, Brain, Muscles
 (b) Receptors, Spinal cord, Muscles
 (c) Muscles, Receptors, Brain
 (d) Muscles, Spinal cord, Muscles
125. NEERI is
 (a) National Ethological and Ecological Research Institute
 (b) National Eugenics and Ecological Research Institute
 (c) National Ecological and Environmental Research Institute
 (d) National Environmental Engineering Research Institute
126. Women who consumed the drug thalidomide for relief from vomiting during early months of pregnancy gave birth to children with
 (a) No spleen
 (b) Hare-lip
 (c) Extra fingers and toes
 (d) Underdeveloped limbs
127. Sickle cell anaemia is
 (a) An autosomal linked dominant trait
 (b) Caused by substitution of valine by glutamic acid in the β – globin chain of haemoglobin
 © Caused by a change in a base pair of DNA
 (d) Characterized by elongated sickle like RBCs with a nucleus

128. The testes in humans are situated outside the abdominal cavity inside a pouch called scrotum. The purpose served is for
- Escaping any possible compression by the visceral organs
 - Providing more space for the growth of epididymis
 - Providing a secondary sexual feature for exhibiting the male sex
 - Maintaining the scrotal temperature lower than the internal body temperature
129. The polymerase chain reaction is a technique that is used for
- in vivo* replication of specific DNA
 - in vivo* synthesis of specific mRNA
 - in vitro* synthesis of specific mRNA
 - in vitro* replication of specific DNA
130. Graft between two different species is called as
- Autograft
 - Allograft
 - Xenograft
 - Isograft
131. A woman is married for the second time. Her first husband was ABO blood type A, and her child by that marriage was type O. Her new husband is type B and their child is type AB. What is the woman's ABO genotype and blood type?
- $I^A I^O$; Blood type A
 - $I^A I^B$; Blood type AB
 - $I^B I^O$; Blood type B
 - $I^O I^O$; Blood type O
132. First clinical gene therapy was performed to prevent development of
- SCID
 - Rheumatoid arthritis
 - Cystic fibrosis
 - Cancer
133. Find the incorrect statement
- Gene therapy is a genetic engineering technique used to treat diseases at molecular level by replacing defective genes
 - Calcitonin is medically useful recombination product in the treatment of infertility
 - Bt* toxin is a biodegradable insecticide obtained from *Bacillus*
 - Totipotency is the potential ability of a cell to develop into a complete plant
134. Using imprints from a plate with complete medium and carrying bacterial colonies, you can select streptomycin resistant mutants and prove that such mutations do not originate as adaptations. These imprints need to be used
- Only on plates with streptomycin
 - On plates with minimal medium
 - Only on plates without streptomycin
 - On plates with or without streptomycin
135. Genetically adapted population to particular habitat is called
- Ecotone
 - Ecotype
 - Biome
 - Niche
136. Study the following in *Pheretima*.
- Dorso intestinal blood vessels
 - External intestinal plexus
 - Internal intestinal plexus
 - Ventro intestinal blood vessel
- Arrange the blood vessels in correct sequence of blood flow from ventral blood vessel.
- The correct sequence is
- IV, II, I, III
 - III, I, II, IV
 - II, III, IV, I
 - IV, II, III, I
137. Which one of the following statements pertaining to pollutants is correct?
- DDT is a non-biodegradable pollutant
 - Excess fluoride in drinking water causes osteoporosis
 - Excess cadmium in drinking water causes black foot disease
 - Methyl mercury in water may cause 'Itai - Itai' disease
138. Golden rice is a transgenic crop of the future with which of the following improved trait?
- High lysine (essential amino acid) content
 - Insect resistance
 - High protein content
 - High vitamin-A content
139. *Nosema bombycis*, which causes pebrine in silk worms is a
- Fungus
 - Virus
 - Bacterium
 - Protozoan

140. Milk secretion in mammals is associated with
 (a) Vasopressin
 (b) Progesterone
 (c) Gonadotropin
 (d) Oxytocin
- Directions for Assertion and Reason Type Questions (For Q. 141 to Q. 150):**
In this type of questions, a statement of Assertion (A) is followed by a Statement of Reason(R). Mark the correct choice as:
- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 (b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion.
 (c) Assertion is true but Reason is false.
 (d) Both Assertion and Reason are false.
141. **Assertion:** In cymose tap root system, oldest branch lies very near to the growing point of the root, while the youngest branch is farthest away from it.
Reason: In cymose tap root system, the primary root itself stops growing after sometime but secondary roots carry on further growth of the root system.
 Ans. (a)
142. **Assertion:**Hybridoma cells are shifted to a medium deficient in nutrient which cannot be synthesized by myeloma cells.
Reason: This medium allows selection of hybridoma cells.
 Ans. (a)
143. **Assertion:** Phenylketonuria is a recessive hereditary disease caused by body's failure to oxidise an amino acid phenylalanine to tyrosine, because of defective enzyme.
Reason: It results in the presence of phenylalanine acid in urine.
 Ans. (a)
144. **Assertion:**Holoblastic cleavage with almost equal sized blastomeres is a characteristics of placental animals.
Reason: Eggs of most mammals, including human, are of centrolecithal type.
 Ans. (c)
145. **Assertion:** The efficiency of C₄ plants is more than those of C₃ plant.
Reason: C₄ plants are more efficient in picking CO₂.
 Ans. (a)
146. **Assertion:***Escherichia coli*, *Shigella* sp. and *Salmonella* sp. are responsible for diarrhoeal disease.
Reason: Dehydration is common to all types of diarrhoeal diseases and adequate supply of fluids electrolytes should be ensured.
 Ans. (b)
147. **Assertion:** Amniocentesis is a process of foetal sex determination.
Reason: Metabolic errors and other diseases can be diagnosed prenatally by this process.
 Ans. (b)
148. **Assertion:** Blood sugar level falls rapidly after hepatectomy.
Reason: The glycogen of the liver is the principal source of blood sugar.
 Ans. (a)
149. **Assertion:** Co- enzyme is a non- protein group without which certain enzymes are inactive or incomplete.
Reason: co- enzymes not only provide a point of attachment of the chemical group being transformed but also influence the properties of the group.
 Ans. (a)
150. **Assertion:** Eukaryotic cells have the ability to adopt a variety of shapes and carry out directed movements.
Reason: There are three principal types of protein filament – microfilament, microtubule and intermediate filaments, which constitute the cytoskeleton.
 Ans. (a)