91. During the formation of primary plant body dermal tissues are present in the form of ?

(1) Epidermis (2) Cortex

(3) Stele (4) Xylem and phloem

92. The plants having vascular tissue, but lacking seeds are placed under :-

(1) Algae (2) Bryophytes

(3) Pteridophytes (4) Gymnosperms

93. Which of the following statements is **correct**?

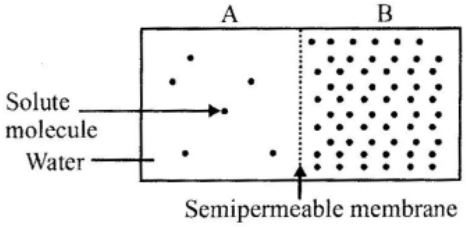
(1) Small and less number of nucleoli are present in cells actively carrying out protein synthesis.

(2) A single human cell has approximately 2.2 metre long thread of DNA distributed among its 46 chromosomes.

(3) Inner membrane of nucleus is continuous with the ER and also bears ribosomes on it.

(4) All living cells possess nucleus with nucleolus and chromatin.

94. Which of the following statements are **correct** about the given figure ?



(a) Water potential of chamber B is more negative

(b) Diffusion of solute will take place from chamber B to chamber A

(c) Diffusion of solvent will take place from chamber A to B

(d) Osmotic pressure of chamber B is higher than chamber A

Options :-

(1) only a & d (2) b, c & d

(3) only a & c (4) a, c & d

95. What happen to the O_2 dissociation curve of Hb if pH is decreased ?

(1) shift to left

(2) shift to right

(3) remain unchanged

(4) will oscillate erratically

96. Which is mismatched :

(1) Bowman's capsule - Glomerular filteration

(2) PCT-Absorption of Na^+ and K^+

(3) DCT- Absorption of glucose

(4) Collection duct - Absorption of water

97. If a germ cell in a female gonad and germ cell in a male gonads begin undergoing meiosis simultaneously, what will be the ratio of ova and sperms produced?

(1) 1 : 1 (2) 1 : 2 (3) 1 : 4 (4) 4 : 1

98. What is the probability of obtaining pure homozygous individuals, if a cross is made between AaBbCcDdxaaBBCCdd individuals ?

(1) $\frac{1}{16}$ (2) $\frac{2}{16}$ (3) $\frac{16}{248}$ (4) $\frac{1}{64}$

99. An important evidence in favour of organic evolution is :

(1) Homologous and vestigial organs

(2) Analogous organs and vestigial organs

(3) Homologous organs only

(4) Homologous and analogous organs

100. What is **wrong** about xerophytes?

(1) Sunken stomata

(2) Small spiny leaves

(3) Thick cuticle

(4) Large number of stomata

101. Which type of permanent tissue is present at the margins of leaf lamina ?

(1) Marginal meristem (2) Parenchyma

(3) Collenchyma (4) Sclerenchyma

102. Which of the following is **not** correctly matched?

(1) *Chlamydomonas* - Unicellular, flagellated

(2) *Laminaria* - Flattened leaf like thallus

(3) *Spirogyra* - Filamentous structure

(4) *Volvox* - Colonial form, nonflagellated

103. Centrioles are differ from cilia or flagella :-

(a) in number of microtubules in each peripheral group.

(b) in number of radial spokes.

(c) in arrangement of microtubules.

(d) in containing proteinaceous central hub.

(e) in being surrounded by double membrane.

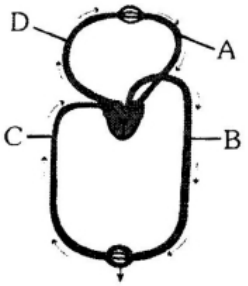
Choose the correct statements:-

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

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

104. All the following steps of TCA cycle, result i $NADH_2$ formation except :-
(1) α-KGA to succinyl CoA
(2) Malic acid to OAA
(3) Succinic acid to fumaric acid
(4) Isocitric acid to oxalosuccinic acid

105. Figure shows schematic plan of blood circulatio in humans with labels A to D, Identify the labe and give its function/s.



(1) D-Dorsal aorta-takes blood from heart to body parts, PO_2 = 95 mm Hg
(2) A-Pulmonary vein-takes impure blood from body parts, PO_2 = 60 mm Hg
(3) B-Pulmonary artery-takes blood from heart to lungs, PO_2 = 90 mm Hg
(4) C-Vena Cava-takes blood from body parts of the right auricle, PCO_2 = 45 mm Hg

106. How many plants in the list given below are polycarpic ?
Wheat, Rice, Maize, Bamboo, Mango, Litchi, Guava, Lemon, Oranges.
(1) Six (2) Three (3) Four (4) Five

107. Milk secretion is caused by :-
(1) Progesterone (2) PRH
(3) PRL (4) Oxytocin

108. The total number of base pair in DNA of a haploid cell of human is :-
(1) 4.6×10^6 bp (2) 3.3×10^6 bp
(3) 6.6×10^9 bp (4) 3.3×10^9 bp

109. Select the **correct** match :
(1) Common ancestor of man and apes – Ramapithecus
(2) First man who stood erect – *Homo habilis*
(3) Connecting link between apes and men – *Australopithecus*
(4) First man who used fire – *Sinanthropus erectus*

110. Which of the following soil shows maximum water holding capacity?
(1) Clay (2) Sand
(3) Silt (4) Gravel

111. Most distinct annual rings are found in the wood of :-
(1) Deciduous temperate plants
(2) Evergreen temperate plants
(3) Deciduous tropical plants
(4) Evergreen tropical plants

112. Which of following structure is triploid ?
(1) Primary endosperm nucleus
(2) Zygote
(3) Embryo
(4) Polar nuclei

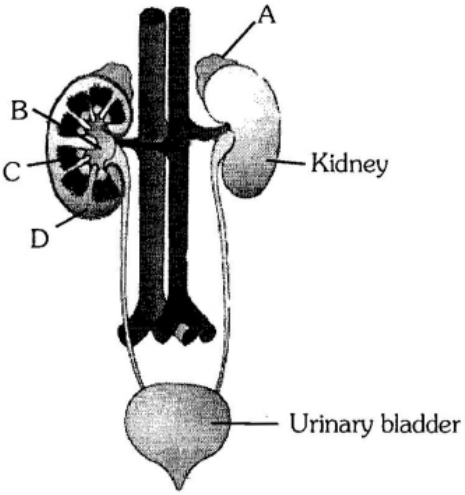
113. All the following are the significances of equational division except :-
(1) Maintenance of the same number of chromosomes cell to cell
(2) Growth of multicellular organisms and cell repair/ replacement
(3) Maintenance of the constant number of chromosomes generation to generation
(4) Restoration of nucleo-cytoplasmic ratio of cells

114. In which portion of the chloroplast, pH is higher when sunlight is on the chloroplast ?
(1) Stroma
(2) Cytosol
(3) Space enclosed by the inner and outer membrane
(4) Space enclosed by the thylakoid membrane

115. Read following statements from A-D :-
(A) Formation of cross bridge.
(B) Release Ca^{+2} ions from sarcoplasmic reticulum into the sarcoplasm.
(C) ATP hydrolysis occur at myosin head.
(D) Unmasking of myosin binding sites.
(E) Actin filaments slides over myosin filaments.
Arrange in correct order of muscle contraction :-
(1) C → A → B → D → E
(2) C → B → D → A → E
(3) B → D → C → A → E
(4) B → A → C → D → E

116. The female gametophyte of a typical dicot plant at the time of fertilization is :-
(1) 8-celled
(2) 6-celled
(3) 7-celled
(4) 4-celled

117. Figure shows human urinary system with structures labelled A to D. Select option which correctly identifies them and gives their characteristics and/or functions.



(1) D-Cortex - outer part of kidney and do not contain any part of nephrons
(2) A-Adrenal gland - located at the anterior part of kidney. Secrete Catecholamines which stimulate glycogen breakdown
(3) B-Pelvis - broad funnel shaped space inner to hilum, directly connected to loops of Henle
(4) C-Medulla-inner zone of kidney and contains complete nephrons

118. Single stranded DNA is found in :-
(1) HIV
(2) $\phi \times 174$ Bacteriophage
(3) Reovirus
(4) Bacteriophage-λ

119. Two key concepts of Darwinians theory –
(1) Branching descent, mutation
(2) Natural selection, Struggle for existence
(3) Natural selection, Branching descent
(4) Branching descent, variations

120. Parasite can be explained as an organism which depends on others for :
(1) Food
(2) Shelter
(3) Both food and shelter
(4) Reproduction

121. Select the **incorrect** pair :
(1) Alternate phyllotaxy- Sun flower
(2) Opposite phyllotaxy - Calotropis
(3) Whorled phyllotaxy - Guava
(4) Reticulate venation- Smilax

122. When any plane passing through the central axis of the body devides the organism into two identical halves it is called :-
(1) Asymetrical
(2) Bilateral symetry
(3) Radial symetry
(4) Cellular level of organisation

123. If in a cell 6 tetrad are present in prophase-I then what will be the number of chromatids in each cell in Anaphase-II ?
(1) 24 (2) 6
(3) 12 (4) 48

124. Read the following functions carefully :-
(i) H_2O splitting
(ii) O_2 release
(iii) NADH formation
(iv) ATP consumption
How many functions among the above carried by PS-Iduring Z-scheme?
(1) Four (2) Zero
(3) Two (4) One

125. The state of heart when it is not pumping blood effectively enough to meet the needs of the body, is :-
(1) Heart attack
(2) Cardiac arrest
(3) Angina pectoris
(4) Heart Failure

126. To form four fully developed polygonum type of embryosacs in angiosperms total number of meiosis and mitosis divisions generations required are :-
(1) 4, 12 (2) 1, 3 (3) 4, 4 (4) 1, 12

127. Which of the following male animal is not heterogametic ?
(1) Fruit fly (2) Fowl
(3) Grasshopper (4) Human

128. Enzyme used in PCR is :-
(1) Taq polymerase (2) gyrase
(3) transcriptase (4) hexolkinase

129. Common ancestor of cycads and dicotyledons is :
(1) Seed ferns (2) Lycopods
(3) Psilophyton (4) Conifers

130. Which of the following is a correct equation for exponential growth curve :-
(1) $\frac{dt}{dN} = rN$ (2) $\frac{dN}{rN} = dt$
(3) $\frac{rN}{dN} = dt$ (4) $\frac{dN}{dt} = rN$

131. Which of the following statements are **correct** for Euphorbia?
(i) Leaves modified in to spines
(ii) Stem modified into leaf like organ
(iii) Cyathium inflorescence
(iv) Ratio of male and female flowers is one: many respectively
(1) (i), (ii), (iii), (iv)
(2) (i), (ii) & (iii)
(3) Only (i)
(4) Only (iii) & (iv)

132. Match the following :-

(a) Coelomate	(i) Aschelminthes
(b) Acoelomate	(ii) Mollusca
(c) Pseudocoelomate	(iii) Platyhelminthes

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

133. Which of these is **mis-matched** ?
(1) Amyloplasts - Store protein granules
(2) Elaioplasts - Store oils or fats
(3) Chloroplasts - Contain chlorophyll pigments
(4) Chromoplasts - Contain coloured pigments carotenoids

134. NAD and NADP contain :-
(1) Niacin and Biotin respectively
(2) Riboflavin and Biotin respectively
(3) Riboflavin and Niacin respectively
(4) Niacin and Niacin respectively

135. What is the type of joint between ribs and sternum?
(1) Cartilagenous joint (2) Synovial joint
(3) Fibrous joint (4) Angular joint

136. Choose the statements which are unrelated for embryo development in flowering plant ?
(1) Develops at micropyle and of ovule
(2) Early stages of embryo development differs in monocots and dicots.
(3) In most cases zygote divide first by transverse division.
(4) Most zygote divide only after certain amount of endosperm is formed.

137. Which of the following is a **correct** match according to secondary metabolites :-

	A (Alkaloid)	B (Toxins)	C (Drugs)
(1)	Vinblastin	Abrin	Morphine
(2)	Codeine	Ricin	Curcumin
(3)	Ricin	Morphine	Abrin
(4)	Rubber	Cellulose	Morphine

138. c-DNA is made by using :-
(1) reverse transcriptase
(2) DNA polymerase-III
(3) RNA polymerase
(4) DNA ligase

139. Match the column-A with B ?

(A)		(B)	
(i)		(a)	Bhang
(ii)		(b)	Datura
(iii)		(c)	Morphine
(iv)	Fungus (claviceps purpurea)	(d)	L.S.D (Lysergic acid diethyl amide)

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

140. Which of the following is an abiotic component of the ecosystem ?

(1) Bacteria (2) Humus
(3) Plants (4) Fungi

141. Find the **incorrect** statements about bacterial characters :-

(A) F-pili are longer and they occur only in donor bacteria.
(B) Capsulated bacteria are mostly pathogenic and more resistant.
(C) Cell wall of gram negative bacteria is made up of only one layer of lipopolysaccharides.

(1) A and B (2) B and C
(3) Only C (4) Only B

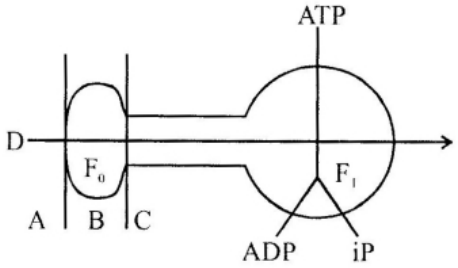
142. Common name of aurelia is :-

(1) Star fish (2) Tarpedo
(3) Jelly fish (4) flat worm

143. Cell organelle, which divides the intracellular space into luminal and extra luminal compartments and contain rough surface, is frequently observed in the cells actively involved in :-

(1) Protein synthesis
(2) Lipid synthesis
(3) Carbohydrate synthesis
(4) r-RNA synthesis

144.



Choose the **correct** option with respect to A,B,C and D given in diagram of coupling process in mitochondria:-

	A	B	C	D
(1)	Inner chamber	Inner mitochondrial membrane	Outer chamber	$2H^+$
(2)	Inner chamber	Inner mitochondrial membrane	Outer chamber	$3H^+$
(3)	Outer chamber	Inner mitochondrial membrane	Inner chamber	$2H^+$
(4)	Outer chamber	Outer mitochondrial membrane	Inner chamber	$2H^+$

145. Neurons are excitable cells because their membranes are in a_____?

(1) Polarised state
(2) Depolarised state
(3) Hyperpolarised state
(4) Neutral state

146. Which of the following plant does not show dioecious condition ?

(1) Marchantia (2) Papaya
(3) Date palm (4) Coconut

147. Consider the following statements and select the option which include all the **correct** ones only:-
(a) Transcription and translation can be coupled in bacteria
(b) The split gene arrangements represents the advanced feature of the genome
(c) The process of splicing represents the dominance of RNA-world
(d) The presence of introns in split gene is reminiscent of antiquity
(1) a,b,d (2) a,b,c (3) a,c,d (4) b,c,d

148. Transgenic mice are being developed for use in:-
(1) Testing the safety of polio vaccines before they are used on human
(2) Production of factor IX
(3) Production of human protein enriched milk
(4) Production of human insulin

149. Identify the **incorrect** statement ?
(1) Thalassemia is quantitative and sickle cell anemia is qualitative problem of haemoglobin synthesis
(2) Down's syndrome is most common chromosomal aneuploidy
(3) Phenyl ketonuria and alkaptonuria patients both possess features of albinism
(4) Cri-du- chat syndrome is due to partial deletion of short arm of 5^{th} chromosome.

150. Which of the following process helps in nutrient conservation?
(1) Mineralisation (2) Immobilisation
(3) Leaching (4) Nitrification

151. Select **incorrect** statement from the following about bryophytes :-
(1) The plant body of liverworts is not thalloid and made of rhizoids, stem and leaves.
(2) Mosses have upright, slender axis bearing spirally arranged leaves.
(3) Spores germinate to form gametophyte
(4) The zygote produces a sporophyte.

152. Fisheries include rearing, catching and selling etc of :-
(1) Fishes (2) Molluscs
(3) Crustaceans (4) All of these

153. The principal function of Golgi apparatus is :-
(1) Synthesis of lipids and proteins
(2) Formation of vacuoles and microbodies
(3) Modification of nucleic acids
(4) Packaging of materials to be delivered inside the cell or outside the cell

154. Match the item in column I (vitamins)with those in column II (deficiency diseases)

Column-I Vitamins	Column-II Diseases
I – K	A – Beri-beri
II – D	B – Haemorrhagic disease
III – B_1	C – Night blindness
IV – A	D – Rickets

Which one of the following is the correct matching of all the four vitamins.
(1) I – C, II – B, III – D, IV – A
(2) I – B, II – D, III – A, IV – C
(3) I – A, II – B, III – D, IV – C
(4) I – C, II – A, III – D, IV – B

155. Sodium potassium pump transports.
(1) $3Na^+$ into the cell for $2K^+$ outwards
(2) $3Na^+$ outwards for $2K^+$ into the cell
(3) $2Na^+$ outwards for 3Kt into the cell
(4) $2Na^+$ outwards for $2K^+$ into the cell

156. In adventive embryony embryos develop from :-
(1) Nucellus (2) Endosperm
(3) Synergids (4) Antipodal cell

157. In a family father is affected by Down syndrome and mother is normal then what will be percentage of affected offspring :-
(1) 50 % (2) 100 % (3) 25 % (4) 75 %

158. The techniques that serve the purpose of early diagnosis of disease or pathogen :-
(1) Southern Hybridization
(2) PCR
(3) ELISA
(4) All of the above

159. Widal test is used in the diagnosis of following pathogen ?
(1) *Mycobacteria*
(2) *Salmonella*
(3) *Vibrio*
(4) *Plasmodium*

160. In a food chain herbivores are :-
(1) Primary producers
(2) Secondary consumer
(3) Secondary producers
(4) Top consumers

161. Female gametophyte in gymnosperm is found in:-
(1) Ovule
(2) Pollen grain
(3) Male gametes
(4) All of these

162. In cockroach two pairs of wings arise from :-
(1) Prothorax, mesothorax
(2) Mesothorax, metathorax
(3) Prothorax, metathorax
(4) Both from prothorax

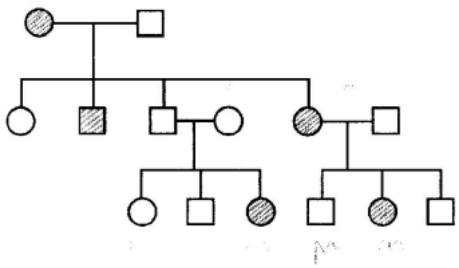
163. Which one of the following hormone play important role in seed development, maturation and dormancy ?
(1) ABA (2) IAA (3) GA (4) CK

164. Identify the correct set which shows the name of the enzyme from where it is secreted and substrate upon which it acts.
(1) Pepsin – Stomach wall – casein
(2) Ptyalin – Intestine – maltose
(3) Chymotrypsin – Salivary gland – Lactose
(4) Ptyalin – Pancreas – lipid

165. Sense of balance maintained with the help of :-
(1) Malleus (2) Stirrup
(3) Semicircular canal (4) Cochlea

166. A 36 year old female have 2 child. If menses start at the age of 12 year then calculate the number of secondary oocyte and ova on till age :-
(1) 288 secondary oocyte and 2 ova
(2) 258 secondary oocyte and 2 ova
(3) 252 secondary oocyte and 12 ova
(4) 248 secondary oocyte and 2 ova

167. Given pedigree chart show which type of inheritance ?



(1) X-linked recessive
(2) Autosomal dominant
(3) Autosomal recessive
(4) X-linked dominant

168. Which microbes used as a biopesticide ?
(1) *Streptococcus*
(2) *Bacillus thuringiensis*
(3) *Pseudomonas putida*
(4) Ladybird beetle

169. Which of the following is responsible for rejection of graft?
(1) Cell mediated immunity
(2) Antibody mediated immunity
(3) Cytokine barrier
(4) Inflammation

170. Which of the following represent the sedimentary type of nutrient cycle ?
(1) Nitrogen (2) Carbon
(3) Phosphorus (4) Oxygen

171. Which one of the following statements is **true** ?
(1) Cyanobacteria are also called red - green algae.
(2) Golden algae are also called desmids.
(3) Eubacteria are also called false bacteria.
(4) Phycomycetes are also called fungi imperfecti.

172. Cuboidal epithelium are present in :-
(1) Airsacs of lungs and fallopian tubes
(2) Tubular parts of nephrons in kidneys
(3) in the lining of stomach and intestine
(4) All above

173. How many of the following organisms **not** fix the atmospheric nitrogen in free living condition ?

Frankia, Anabaena, Rhodospirillum, Bijernickia, Rhizobium, Azotobacter, Nostoc

(1) Two (2) Four

(3) Five (4) Three

174. Partial pressure of oxygen in alveoli, atmospheric air and tissue will be

(1) 40, 159, 45

(2) 40, 0.3, 45

(3) 104, 159, 40

(4) 104, 0.3, 45

175. Mark the correct matching of hormone and the disorder.

(1) PTH-cretinism

(2) Thyroxine- addisons disease

(3) Insulin - diabetes insipidus

(4) Cortisol - cushing disease

176. The growth of mature Graafian follicle is controled by :

(1) Progesterone – oestrogen

(2) FSH-LH

(3) FSH-LTH

(4) FSH, Progesterone, oestrogen

177. If the frequency of recessive allele in the population is 40%. Find the number of Dominant individuals out of a population of 5000 individuals:-

(1) 3000 (2) 4200

(3) 3500 (4) 2000

178. Which variety of bhindi is resistant to shoot borer and fruit borer insect ?

(1) Pusa sawani

(2) Pusa A-4

(3) Pusa Komal

(4) Both (1) and (2)

179. Animals that can tolerate a narrow range of salinity are :

(1) Stenothermal

(2) Eurythermal

(3) Stenohaline

(4) Euryhaline

180. The breakdown of detritus into small particles by earthworm is a process called :-

(1) Mineralisation

(2) Catabolism

(3) Humification

(4) Fragmentation