(BOTANY)

SECTION - A

101. In which phase of cell cycle amount of DNA constant at 4c level?
(1) G_1 (2) G_2
(3) S (4) M

102. Splitting of centromere and hence separation of chromatids occurs during
(1) Prophase-II (2) Anaphase-I
(3) Anaphase-II (4) Metaphase-II

103. The four chromatids of each bivalent chromosomes becomes distinct and clearly appears as tetrads in–
(1) Zygotene (2) Pachytene
(3) Diplotene (4) Diakinesis

104. Which of the following is **incorrect** about bacteria?
(A) Almost occur everywhere.
(B) Can live in hot spring, deep ocean, snow and desert areas.
(C) Can live as a parasite.
(D) It is composed of simple behaviour and complex structure.
(1) (A) and (B) only
(2) (A) and (D) only
(3) (B) and (C) only
(4) (D) only

105. Mark the **correct** statement/s.
(A) Cyanobacteria have 'chl b' similar to green plants
(B) Chemosynthetic bacteria oxidises various inorganic substance into simpler one.
(C) True sexual reproduction present in monera
(1) Both A and B correct
(2) Both B and C correct
(3) Only B correct
(4) Only A correct

106. Most extensive metabolic diversity is found in–
(1) Protozoans (2) Bacteria
(3) Fungi (4) Both (1) and (2)

107. In which phase ER and golgi body disappear.
(1) Anaphase (2) Metaphase
(3) Prophase (4) Telophase

108. Mark the **incorrect** statement/s.
Statement-I: Majority of bacteria are able to manufacture their food from inorganic raw material.
Statement-II: Most common reproduction in bacteria is spore formation.
(1) Only statement I incorrect
(2) Only statement II incorrect
(3) Statement I and II both incorrect
(4) Statement I and II both correct

109. Which of the following not **correct** for interkinesis?
(1) DNA Duplication occur
(2) Stage between two meiotic division
(3) Short lived
(4) Both (1) and (3)

110. Which of the following are autotrophs?
(1) Photosynthetic bacteria
(2) Chemosynthetic bacteria
(3) Archaebacteria
(4) Both (1) and (2)

111. Which of the following bacteria are comma-shaped?
(1) *Coccus* (2) *Vibrio*
(3) *Bacillus* (4) *Clostridium*

112. Compaction of chromosome occur throughout in _____ phase of meiosis
(1) Leptotene (2) Zygotene
(3) Pachytene (4) Diplotene

113. In meiosis, synapsis occurs during
(1) Pachytene (2) Zygotene
(3) Leptotene (4) Diplotene

114. Read the following statements regarding methanogens and select the **correct** option.
(i) They are included in the group Archaebacteria.
(ii) They are responsible for the production of biogas in gobar gas plants.
(iii) They live in hot sulphur springs.
(1) Statements (i) and (ii) are correct.
(2) Only Statements (i) is correct.
(3) Statements (i), (iii) are correct.
(4) All statements are correct.

115. Mark the **correct** statement/s.
Statement-I Chemoautotrophs bacteria play role in recycling of nitrogen, phosphorous, iron sulphur.
Statement-II Archaebacteria and other bacteria having same cell wall structure.
(1) Statements I and II are correct
(2) Only Statements I is correct
(3) Only Statements II is correct
(4) Statements I and II are incorrect

116. Which statement is **not** true about *Mycoplasma*?
(1) They are smallest living organism with well-defined nucleus
(2) They can be parasitic to plants only.
(3) They lack cell wall
(4) Both (1) and (2)

117. End of prophase is marked by–
(1) Complete disintegration of nuclear membrane
(2) Disappearance of ER, Golgi complex, nucleolus and nuclear envelope
(3) Initiation of condensation of chromosomal material
(4) Chromosomes align at the equatorial Plate

118. The phase characterised by the alignment of chromosome at the equator is
(1) Prophase (2) Anaphase
(3) Metaphase (4) Telophase

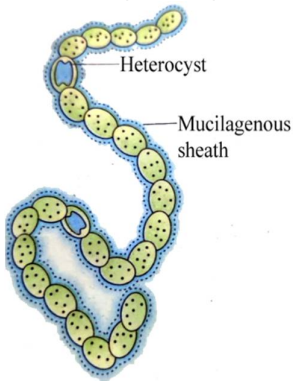
119. As compared to slime moulds, Euglenoids show–
(A) Chloroplasts
(B) Photosynthetic nutrition
(C) Proteinaceous pellicle
(D) Contractile vacuole
(1) Only A & B (2) Only B & C
(3) Only A, B & C (4) All of the above

120. Plasmogamy involve fusion of–
(1) Two motile gametes
(2) Non-motile gametes
(3) Fusion of zoospore
(4) Both (1) and (2)

121. Which of the following is not true for diatom?
(1) Passive movement
(2) Flagellated cells
(3) Cell wall like overlapping shells, which fit together as in a soap box
(4) Used in polishing, filtration of oils and syrups

122. Plant disease citrus canker caused by–
(1) Bacteria (2) Virus
(3) Protozoa (4) Fungi

123. How many of the given features (**a to e**) are **correct** about the organism given in this diagram.



a. Filamentous blue green algae
b. Can fix atmospheric nitrogen
c. Have specialized cells heterocysts
d. Chemosynthetic autotrophs
e. Heterocyst can perform the photosynthesis
(1) Two (2) Three
(3) One (4) Four

124. From given statements, mark the **correct**.
(1) *Ustilago* produced sexual spore exogenously
(2) Coenocytic mycelium is found in *Penicillium*
(3) Ascomycetes are mostly unicellular
(4) Both (1) and (2)

125. Fungi which produces exogenously sexual spores is
(1) *Aspergillus* (2) *Agaricus*
(3) *Trichoderma* (4) *Albugo*

126. Many members of _____ class are decomposers of litter and help in mineral cycling.
(1) Ascomycetes
(2) Deuteromycetes
(3) Basidiomycetes
(4) Phycomycetes

127. Following features belong to:
A. Complete lacking of cell wall
B. Anaerobic
C. PPLO included
D. Penicillin not effective
(1) Chrysophytes (2) Cyanobacteria
(3) Viroids (4) *Mycoplasma*

128. Match the organisms in column I with habitats in column II.

	Column-I		**Column-II**
A.	Halophiles	(i)	Hot springs
B.	Thermoacidophiles	(ii)	Aquatic Environment
C.	Methanogens	(iii)	Guts of Ruminants
D.	Cyanobacteria	(iv)	Salty area

Select the **correct** answer from the options given below.
(1) A-(iv), B-(i), C-(iii), D-(ii)
(2) A-(i), B-(ii), C-(iii), D-(iv)
(3) A-(iii), B-(iv), C-(ii), D-(i)
(4) A-(ii), B-(iv), C-(iii), D-(i)

129. The X-shaped structures observed during diplotene are
(1) Chiasmata
(2) Synaptonemal complex
(3) Bivalent complex
(4) None of these

130. In which phase chromosome loose its identity and convert into chromatin?
(1) Anaphase (2) Metaphase
(3) Prophase (4) Telophase

131. In which phase of cell cycle, DNA content gets doubled?
(1) Interphase (2) Anaphase
(3) Prophase (4) Telophase

132. What is the approximate percentage duration of cell cycle that comes under interphase in humans.
(1) 100% (2) 95%
(3) 25% (4) 5%

133. Photosynthetic pigment present in *Nostoc* is Chlorophyll–
(1) a + c (2) a + d
(3) a (4) a + e

134. Which of the following occur in S-phase?
(1) Histone synthesis
(2) Centriole duplication
(3) DNA replication
(4) All of the above

135. Choose **incorrect** pair.
(1) Terminalisation – Diakinesis
(2) Crossing over – Pachytene
(3) Synapsis – Zygotene
(4) Synaptonemal complex – Leptotene

SECTION-B

136. The kingdom system that did not distinguish between the prokaryotes and eukaryotes as well as unicellular and multicellular organisms was given by–
(1) Copeland (2) Linnaeus
(3) Carl Woese (4) Whittaker

137. Under favourable conditions, the most common method of reproduction in bacteria is–
(1) Binary fission
(2) Endospore formation
(3) Transformation
(4) Conjugation

138. Consider the following statement.
A. Protista have membrane bound organelle
B. Protista can be photosynthetic
C. Well defined nucleus present in Protista
D. Boundaries of protista kingdom are not well defined
Mark the **correct** statements.
(1) A, B and C (2) B, C and D
(3) A, C and D (4) All correct

139. Heterocyst is a structure which is associated with–
(1) Nitrogenase
(2) Absence of chl a
(3) Absence of PS-II
(4) All of these

140. Whittaker's kingdom are–
(1) Plantae and Animalia
(2) Monera and Protista
(3) Fungi
(4) All of these

141. In M phase, the division of nucleus is called as
(1) Cytokinesis (2) Karyokinesis
(3) Nucleokinesis (4) Diakinesis

142. The photosynthetic protists are–
(1) Diatoms, euglenoids, and slime moulds
(2) Amoeba, dinoflagellates, and diatoms
(3) Euglenoids, diatoms, and dinoflagellates
(4) Ciliates, zooflagellates, and dinoflagellates

143. Consider the following statement.
A. Spores of slime mould have true cell wall
B. Plasmodium show differentiation in favourable conditions
C. Slime moulds are saprophytic protists
D. Diatoms are chief producer of ocean
Mark the **correct** statement.
(1) Only A, B and D
(2) Only A, C and D
(3) Only A and D
(4) All are correct

144. The parasite of sleeping sickness is
(1) *Entamoeba* (2) *Trypanosoma*
(3) *Paramoecium* (4) *Amoeba*

145. During meiosis, anaphase-II begins with–
(1) Separation of homologous chromosomes
(2) Simultaneous splitting of centromere of each chromosome
(3) Movement of homologous chromosomes towards opposite poles
(4) Expansion of spindle fibres

146. Dissolution of the synaptonemal complex occurs during:
(1) Zygotene (2) Diplotene
(3) Leptotene (4) Pachytene

147. The complete disintegration of nuclear envelope in a cell cycle marks the
(1) Start of prophase of mitosis
(2) Start of metaphase of mitosis
(3) End of anaphase of mitosis
(4) Start of telophase of mitosis

148. Mark the **incorrectly** matched:
(1) Anaphase – Separation of sister chromatids
(2) Metaphase – Spindle fibre attached to Kinetochore
(3) Telophase – Nuclear membrane reappear
(4) Prophase – Chromosome condensation complete

149. The phase of cell cycle in which the centriole duplicates in the cytoplasm?
(1) S Phase (2) G_1 phase
(3) G_2 phase (4) G_0 phase

150. In ……. Phase of meiosis-I, chromosome pair is connected to opposite pole by spindle fibre–
(1) Prophase-I (2) Metaphase-I
(3) Metaphase (4) Both (1) and (2)

(ZOOLOGY)

SECTION - A

151. Which plasma protein help in defence by killing pathogens

(1) Albumin (2) Globulin
(3) Fibrinogen (4) Prothrombin

152. Closed circulatory system is found in

(1) Arthropoda (2) Echinodermata
(3) Hemichordata (4) Annelida

153. Ventricles are thick walled as compared to atrium because

(1) It is to receive blood from atria.
(2) It is present on the posterior side.
(3) It has to pump blood to different body organs.
(4) None of these

154. **Assertion:** In a healthy person cardiac output almost equal to 5 litre.
Reason: In each cardiac cycle approx 5 litre blood circulates throughout body.

(1) Both Assertion and Reason are true but Reason is correct explanation of Assertion.
(2) Both Assertion and Reason are true but Reason is not correct explanation of Assertion.
(3) Assertion is true and Reason is false.
(4) Assertion and Reason both are false.

155. Two chambered venous heart is found in

(1) Birds (2) Frog
(3) Reptiles (4) Fishes

156. Megakaryocytes of bone marrow produces:

(1) RBCs (2) Monocytes
(3) Lymphocyte (4) Platelets

157. A person with blood group A +ve contain:

(1) A antigen on RBC and anti A antibody in plasma
(2) B antigen on RBC and anti B antibody in plasma
(3) Rh antigen and anti B antibody in plasma
(4) No antigen on RBC anti A antibody in plasma

158. Which nodal tissue is found in upper right corner of right atrium?

(1) SA node
(2) AV node
(3) Purkinje fibres
(4) AV bundle

159. Match the column I with column II and choose the correct options.

	Column-I		**Column-II**
A.	Agranulocyte	P.	5-55 million/mm^3
B.	Granulocyte	Q.	12-16 gm
C.	Haemoglobin	R.	Neutrophil
D.	Red blood corpuscles	S.	Lymphocyte

	A	**B**	**C**	**D**
(1)	P	Q	R	S
(2)	S	R	Q	P
(3)	Q	R	P	S
(4)	P	S	R	Q

160. If the stroke volume is 70 mL and heart rate is 72 per min. What is the cardiac output?

(1) 500 mL (2) 5040 mL
(3) 3600 mL (4) 300 mL

161. When two atria contract simultaneously and result in the blood pumping into ventricle. This called:

(1) Atrial diastole
(2) Atrial systole
(3) Ventricular diastole
(4) Ventricular systole

162. Which enzyme is responsible for conversion of fibrinogens to fibrin?

(1) Thrombin
(2) Thrombokinase
(3) Prothrombin.
(4) Thromboplastin

163. Two separate circulatory pathways i.e. double circulation is found in:

(1) Reptiles and birds
(2) Mammals only
(3) Birds, crocodile and mammals
(4) Reptiles and mammals

164. Which is incorrect match in the following?

(1)	AV node	:	Lower left corner of right atrium
(2)	Interatrial septum	:	Thick and Muscular
(3)	Coronary circulation	:	Blood flow to Heart muscles
(4)	Purkinje fibres	:	Ventricles

165. All the components of the nodal tissues are auto excitable. Why does the SA node act as the normal pacemaker?
(1) SA node has the lowest rate of depolarisation.
(2) The SAN can generate the maximum no. of action potentials
(3) Only SA node have the ability to generate action potential.
(4) Both (2) and (3)

166. From the given structural components of the heart which of the following parts carry oxygenated blood?
(1) Pulmonary vein
(2) Hepatic vein portal
(3) Pulmonary artery
(4) Both (1) and (2)

167. To obtain a standard FCG the patient is connected to the machine with their electrical loads these three electrical leads are connected to
(1) Chest and each wrist.
(2) Each ankle and wrist
(3) Thigh and ankle.
(4) Each wrist and left ankle.

168. Erythroblastosis foetalis is a disease in which.
(1) 1^{st} Foetus suffers from Anaemia
(2) 2^{nd} foetus suffers from cancer
(3) 2^{nd} foetus is normal and 1^{st} foetus has jaundice
(4) 2^{nd} foetus has jaundice

169. The first heart sound Lubb occurs in which phase of the cardiac cycle?
(1) Joint diastole
(2) Atrial systole
(3) Ventricular systole
(4) Ventricular diastole

170. Which Leucocyte secretes Histamine?
(1) Basophil (2) Eosinophil
(3) Lymphocyte (4) Platelet

171. The cardiac impulse is initiated and conducted further up to ventricle the correct sequence of conduction of impulse is:
(1) SA node → AV node → Purkinje fibres → AV bundle
(2) SA node → Purkinje fibres → AV node → AV bundle
(3) SA node → AV node → AV bundle → Purkinje fibres
(4) SA node → Purkinje fibres → AV bundles → AV node

172. Leukocytes are known as WBCs as they are colourless due to
(1) Presence of nucleus
(2) Due to presence of Mitochondria
(3) Lack of Haemoglobin
(4) Due to the presence of secretory granules.

173. The true statement about RBCs is
(1) RBC have an average life span of 120 days.
(2) RBC are formed in the red bone marrow in adults.
(3) RBCs are destroyed in the spleen (graveyard of RBCs)
(4) All of the above

174. Which of the following are parts of systemic circulation?
(1) Aorta, pulmonary, Vena cava
(2) Vena cava, Pulmonary, Aorta artery
(3) Aorta, Vena cava, coronary artery
(4) Superior Vena cava, coronary artery, Pulmonary vein

175. Tricuspid value is present in between:
(1) Right atrium and right ventricle
(2) Right atrium and left ventricle
(3) Left atrium and left ventricle
(4) Left atrium and right ventricle

176. Which will decrease Heart Rate?
(1) Adrenalin (2) Noradrenalin
(3) Sympathetic (4) Para sympathetic

177. Which part of the brain can moderate cardiac functions?
(1) Pons (2) Cerebrum
(3) Medulla (4) Cerebellum

178. Which is not correctly matched in the following?
(1) Albumin → Plasma protein
(2) ORS complex → Ventricular depolarisation
(3) T-wave → Ventricular repolarisation
(4) End of T-wave → End of Diastole

179. The process of excretion involves?
(1) Removal of useful substances from the body.
(2) Removal of metabolic wastes from the body
(3) Removal of the substances which have never been used by the body
(4) Removal of by-products formed during useful activities in the body

180. Among the following ___X___ most toxic and ___Y___ requires least water for its excretion?
(1) X = NH_3 and Y = Urea
(2) X = Urea and Y = Uric acid
(3) X = Uric acid and Y = NH_3
(4) X = NH_3 and Y = Uric acid

181. Which part of the nephron is not found in cortex?
(1) PCT (2) DCT
(3) Glomerulus (4) Loop of Henle

182. "Excretion of N_2 wase in the form of paste or pellet" is seen in
(1) Bony fishes
(2) Reptiles
(3) Aquatic amphibians
(4) Mammals

183. Each kidney of adult human measures:

	Length	Width	Thickness	Weight
(1)	10-12 cm	5-7 cm	2-3 cm	120-170
(2)	10-20 cm	10-12 cm	6-12 cm	40-50
(3)	2-6 cm	10-12 cm	6-12 cm	40-50
(4)	10-12 cm	6-7 cm	2-3 mm	120-170

184. Kidney are not required in elimination of ___X___ in ___Y___.
(1) X = Urea, Y = Mammals
(2) X = NH_3, Y = Birds
(3) X = NH_3, Y = Aquatic amphibians
(4) X = Uric acid, Y = Reptiles

185. Hypertension or high blood pressure is:
(1) $BP = \frac{120}{80}$ (2) $BP = \frac{130}{90}$
(3) $BP = \frac{140}{90}$ (4) $BP = \frac{100}{60}$

SECTION: B

186. Which one of the following is a tube that carries urine from the kidney to the urinary bladder?
(1) Loop of Henle (2) Ureter
(3) Urethra (4) Afferent arteriole

187. Each kidney has how many nephrons?
(1) About 2 million (2) About 1 million
(3) About 5000 (4) About 50,000

188. Which of the following statements is incorrect?
(A) Outer cortex and inner medulla are the two zones in kidney.
(B) Medulla is in the form of many medullary pyramids.
(C) Renal artery brings O_2 blood to the kidney.
(D) Inwards extension of cortex between renal column or medullary pyramids is called Bowman's capsule
(1) A and D (2) B and D
(3) Only D (4) All of the above

189. Match the column I with column II

	Column-I		Column-II
A.	Nephridia	I.	Crustaceans (Prawn)
B.	Malphighian tubules	II.	Annelids (Earthworm)
C.	Antennal gland or green gland	III.	Insects (Cockroach)

	A	B	C
(1)	I	II	II
(2)	III	II	I
(3)	II	III	I
(4)	II	I	III

190. Kidneys are reddish brown, bean shaped structures situated between the level of ___A___ thoracic and ___B___ lumbar vertebrae.
(1) A- Last (12^{th}), B- 3^{rd}
(2) A- 3^{rd}, B- Last
(3) A- 3^{rd}, B- 5^{th}
(4) A- 3^{rd}, B- 2^{nd}

191. Protonephridia are the excretory structure in:
(1) Aschelminthes (2) Platyhelminthes
(3) Prawn (4) Molluscs

192. The term 'ammonotelic' and 'ureotelic' and 'uricotelic' are used to describe:
(1) Modes of excretory system development
(2) The actions of hormones on the excretory system.
(3) The types of nitrogenous waste produced by various class of vertebrates.
(4) Modification of kidney tubules to enhance excretion.

193. Renal corpuscle or Malpighian body is?
(1) Bowman's capsule
(2) Glomerulus with afferent
(3) Glomerulus only
(4) Glomerulus along with Bowman's capsule

194. **Statement I:** Cortical nephrons are less in number as compared to Juxta medullary nephrons.
Statement II: Juxta medullary nephrons have a longer loop of Henle that goes deep in cortex of Kidney.
(1) Both statement I and statement II are correct.
(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 incorrect.

195. **Assertion:** Blood exhibits coagulation or clotting in response to an injury or trauma.
Reason: Blood coagulation is mechanism to present excessive loss of blood from the body.
(1) Both Assertion and Reason are true but Reason is correct explanation of Assertion.
(2) Both Assertion and Reason are true but Reason is not correct explanation of Assertion.
(3) Assertion is true and Reason is false.
(4) Assertion and Reason both are false.

196. A person's ECG indicated 100 ORS complex in a time interval of 1 min what will the heart rate approximately.
(1) 50 per min (2) 100 per min
(3) 40 per min (4) 40 per min

197. Congestive heart failure involves congestion in
(1) Liver (2) Lungs
(3) Kidney (4) Brain

198. Match column I with column II and select the correct option.

	Column-I (Area of Heart)		**Column-II (Receives blood)**
A.	Right atrium	I.	Left atrium
B.	Right ventricle	II.	Vena cava
C.	Left atrium	III.	Right atrium
D.	Left ventricle	IV.	Pulmonary vein

	A	**B**	**C**	**D**
(1)	II	III	IV	I
(2)	I	II	III	IV
(3)	IV	I	II	III
(4)	III	IV	I	II

199. Which is a correct statement in the following?
(1) Heart is protected by double walled pleura
(2) When heart stops beating, condition is called heart failure
(3) Cardiac output of athletes in higher than a normal man
(4) Tunica externa of artery is made up of smooth muscles.

200. A symptom of acute chest pain appears when no oxygen reaching the heart muscle is called?
(1) High blood pressure
(2) Angina
(3) Hear failure
(4) Coronary artery disease

(BOTANY)

101. (2)
In G_2 phase of cell cycle amount of DNA constant at 4c level.
Class 11th NCERT Pg. No.163

102. (3)
Anaphase II: It begins with the simultaneous splitting of the centromere of each chromosome (which was holding the sister chromatids together), allowing them to move toward opposite poles of the cell.
Class 11th NCERT Pg. No. 168, 169

103. (2)
Pachytene- During this stage, the four chromatids of each bivalent chromosomes becomes distinct and clearly appears as tetrads.
Class 11th NCERT Pg. No. 168

104. (4)
Bacterial structure is very simple, they are very complex in behaviour.
Class 11th NCERT Pg. No.18

105. (3)
* Cyanobacteria have chl a similar to green plants.
* True sexual reproduction absent in monera.

Class 11th NCERT Pg. No.19

106. (2)
Most extensive metabolic diversity is found in monera.
Class 11th NCERT Pg. No.19

107. (3)
Prophase.
Class 11th NCERT Pg. No.164

108. (3)
Some of the bacteria are autotrophic, i.e., they synthesise their own food from inorganic substrates.
Bacteria reproduce mainly by fission.
Class 11th NCERT Pg. No.19,20

109. (1)
The stage between the two meiotic divisions is called interkinesis and is generally short lived.
There is no replication of DNA during interkinesis. Interkinesis is followed by prophase II, a much simpler prophase than prophase I
Class 11th NCERT Pg. No.169

110. (4)
Photosynthetic bacteria and chemosynthetic bacteria both.
Class 11th NCERT Pg. No.19

111. (2)
Bacteria are grouped under four categories based on their shape: the spherical Coccus (pl.: cocci), the rod-shaped Bacillus (pl.: bacilli), the comma-shaped Vibrium (pl.: vibrio) and the spiral Spirillum.
Class 11th NCERT Pg. No.18

112. (1)
During leptotene stage the chromosomes become gradually visible under the light microscope. The compaction of chromosomes continues throughout leptotene.
Class 11th NCERT Pg. No.168

113. (2)
Zygotene-During this stage chromosomes start pairing together and this process of association is called synapsis. Such paired chromosomes are called homologous chromosomes.
Class 11th NCERT Pg. No.168

114. (1)
Methanogens are present in the gut of several ruminant animals such as cows and buffaloes and they are responsible for the production of methane (biogas) from the dung of these animals.
Class 11th NCERT Pg. No.19

115. (2)
Archaebacteria differ from other bacteria in having a different cell wall structure and this feature is responsible for their survival in extreme conditions.
Class 11th NCERT Pg. No.19

116. (4)
Mycoplasma are prokaryotes.
The Mycoplasma are organisms that completely lack a cell wall. They are the smallest living cells known and can survive without oxygen. Many *mycoplasma* are pathogenic in animals and plants.
Class 11th NCERT Pg. No.20

117. (2)
Disappearance of ER, BG, nucleolus and nuclear envelope.
Class 11th NCERT Pg. No.164

118. (3)
Metaphase is marked by the alignment of chromosomes at the equatorial plate.
Class 11th NCERT Pg. No. 165

119. (4)
All of these.
Class 11th NCERT Pg. No.21

120. (4)
Fusion of protoplasms between two motile or non-motile gametes called plasmogamy.
Class 11th NCERT Pg. No.23

121. (2)
Diatom do not have flagella.
Class 11th NCERT Pg. No.20

122. (1)
Plant disease citrus canker caused by bacteria.
Class 11th NCERT Pg. No.20

123. (2)
Filamentous blue green algae-*Nostoc*
Class 11th NCERT PG NO.19.

124. (1)
Coenocytic mycelium is found in Phycomycetes
* Ascomycetes are mostly multicellular
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125. (2)
Basidiospores are produced by members of basidiomycetes. *Agaricus* belongs to class basidiomycetes.
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126. (2)
Deuteromycetes-Some members are saprophytes or parasites while a large number of them are decomposers of litter and help in mineral cycling.
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127. (4)
Mycoplasm.
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128. (1)
Class 11th NCERT Pg. No.19.

129. (1)
These X-shaped structures are called chiasmata.
Class 11th NCERT Pg. No.129

130. (4)
Telophase - Chromosomes cluster at opposite spindle poles and their identity is lost as discrete elements.
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131. (1)
S or synthesis phase marks the period during which DNA synthesis or replication takes place.
During this time the amount of DNA per cell doubles
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132. (2)
The interphase lasts more than 95% of the duration of cell cycle
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133. (3)
Photosynthetic pigment present in *Nostoc* is Chlorophyll a
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134. (4)
In animal cells, during the S phase, DNA replication begins in the nucleus, and the centriole duplicates in the cytoplasm.
Class 11th NCERT Pg. No.-163

135. (4)
Synaptonemal complex-zygotene.
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136. (2)
Linnaeus.
Class 11th NCERT Pg. No.16

137. (1)
Under favourable conditions, the most common method of reproduction in bacteria is binary fission.
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138. (4)
All are correct
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139. (4)
Class 11th NCERT Pg. No. 19.

140. (4)
R.H. Whittaker (1969) proposed a Five Kingdom Classification. The kingdoms defined by him were named Monera, Protista, Fungi, Plantae and Animalia.
Class 11th NCERT Pg. No.17

141. (2)
The M Phase starts with the nuclear division, corresponding to the separation of daughter chromosomes (karyokinesis)
Class 11th NCERT Pg. No. 163

142. (3)
Euglenoids, diatoms, and dinoflagellates
Class 11th NCERT Pg. 20,21

143. (2)
Plasmodium show differentiation in unfavourable conditions.
Class 11th
NCERT Pg. No. 126

144. (2)
Flagellated protozoans: The parasitic forms cause diseases such as sleeping sickness. Example: *Trypanosoma*.
Class 11thNCERT Pg. No.22

145. (2)
Simultaneous splitting of centromere of each chromosome.

146. (2)
Diplotene.
NCERT Pg. No. 168

147. (2)
Metaphase - The complete disintegration of the nuclear envelope marks the start of the second phase of mitosis.

148. (4)
Metaphase-condensation of chromosomes is completed and they can be observed clearly under the microscope.

149. (1)
In animal cells, during the S phase, DNA replication begins in the nucleus, and the centriole duplicates in the cytoplasm.
NCERT Pg. No.163

150. (2)
NCERT Pg. No.168
Metaphase I - The microtubules from the opposite poles of the spindle attach to the pair of homologous chromosomes.

(ZOOLOGY)

151. (2)
Plasma contains three proteins namely, fibrinogen, globulins and albumins. Fibrinogens are needed for clotting or coagulation of blood. Globulins are involved in defence mechanisms of the body and the albumins help in osmotic balance.
NCERT Pg no. 279.

152. (4)
The closed circulatory system found in annelids and chordates involves the heart pumping blood through a closed network of blood vessels. This arrangement is considered advantageous because it allows for more precise regulation of fluid flow.
NCERT Pg no. 282

153. (3)
The walls of ventricle are thicker when compared to the walls of atria, as ventricle have to pump blood to all the different organs of the body.
NCERT Pg no. 284

154. (3)
- In a cardiac cycle, each ventricle ejects approximately 70 mL of blood, known as the stroke volume, hence in each cardiac cycle 70 mL of blood circulates in the body.
- The cardiac output is calculated by multiplying the stroke volume with the heart rate (number of beats per minute). Hence, the cardiac output represents the volume of blood pumped out by each ventricle per minute and typically averages 5000 mL or 5 litres in a healthy individual.

NCERT Pg no. 285

155. (4)
Fishes have a 2-chambered heart with an atrium and a ventricle.
NCERT Pg no. 282

156. (4)
Platelets, also known as thrombocytes, are cell fragments formed from megakaryocytes, specialized cells in the bone marrow. In a typical blood sample, there are 1,500,000 to 3,500,000 platelets per cubic millimetre (mm–3). Platelets play a crucial role in blood clotting, as they can release various substances involved in the coagulation process. When the platelet count decreases, it can result in clotting disorders, leading to excessive blood loss from the body.
NCERT Pg no. 280

157. (3)
A person with blood group A +ve contains, Rh antigen and anti – B antibody in plasma.
NCERT Pg no. 280

158. (1)
SAN (sino – atrial node) is found in the upper right corner of the right atrium, known as the pacemaker of the heart.
NCERT Pg no. 284

159. (2)
Agranulocyte – Lymphocyte
Granulocytes – Neutrophil
Haemoglobin – 12 to 16 gm
Red blood corpuscles – 5 to 5.5 million/mm^3
NCERT Pg no. 279

160. (2)
The cardiac output is calculated by multiplying the stroke volume with the heart rate (number of beats per minute). So, 70 x 72 = 5040.
NCERT Pg no. 285

161. (2)
After the sinoatrial node (SAN) generates an action potential, it triggers a simultaneous contraction of both atria, known as atrial systole. This contraction enhances the blood flow into the ventricles, increasing it by approximately 30 percent, hence, resulting in the blood pumped into the ventricles.
NCERT Pg no. 284

162. (1)
Fibrins are formed by the conversion of inactive fibrinogens in the plasma by the enzyme thrombin. Thrombins, in turn are formed from another inactive substance present in the plasma called prothrombin.
NCERT Pg no. 281

163. (3)
Crocodiles, birds and mammals possess a 4-chambered heart with two atria and two ventricles. Hence two separate circulatory pathways or double circulation.
NCERT Pg no. 282

164. (2)
Inter – atrial septum in thin-walled which separates left and right atria.
NCERT Pg no. 283

165. (2)
SAN can generate the maximum no. of action potentials among all the nodal tissues.
NCERT Pg no. 284

166. (4)
Pulmonary vein and hepatic portal vein carry oxygenated blood.
NCERT Pg no. 284

167. (4)
To obtain a standard ECG, a patient is connected to the machine with three electrical leads, one to each wrist and to the left ankle. That continuously monitor the heart activity. For a detailed evaluation of the heart's function, multiple leads are attached to the chest region.
NCERT Pg no. 286

168. (4)
- Erythroblastosis foetalis is when the Rh antigen is present on the foetal RBC, but is absent on the mother's RBCs. During the delivery of the first child, there is a possibility that a small amount of Rh+ve blood from the fetus may come into contact with the maternal blood.
- Consequently, the mother's immune system starts producing antibodies against the Rh antigen in her blood. In subsequent pregnancies, these Rh antibodies from the Rh-ve mother can pass into the bloodstream of a Rh+ve fetus, leading to the destruction of fetal red blood cells. This condition, known as erythroblastosis fetalis, can be life-threatening for the fetus or cause severe anaemia and jaundice in the baby.
- To prevent this, administering anti-Rh antibodies to the mother immediately after the delivery of the first child can effectively avoid the development of Rh antibodies and protect the health of future pregnancies.

NCERT Pg no. 281

169. (3)
Two distinct sounds are generated during each cardiac cycle, readily audible through a stethoscope. The initial heart sound (lub) corresponds to the closure of the tricuspid and bicuspid valves, while the second heart sound (dub) aligns with the closure of the semilunar valves. These acoustic signals hold crucial importance in clinical diagnosis.
NCERT Pg no. 285

170. (1)
Basophil secrete histamine, serotonin and heparin, and are involved in inflammatory reactions.
NCERT Pg no. 279.

171. (3)

The correct sequence of conduction of impulse:

SA node → AV node → AV bundle → Purkinje fibres.

NCERT Pg no. 284.

172. (3)

Leucocytes are also known as white blood cells (WBC) as they are colourless due to the lack of haemoglobin. They are nucleated and are relatively lesser in number which averages 6000-8000 mm–3 of blood.

NCERT Pg no. 279

173. (4)

Erythrocytes, also known as red blood cells (RBC), constitute the largest portion of blood cells. In a healthy adult male, there are approximately 5 million to 5.5 million RBCs per mm^3 of blood. These cells are produced in the red bone marrow during adulthood. Most mammals' RBCs lack a nucleus and possess a biconcave shape. Their distinctive red color and name originate from the presence of a complex protein called hemoglobin, which contains iron. A healthy individual typically has 12-16 grams of hemoglobin per 100 ml of blood, and these molecules play a crucial role in transporting respiratory gases.

NCERT Pg no. 279

174. (3)

The systemic circulation provides nutrients, O2 and other essential substances to the tissues and takes CO2 and other harmful substances away for elimination. Aorta, vena cava, coronary artery are the components of systemic circulation.

NCERT Pg no. 286

175. (1)

The opening between the right atrium and the right ventricle is guarded by a valve formed of three muscular flaps or cusps, the tricuspid valve, whereas a bicuspid or mitral valve guards the opening between the left atrium and the left ventricle.

NCERT Pg no. 283

176. (4)

Parasympathetic neural signals decrease the heart rate and speed of conduction of action potential and therefore cardiac output in also decreased.

NCERT Pg no. 287

177. (3)

In the medulla oblongata, there exists a unique neural centre capable of regulating cardiac function via the autonomic nervous system (ANS). Neural impulses conveyed through the sympathetic nerves (a part of ANS) can elevate the heart rate, enhance ventricular contraction strength, and consequently increase cardiac output. Conversely, parasympathetic neural signals (another component of ANS) decrease the heart rate and the speed of action potential conduction, thereby reducing cardiac output. Additionally, adrenal medullary hormones can contribute to an increase in cardiac output.

NCERT Pg no. 287

178. (4)

The T – wave represents the return of the ventricles from excited to normal state i.e., repolarisation. The end of T – wave marks the end of systole.

NCERT Pg no. 286

179. (2)

The process of excretion involves removal of metabolic wastes from the body.

NCERT Pg no. 290

180. (4)

Ammonia is the most toxic form and requires large amount of water for its elimination, whereas uric acid, being the least toxic, can be removed with a minimum loss of water.

NCERT Pg no. 290

181. (4)

The Malpighian corpuscle, PCT and DCT of the nephron are situated in the cortical region of the kidney whereas the loop of Henle dips into the medulla.

NCERT Pg no. 293

182. (2)

Reptiles, birds, land snails and insects excrete nitrogenous wastes as uric acid in the form of pellet or paste with a minimum loss of water and are called uricotelic animals.

NCERT Pg no. 290

183. (1)

The kidneys are reddish-brown, bean-shaped organs located adjacent to the dorsal inner wall of the abdominal cavity, positioned between the levels of the last thoracic and third lumbar vertebrae. In an adult human, each kidney measures approximately 10-12 cm in length, 5-7 cm in width, and 2-3 cm in thickness, weighing an average of 120-170 g.

NCERT Pg no. 291

184. (3)

Kidneys are not required in the elimination of NH_3 in aquatic amphibians.

NCERT Pg no. 290

185. (3)

Hypertension refers to blood pressure levels that exceed the normal range (120/80). In this reading, 120 mm Hg (millimeters of mercury pressure) represents the systolic or pumping pressure, while 80 mm Hg indicates the diastolic or resting pressure. When an individual's blood pressure readings are consistently at 140/90 or higher, it is considered hypertension. High blood pressure can lead to heart diseases and also has adverse effects on critical organs such as the brain and kidneys.

NCERT Pg no. 288

186. (2)

The tube that carries urine from kidney to the urinary bladder is called ureters. A pair of ureters enter each kidney at a notch called hilum.

NCERT Pg no. 291

187. (2)

Each kidney has about a million nephrons.

NCERT Pg no. 292

188. (3)

The cortex extends in between the medullary pyramids as renal columns called Columns of Bertini.

NCERT Pg no. 292

189. (3)

Nephridia – Annelids
Malpighian tubules – Insects
Antennal gland or green gland – Crustaceans

NCERT Pg no. 290

190. (1)

The kidneys are reddish-brown, bean-shaped organs located adjacent to the dorsal inner wall of the abdominal cavity, positioned between the levels of the last thoracic and third lumbar vertebrae. In an adult human, each kidney measures approximately 10-12 cm in length, 5-7 cm in width, and 2-3 cm in thickness, weighing an average of 120-170 g.

NCERT Pg no. 291

191. (2)

Protonephridia are the excretory structures in Platyhelminthes.

NCERT Pg no. 291

192. (3)

The terms like ammonotelic (ammonia), ureotelic (urea) and uricotelic (uric acid) are used to describe the types of nitrogenous waste produced by various class of vertebrate.

NCERT Pg no. 290

193. (4)

Glomerulus along with Bowman's capsule, is called the malpighian body or renal corpuscle.

NCERT Pg no. 292

194. (4)

The majority of nephrons have a short loop of Henle, extending only a small distance into the medulla. These are referred to as cortical nephrons. However, some nephrons have a significantly longer loop of Henle that extends deep into the medulla. These particular nephrons are known as juxtamedullary nephrons.

NCERT Pg no. 293

195. (1)

Blood exhibits coagulation or clotting in response to an injury or trauma. This is a mechanism to prevent excessive loss of blood from the body.

NCERT Pg no. 281

196. (2)

By counting the number of QRS complexes that occur in a given time period, one can determine the heart beat rate of an individual. Hence, 100 QRS complex in a minute means 100 cardiac cycles a minute so heart rate should be 100 per minute.

NCERT Pg no. 286

197. (2)

Heart failure means the state of heart when it is not pumping blood effectively enough to meet the needs of the body. It is sometimes called congestive heart failure because congestion of the lungs is one of the main symptoms of this disease.

NCERT Pg no. 288

198. (1)

Right atrium – vena cava
Right ventricle – right atrium
Left atrium – pulmonary vein
Left ventricle – left atrium

199. (3)

Heart is covered by a double walled pericardium.

When heart suddenly stops beating it is called heart attack.

Cardiac output of athletes is higher than a normal man.

Tunica external of artery is made up of connective tissues.

NCERT Pg no. 283

200. (2)

A symptom of acute chest pain appears when no oxygen reaching the heart muscle is called angina pectoris.

NCERT Pg no. 288