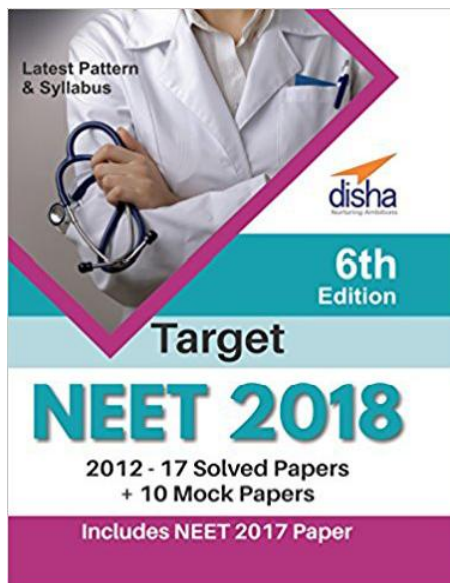




NEET MOCK TEST 2- BIOLOGY

This Paper "NEET Mock Test 2- Biology" is taken from our Book:



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AIPMT 2015 Solved Paper

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Solutions to Mock Tests 1 to 10

PART C – BIOLOGY

DIRECTIONS : There are 90 multiple choice questions numbered 91 to 180. Each question has 4 choices (1), (2), (3) and (4), out of which ONLY ONE is correct.

- 91.** Select the correct statement
- (1) Phosphorus cycle is an example of gaseous nutrient cycle
 - (2) The pyramid of biomass in sea is generally inverted
 - (3) By the process of humification, soluble inorganic nutrients go down into the soil horizon
 - (4) A given organism may not occupy more than one trophic level simultaneously
- 92.** Select the wrong statement
- (1) Human insulin is being commercially produced from a transgenic species of *Escherichia coli*
 - (2) Bt toxin genes Cry I Ac control the corn borer
 - (3) Human protein, alpha-1 -antitrypsin is used to treat emphysema
 - (4) The first transgenic cow, Rosie, produced alpha lactalbumin, enriched milk
- 93.** Consider the following statements with respect to angiosperms
- (1) The male sex organ in a flower is the stamen
 - (2) The anthers following mitosis produce pollen grains
 - (3) In an embryo sac, the primary endosperm nucleus (PEN) is diploid
 - (4) After double fertilization the ovules develop into seeds and ovaries develop into fruit.
- Of the above statements
- (1) (3) and (4) are correct
 - (2) (1) and (2) are correct
 - (3) (1) and (3) are correct
 - (4) (1) and (4) are correct
- 94.** Which of the following secondary metabolites belong to the group drugs?
- I. Morphine II. Curcumin III. Codeine IV. Vinblastine
V. Abrin

- (1) I and II only
 - (2) I and V only
 - (3) II and III only
 - (4) II and IV only
- 95.** FAD is electron acceptor in the citric acid cycle during the oxidation of
- (1) Malic acid to oxaloacetic acid
 - (2) Succinic acid to malic acid
 - (3) Citric acid to alpha-ketoglutaric acid
 - (4) Alpha-ketoglutaric acid to succinic acid
- 96.** Match the Column I with that of Column II and choose the correct combination from the options given

	Column I - Essential elements		Column II - Deficiency causes
A.	N, K, Mg, S, Fe, Mn, Zn, and Mo	I.	Inhibit cell division
B.	N, K, S and Mo	II.	Necrosis
C.	Ca, Mg, Cu and K	III.	Delay in flowering
D.	N, S and Mo	IV.	Chlorosis

- (1) A-IV ; B-III ; C-II; D-I
 - (2) A-I ; B-II ; C-III; D-IV
 - (3) A-IV ; B-I ; C-II; D-III
 - (4) A-II ; B-III ; C-IV; D-I
- 97.** DNA replicates semi-conservatively was first shown in
- (1) *Vicia faba*
 - (2) *E. coli*
 - (3) *Streptococcus pneumoniae*
 - (4) *Drosophila*
- 98.** The precursor of eukaryotic mRNA is
- (1) hnRNA
 - (2) tRNA
 - (3) rRNA
 - (4) snRNA
- 99.** The entry of food into the larynx is prevented by
- (1) Mitral valve
 - (2) Diaphragm
 - (3) Epiglottis
 - (4) Hyoid

SPACE FOR ROUGH WORK

- 100.** Covered smut of barley is caused by
 (1) *Ustilago hordei*
 (2) *Tilletia caries*
 (3) *Ustilago nuda*
 (4) *Colletotrichum falcatum*
- 101.** Which of the following is not matched correctly?
 (1) *Anabaena* - Cyanobacteria
 (2) *Amoeba* - Protozoa
 (3) *Gonyaulax* - Dinoflagellates
 (4) *Albugo* - Chrysophytes
- 102.** In gymnosperms, the pollen chamber represents
 (1) a cell in the pollen grain in which the sperms are formed
 (2) a cavity in the ovule in which pollen grains are stored after pollination
 (3) an opening in the mega gametophyte through which the pollen tube approaches the egg
 (4) the microsporangium in which pollen grains develop
- 103.** Iodine is obtained from
 (1) *Laminaria* (2) *Chlorella*
 (3) *Polysiphonia* (4) *Porphyra*
- 104.** Secondary body cavity with segmented mesodermal lining is called
 (1) haemocoel (2) neurocoel
 (3) true coelom (4) pseudocoelom
- 105.** Pneumatic bones are expected to be found in
 (1) house lizard (2) flying fish
 (3) pigeon (4) tadpole of frog
- 106.** Mark the correct statement for monosaccharides.
 (1) Monosaccharides with 5 carbon atoms are smallest carbohydrates
 (2) Pentose sugar ribose is rarely found in animal cells
 (3) All hexoses are aldoses except fructose
 (4) The most important sugar occurring in animals is cellulose
- 107.** Fill in the blanks and select the correct option w.r.t. Meiosis.
 I. The beginning of A is recognized by the B of the synaptonemal complex.
 II. Crossing over between homologous chromosomes is completed by the end of C.
 III. D begins with simultaneous splitting of the centromere of each chromosome.
- (1) A-Diplotene (2) A-Diplotene
 B-Formation B-Dissolution
 C-Pachytene C-Pachytene
 D-Anaphase-I D-Anaphase-II
- (3) A-Diplotene (4) A-Pachytene
 B-Dissolution B-Dissolution
 C-Diakinesis C-Diplotene
 D-Anaphase-I D-Diakinesis
- 108.** Match the following w.r.t. shape of chromosome at anaphase of mitosis
- | Column - I | Column - II |
|--------------------|---------------|
| A. Acrocentric | I. I-shaped |
| B. Sub-metacentric | II. J-shaped |
| C. Telocentric | III. V-shaped |
| D. Metacentric | IV. L-shaped |
- (1) A-II ; B-I ; C-III; D-IV
 (2) A-I ; B-II ; C-III; D-IV
 (3) A-II ; B-III ; C-IV; D-I
 (4) A-II ; B-IV ; C-I; D-III
- 109.** Fill in the blanks and choose the correct option.
 (i) According to most accepted model of ascent of sap, water column is (i) in xylem.
 (ii) Loss of water in liquid phase from leaf tips is known as (ii).
 (iii) Water is absorbed along with mineral solutes by the (iii) purely by diffusion.
 (1) (i) Pulled, (ii) Guttation, (iii) Root hair
 (2) (ii) Transpiration, (iii) Root nodules, (i) Root hair
 (3) (i) Pushed, (ii) Transpiration, (iii) Pulled
 (4) (ii) Guttation, (iii) Root cap, (i) pushed
- 110.** Cyanide blocks respiratory pathway between
 (1) Complex III and IV
 (2) Complex II and III
 (3) Complex I and II
 (4) Complex IV and O₂
- 111.** Find the incorrect match w.r.t. protein synthesis.
 (1) m RNA – Codons
 (2) r RNA – Catalytic role during translation
 (3) UTR – Only at 3' end
 (4) t RNA – Transfers amino acids

112. Interferons are glycoproteins which are _____ and are considered to be a part of _____
- (1) Anti-fungal, second line of defence
 - (2) Anti-viral, physiological barriers
 - (3) Anti-viral, non specific immunity
 - (4) Anti-viral, specific immunity
113. In plant breeding programme, which of the following process is crucial to the success of the breeding objective and requires careful scientific evaluation of the progeny?
- (1) Cross hybridisation
 - (2) Testing release and commercialisation of new cultivars
 - (3) Collection of plants
 - (4) Selection and testing of superior recombinants
114. Ganga Action Plan was initiated by
- (1) Ministry of Environment and Forests
 - (2) South Asia Co-operative Environment Programme
 - (3) United Nations Environment Programme
 - (4) Environmental Protection Agency (EPA)
115. Consider the following four statements (A–D) related to organic farming and select the correct option stating true (T) and false (F). The statements are
- A. Uses chemical fertilizers containing organic compounds only
 - B. Produces food crops rich in organic compounds but poor in minerals
 - C. No need to use chemical fertilizers and pesticides
 - D. Use biofertilizers that enrich the nutrient quality in the soil.
- | | A | B | C | D |
|-----|---|---|---|---|
| (1) | F | F | F | T |
| (2) | T | F | T | F |
| (3) | F | F | T | T |
| (4) | F | T | T | T |
116. The mode of nutrition present in *Euglena* is referred to as
- (1) Osmotrophy
 - (2) Mixotrophy
 - (3) Phototrophy
 - (4) Chemotrophy
117. Which one of the following feature/event in pteridophytes is a precursor to the seed habit that considered an important step in evolution?
- (1) Steler system
 - (2) Oogamous reproduction
 - (3) Development of cone
 - (4) Heterospory
118. Key evolutionary advances of the flatworms are bilateral symmetry and
- (1) a one-way digestive tract
 - (2) a body cavity
 - (3) Internal organs
 - (4) Intracellular digestion
119. Type of venation in cucumber and banana is respectively
- (1) reticulate and furcate
 - (2) reticulate and parallel
 - (3) parallel and reticulate
 - (4) furcate and parallel
120. A. The vascular bundles are absent in veins
B. The veins vary in thickness in the reticulate venation of the dicot leaves
C. Spongy parenchyma is located on adaxial surface of monocot leaf
- Which of the above statement(s) is/are correct?
- (1) A & C are correct
 - (2) B & C are incorrect
 - (3) Only C is incorrect
 - (4) Only B is correct
121. Choose the wrong statement regarding urine formation
- (1) Filtration is non-selective process performed by glomerulus
 - (2) The glomerular capillary blood pressure causes filtration of blood through three layers
 - (3) GFR in a healthy individual is approximately 125 ml/min
 - (4) The ascending limb of the Henle's loop is permeable to water but allows transport of electrolytes actively or passively
122. The skeletal muscle fibre is a 'syncytium', which means it is
- (1) multinucleated
 - (2) made up of many proteins
 - (3) long and slender
 - (4) swollen in the middle with tapered ends
123. The projecting ridge in ampulla of semi-circular canals in ear is called
- (1) Succus entericus
 - (2) Maccula
 - (3) Otolith
 - (4) Crista ampullaris

- 124.** Function of the somatostatin is to
- (1) stimulate pituitary synthesis and release gonadotropins
 - (2) inhibit the release of gonadotropins from pituitary
 - (3) stimulate pituitary and promotes the secretion of growth hormone
 - (4) inhibit the release of growth hormone from the pituitary
- 125.** Which of the following statements regarding cyclic flow of electrons during light reactions is **false**?
- (1) This process takes place in the stromal lamella
 - (2) ATP synthesis takes place
 - (3) NADPH + H⁺ is synthesized
 - (4) Takes place only when light of wavelength beyond 680 nm is available for excitation
- 126.** The term 'keel' is used for special type of
- (1) sepals
 - (2) petals
 - (3) stamens
 - (4) carpels
- 127.** In dicotyledonous roots, the initiation of lateral roots takes place in
- (1) endodermal cells
 - (2) cortical cells
 - (3) epidermal cells
 - (4) pericycle cells.
- 128.** Read the following statements and choose the correct option.
- A. Blood cells secrete fibres of structural proteins called collagen or elastin.
 - B. Neuroglial cells protect and support the nephrons.
 - C. Osteocytes are present in spaces called lacunae.
 - D. Striated muscle fibres are bundled together in a parallel fashion.
 - E. Biceps are involuntary and striated.
- (1) C and D alone are wrong
 - (2) B and D alone are wrong
 - (3) A and C alone are wrong
 - (4) A, B and E alone are wrong
- 129.** Select the matched ones.
- | | | |
|-------------------|---|--------------------------|
| (a) Amyloplasts | - | store proteins |
| (b) Mitochondrion | - | 'powerhouse' of the cell |
| (c) Stroma | - | chlorophyll pigment |
| (d) Axoneme | - | 9 + 2 array |
- (1) (a) and (c) only
 - (2) (b), (c) and (d) only
 - (3) (c) and (d) only
 - (4) (b) and (d) only
- 130.** Match the protein with its function and choose the right option.
- | Protein | Function |
|----------------|--------------------------------------|
| (A) Collagen | (i) Glucose transport |
| (B) Trypsin | (ii) Hormone |
| (C) Insulin | (iii) Intercellular ground substance |
| (D) GLUT-4 | (iv) Enzyme |
- (1) A-(iii), B-(iv), C-(ii), D-(i)
 - (2) A-(iv), B-(i), C-(ii), D-(iii)
 - (3) A-(ii), B-(iv), C-(i), D-(iii)
 - (4) A-(iii), B-(iv), C-(i), D-(ii)
- 131.** Select the matched ones.
- (i) Guttation - water loss in its liquid phase
 - (ii) Adhesion - mutual attraction between water molecules
 - (iii) Imbibition - absorption of water by dry wood
 - (iv) Hypotonic solution - cells shrink
- (1) (i), (ii) and (iii) only
 - (2) (ii) and (iv) only
 - (3) (i) and (iii) only
 - (4) (ii), (iii) and (iv) only
- 132.** Find out the correct option w.r.t. the human dentition.
- (1) Ameloblasts – Secrete the major portion of tooth, i.e., enamel
 - (2) Odontoblast – ectodermal in origin
 - (3) Enamel – soft living tissue of the body
 - (4) Crown – Forms the hard chewing surface of the teeth, helps in mastication of food
- 133.** The ejection of stomach contents through the mouth is controlled by neural centres present in
- (1) Cerebrum
 - (2) Cerebellum
 - (3) Pons
 - (4) Medulla
- 134.** Progressive degeneration of skeletal muscle is mostly due to genetic disorder of
- (1) Tetany
 - (2) Gouty arthritis
 - (3) Myasthenia gravis
 - (4) Muscular dystrophy

135. Which of the pair is not a correct match?
 (1) Iris – Accommodation
 (2) Retina – Screen to form image
 (3) Scotopic vision – Rods
 (4) Ciliary body – Form aqueous humour
136. Cortisol is
 A. Anti-inflammatory hormone
 B. Stress hormone
 C. Immunosuppressive hormone
 D. Hyperglycaemic hormone
 (1) Only A, B and C are correct
 (2) A, B, C and D are correct
 (3) Only A is correct
 (4) Only A and B are correct
137. During biofortification, breeding for improved nutritional quality is undertaken with objective of improving all, except
 (1) Micronutrient content
 (2) Protein quality
 (3) Vitamin quality
 (4) Oil quality
138. Technique used to transfer ssDNA from gel to nitrocellulose membrane is called as
 (1) Northern blotting
 (2) Western blotting
 (3) Southern blotting
 (4) Gel electrophoresis
139. Micro-injection is a method used to
 (1) produce sticky ends of DNA
 (2) provide protection against pathogen
 (3) purify the DNA
 (4) inject recombinant DNA into the nucleus of an animal cell
140. The sticky ends of a fragmented DNA molecule are made of
 (1) calcium salts (2) endonuclease enzyme
 (3) unpaired bases (4) methyl groups
141. Which of the following is required to perform polymerase chain reaction?
 (1) Primers, dNTPs and DNA polymerase
 (2) DNA, CaCl_2 and nuclease
 (3) Mg^{+2} , DNA
 (4) Both (1) and (3)
142. Choose odd w.r.t. collenchyma.
 (1) Found in hypodermis of dicot stem
 (2) Living mechanical tissue
 (3) Absent in monocots
 (4) Thickening of wall is due to deposition of cellulose and lignin
143. How many given below meristems are examples of lateral meristems?
 Cylindrical meristems, Apical meristem, Fascicular meristem, Axillary meristem, Interfascicular cambium, Intercalary meristem and Cork cambium.
 (1) Three (2) Four
 (3) Five (4) Six
144. One hormone hastens the maturity period in juvenile conifers, a second hormone controls xylem differentiation while the third increases the tolerance of plants to various stresses and they are respectively
 (1) Auxin, Gibberellin and Cytokinin
 (2) Gibberellin, Auxin and Cytokinin
 (3) Gibberellin, Auxin and Ethylene
 (4) Gibberellin, Auxin and ABA
145. The ozone hole over Antarctica develops each year between
 (1) Late December and early February
 (2) Late February and early April
 (3) Late April and early June
 (4) Late August and early October
146. Match Column I with Column II and select the correct option
- | Column I | Column II |
|-------------------|--------------------------|
| A. Ascomycetes | I. <i>Ustilago</i> |
| B. Phycomycetes | II. <i>Saccharomyces</i> |
| C. Basidiomycetes | III. <i>Trichoderma</i> |
| D. Deuteromycetes | IV. <i>Albugo</i> |
- (1) A–II ; B–I ; C–IV ; D–III
 (2) A–IV ; B–III ; C–II ; D–I
 (3) A–II ; B–IV ; C–I ; D–III
 (4) A–III ; B–IV ; C–I ; D–II

147. Which of the following are heterosporous pteridophytes?

- I. *Lycopodium* II. *Selaginella*
 III. *Equisetum* IV. *Salvinia*
 (1) I and II only (2) II and III only
 (3) II and IV only (4) II and IV only

148. If an inheritable mutation is observed in a population at high frequency, it is referred as

- (1) DNA polymorphism
 (2) Expressed sequence tag
 (3) Sequence annotation
 (4) Linkage

149. To generate pressure gradients to facilitate expiration and inspiration, the human body uses the intercostal muscles and

- (1) alveolar sacs
 (2) bronchi
 (3) primary, secondary and tertiary bronchioles
 (4) diaphragm

150. Identify the correct statement regarding cardiac activity

- (1) Normal activities of the human heart is regulated intrinsically hence it is neurogenic
 (2) A special neural centre in the medulla oblongata can moderate the cardiac function through the CNS
 (3) Parasympathetic neural signals increase the rate of heart beat
 (4) Adrenal medullary hormones can increase cardiac output

151. Find the **wrongly** matched pair

- (1) Endemism - species confined to one region and not found anywhere else
 (2) *in situ* conservation - IVFD
 (3) Alien species to India - *Clarias gariepinus*
 (4) Lungs of the planet - Amazon Rain Forest

152. Match Column I with Column II and choose the correct option.

- | Column I | Column II |
|---|----------------|
| A. breeding crops with higher levels of nutrients | I. Totipotency |

- | | |
|---|----------------------|
| B. plant grown from hybrid protoplast producing a large number of plants through tissue culture | II. Micropropagation |
| C. capacity to generate a whole plant from an explant | III. Somaclone |
| D. Plants genetically identical to the original plant | IV. Somatic hybrid |
| E. (1) A – V; B – IV; C – II; D – I; E – III
(2) A – I; B – III; C – V; D – IV; E – II
(3) A – V; B – II; C – I; D – IV; E – III
(4) A – III; B – I; C – V; D – IV; E – II | V. Biofortification |

153. Match Column I with Column II and choose the correct answer.

- | Column I | Column II |
|--|------------------------------------|
| A. Sponges | I. Incomplete digestive system |
| B. Coelenterates | II. Cellular level of organization |
| C. Annelids | III. Radial symmetry |
| D. Platyhelminthes | IV. Pseudocoelomate |
| E. I Aschelminthes | V. Metamerism |
| (1) A – III; B – IV; C – I; D – II; E – V
(2) A – V; B – III; C – IV; D – I; E – II
(3) A – II; B – III; C – V; D – I; E – IV
(4) A – I; B – II; C – III; D – IV; E – V | |

154. Choose the **wrong** statement

- (1) In grasshopper, besides autosomes males have only one X-chromosome, whereas females have a pair of X-chromosomes
 (2) In XY type of sex determination, both males and females have same number of chromosomes
 (3) In *Drosophila*, males have one X and one Y chromosome, whereas females have a pair of X-chromosome besides autosomes
 (4) In birds, females have one Z and one W chromosomes, whereas males have a pair of Z chromosomes besides autosomes

155. Secretion of pancreatic juice is stimulated by

- (1) gastrin (2) secretin
(3) enterogasteron (4) enterokinase

156. Choose the correct statement

- (1) Non myelinated nerve fibres are found in spinal and cranial nerves.
(2) Retina has multipolar neurons.
(3) Electrical synapses are commonly present in humans.
(4) Impulse transmission across an electrical synapse is faster than across a chemical synapse.

157. Which of the following hormones have antagonistic (opposing) effects?

- (1) Thyroxine and calcitonin
(2) Insulin and glucagon
(3) Growth hormone and epinephrine
(4) ACTH and glucocorticoids

158. Number of chromosomes in an angiospermic plant is 14, then the number of chromosomes in synergid cells will be

- (1) 14 (2) 7
(3) 28 (4) 21

159. Match the items in column I with those in column II and chose the correct answer.

Column I	Column II
A. Small opening of ovule	I. Funicle
B. Stalk of ovule	II. Integuments
C. Protective envelopes of ovule	III. Chalaza
D. Junction part of ovule and stalk	IV. Hilum
E. Basal part of the ovule	V. Micropyle

(1) A – V; B – I; C – II; D – IV; E – III
(2) A – I; B – III; C – II; D – IV; E – V
(3) A – III; B – I; C – II; D – IV; E – V
(4) A – IV; B – I; C – V; D – II; E – III

160. During embryonic development endoskeleton and muscle develop from which germinal layer?

- (1) Ectoderm (2) Endoderm
(3) Mesoderm (4) Blastopore

161. Match list I with list II and choose the correct answer

List I	List II
A. Hypothalamus	I. Sperm lysins
B. Acrosome	II. Estrogen
C. Graafian follicle	III. Relaxin
D. Leydig cells	IV. GnRH
E. Parturition	V. Testosterone

(1) A – IV, B – I, C – II, D – III, E – V
(2) A – II, B – I, C – IV, D – III, E – V
(3) A – II, B – I, C – V, D – IV, E – III
(4) A – IV, B – I, C – II, D – V, E – III

162. Which of the following statements is incorrect?

- (1) Osmoconformers are able to maintain osmotic concentration of their cells by either physiological or behavioural means.
(2) Most vertebrates, except the birds and mammals are unable to thermoregulate.
(3) Success of mammals is mainly due to their ability to thermoregulate and live comfortably whether they are in Antarctica or in Sahara desert.
(4) None of these

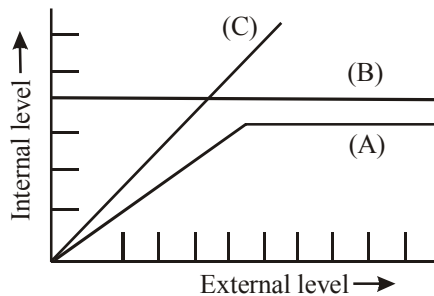
163. Archaeobacteria that flourish in temperature above 100°C have special _____ molecules that do not coagulate at high temperatures and remain functional.

- (1) carbohydrate (2) ester
(3) protein (4) fat

164. The age structure of a population influences population growth because

- (1) younger females have more offsprings than do older females
(2) different age groups have different reproductive capabilities
(3) more is the number of immature individuals, slower is the growth of population
(4) a shorter generation time results in slower population growth

165. The following figure given below is a diagrammatic representation of organismic response to abiotic factors. What do (1), (2) and (3) represent respectively?



- (1) (A) Conformers (B) Regulators (C) Partial regulators
 (2) (A) Regulators (B) Partial regulators (C) Conformers
 (3) (A) Partial regulators (B) Regulators (C) Conformers
 (4) (A) Partial regulators (B) Conformers (C) Regulators
166. The hormone releasing IUD is
 (1) LNG20
 (2) Lippes loop
 (3) CuT
 (4) Multiload 375
167. Read the statements regarding a stable community and choose the correct option
 (a) must be resistant to occasional disturbances
 (b) should show much variation in productivity from year to year
 (c) must be resistant to invasions by alien species
 (1) (a) and (b) are correct
 (2) (a), (b) and (c) are correct
 (3) (a) only is correct
 (4) (a) and (c) are correct
168. The cytokine barrier among these is
 (1) Polymorphonuclear neutrophil
 (2) Monocyte
 (3) NK cell
 (4) Interferon
169. Read the statements regarding echinoderms and choose the correct option
 (a) All are marine with organ system level of organisation
 (b) Adults are bilaterally symmetrical
 (c) They are dioecious
 (d) Fertilisation is internal and indirect development is observed
 (e) Triploblastic and acoelomate animals
 (1) (a) and (c) are correct
 (2) (e) alone is correct
 (3) (a), (c) and (e) are correct
 (4) (a) and (e) are correct
170. The number of cells in mature female and male gametophyte in angiosperms is _____ and _____ respectively.
 (1) 8, 1 (2) 7, 4
 (3) 7, 3 (4) 8, 2
171. Arrange the following terms in the correct developmental sequence in flowering plants.
 A. Sperms B. Heart-shaped embryo
 C. Syngamy D. Microspore mother cell
 E. Sporic meiosis F. Globular embryo
 (1) E, D, A, C, F, B (2) D, E, A, C, F, B
 (3) D, E, A, C, B, F (4) E, D, A, C, B, F
172. The most common mode of entry of pollen tube into ovule is
 (1) Chalazogamy (2) Xenogamy
 (3) Porogamy (4) Basigamy
173. Which of the following is wrongly matched?
 (1) AIH – Semen collected from donor is artificially introduced into vagina or uterus of female.
 (2) IVF – Fertilisation takes place outside female's body in a dish in a laboratory.
 (3) ZIFT – Embryo upto 8 blastomeres is transferred into fallopian tube
 (4) GIFT – Ovum collected from donor is transferred into another female
174. During parturition
 (1) There is increase in estrogen to progesterone ratio
 (2) Prostaglandin level falls
 (3) Relaxin promotes contraction of uterine muscles
 (4) Cervical mucus plug strengthens by progesterone activity

175. Match the columns and select correct option.

Column - I	Column - II
A. Down's syndrome	I. Holandric trait
B. Porcupine skin	II. Autosomal recessive
C. Alkaptonuria	III. X-linked trait
D. Haemophilia	IV. Trisomy

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

176. Choose the odd option w.r.t. sickle cell anaemia.

- (1) It is a result of transversion
(2) Heterozygous ($Hb^A Hb^S$) are carrier of the disease
(3) It is due to point mutation
(4) GTG in the coding strand is replaced by GAG

177. Normal visioned male marries a carrier female for colour blindness then

- (1) All sons will be colour blind, daughters will be normal.
(2) 50% daughters are colour blind carriers.
(3) Both the sons and daughters will be colour blind.
(4) A male offspring has 50% chance of active disease.

178. Unwinding of DNA creates tension which is released by enzyme

- (1) Pyrophosphatase (2) Primase
(3) Helicase (4) Topoisomerase

179. Consider the following statements regarding transformation experiment

- A. DNAase inhibits transformation
B. It proved that DNA is the genetic material in virus
C. Avery, MacLeod and McCarty used protease, RNAase and DNAase enzymes
D. It was performed on *Streptococcus pneumoniae* by F. Griffith
- (1) B & D (2) Only A
(3) A, C & D (4) A, B & C

180. Match the columns and choose the correct combination

Column - I	Column - II
A. Non sense codon	I. UUU
B. Ambiguous codon	II. UGG
C. Codon for tryptophan	III. GUG
D. Phenylalanine codon	IV. UAG

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

Hints and Solutions

PART C – BIOLOGY

91. (2) Phosphorus cycle is an example of sedimentary cycle. Pyramid of biomass of aquatic ecosystem is inverted. If decomposition leads to the formation of colloidal organic matter (humus), the process is called humification. Simple food chains are very rare in nature. This is because each organism may obtain food from more than one trophic level.
92. (2) The proteins encoded by the genes cry I Ac and cry II Ab control the cotton bollworms, that of cry I Ab controls corn borer.
93. (4) The anthers following meiosis produces pollen grains. In an embryo sac, the primary endosperm nucleus (PEN) is triploid.
94. (4) Curcumin and vinblastine are secondary metabolites that belong to drugs. Morphine and codeine belong to alkaloids and abrin belongs to toxins.
95. (2) FAD is an electron acceptor in TCA cycle during oxidation of succinic acid to malic acid.
96. (3)
97. (2) Experimental evidences of DNA replication is carried in *E.coli*.
98. (1) The RNA polymerase II transcribes precursor of mRNA, the heterogeneous nuclear RNA (hnRNA).
99. (3) Epiglottis is a cartilaginous flap of glottis.
100. (1)
101. (4) *Albugo* is the parasitic fungi which is found on mustard. It is the member of phycomycetes that are found in aquatic habitats and on decaying wood in moist and damp places.
102. (4) The fertile region of microsporophyll bears a number of microsporangia or pollen sacs arranged in sori. The pollen chamber represents microsporangium in which pollen grains develop.
103. (1) Iodine is extracted from brown algae, laminaria which is also known as Kelps.
104. (3) The body cavity which is lined by mesoderm is called coelom. Animals possessing coelom are called coelomates, e.g., annelids, molluscs, arthropods, echinoderms, hemichordates and chordates.
105. (3) In class Aves, endoskeleton is almost completely ossified. Bones are spongy or pneumatic. Long bones are hollow with air cavities.
106. (3) Monosaccharides are simple sugars that have 3-7 carbon atoms. Pentose sugar ribose is found in RNA. Most important sugar occurring in animals is glucose.
107. (2) A = Diplotene
B = Dissolution
C = Pachytene
D = Anaphase-II
108. (4) A-II; B-IV; C-I; D-III
109. (1) (i) Pulled
(ii) Guttation
(iii) Root hair
110. (4) Cyanide inhibits terminal electron transfer to O₂ complex IV
111. (3) UTRs are found at both 3' and 5' ends.
112. (3) Interferons are released as cytokine barriers under non-specific immunity.
113. (4) Selection and testing of superior recombinants require scientific evaluation of the progeny.
114. (1) Ganga Action plan was initiated by ministry of Environment and forests.
115. (3)
116. (2) Mixotrophy is the mode of nutrition which includes both phototrophy and heterotrophy.
117. (4) Gymnosperms and angiosperms are seed producing plants.
118. (3) Internal organs are formed for the first time in platyhelminthes. They have blind sac type of body plan with two way digestion.
119. (2)
120. (4) The vascular bundles are present in veins.
121. (5) The ascending limb of Henle's loop is non-permeable to water.
122. (1) Multinucleated animal cells are known as syncytium.
123. (4) Crista ampullaris possess hair cells.
124. (4) Somatostatin from the hypothalamus inhibits the release of growth hormone from the pituitary.
125. (3) NADPH + H⁺ never formed in cyclic reaction.
126. (2) A keel is a structure of the papilionaceous type of flower, made up of two petals loosely united along their edges.
127. (4) Initiation of lateral roots during secondary growth takes place in the pericycle.
128. (4) Collagen and elastin are structural proteins present in white collagen fibres and yellow elastic fibres respectively, which are connective tissue fibres. Collagen fibres are present in white fibrous connective tissue. Yellow elastic fibres are present in yellow elastic connective tissue.
Neuroglia cells are specialized cells found in the brain and spinal cord supporting the neurons and their fibres. The muscles of biceps are voluntary and striated.
129. (4) Amyloplasts store carbohydrates (starch), e.g., potato whereas proteins are stored by aleuroplasts. chlorophyll pigments are presents in the thylakoid.
130. (1)
131. (3) Cohesion is the mutual attraction between water molecules whereas adhesion is the attraction of water molecules to polar surfaces (such as the surface of tracheary elements). Cell swell in hypotonic solutions and shrink in hypertonic ones.
132. (1) Ameloblasts secrete enamel and enamel forms the hard chewing surface which is present only in the crown part.

133. (4) Ejection of stomach contents, i.e., food, through the mouth is known as vomiting. This process is controlled by the neural centre present in 'medulla'.
134. (4) Muscular dystrophy is a genetic disorder in which there is continuous weakness and breakdown of skeletal muscles.
135. (1) Ciliary body muscle, lens and suspensory ligament are associated with accommodation.
136. (2) Cortisol is a gluco-corticoid, steroid, anti-inflammatory, immunosuppressive, stress hormone produced by adrenal gland.
137. (3) During biofortification vitamin content is the objective undertaken for improvement.
138. (3) Southern blotting
139. (4) Micro-injection method is the direct or vectorless method of gene transfer, in which foreign DNA is directly injected into the nucleus of animal cell or plant cell by using micro needles or micro pipettes. It is used in oocytes, eggs and embryo.
140. (3) The single-stranded free ends that project from each fragment of DNA duplex are unpaired bases and are known as "sticky ends". Sticky ends can join with similar complementary ends of DNA fragment from some other sources.
141. (4) Polymerase chain reaction is a technique used to replicate a fragment of DNA so as to produce many copies of a particular DNA sequence. A single PCR amplification cycle involves three basic steps: denaturation, annealing and extension (polymerisation).
142. (4) Thickening of wall is due to deposition of cellulose, hemicellulose and pectin.
143. (2) Cylindrical meristem, fascicular meristem, interfascicular combium, cork combium.
144. (4)
145. (4) The ozone hole over Antarctica develops each year between late August and early October.
146. (3)
147. (2) *Salvinia* and *Selaginella* are heterosporous pteridophytes.
148. (1)
149. (4) Diaphragm is present below lung and separates thoracic cavity from abdominal cavity. Its up and down movement helps in expiration and inspiration during breathing.
150. (4) Hormones of adrenal medulla include noradrenaline and adrenaline. Nor-adrenaline regulates blood pressure and cardiac output under normal conditions.
151. (2) IVF is *in vitro* fertilization which is a method of assisted reproduction for infertile couples.
152. (1)
153. (3)
154. (3) XX-XO type of sex determination is found in roundworms and some insects like tree bugs, grasshoppers etc. Here, the females have two sex chromosome XX, while the males have only one sex chromosome X. There is no second sex chromosome. Females show homogamety and produce all X containing eggs while males show heterogamety and produce both X containing sperms and sperms without sex chromosomes.
155. (2) Pancreatic juice is secreted from aciner cells of exocrine part of pancreas. Its secretion is stimulated by secretin and cholecystokinin (CCK) hormones. Secretin increases the amount of bicarbonates (fluid) in pancreatic juice.
156. (4) Myelinated nerve fibres are found in spinal and cranial nerves. Retina has bipolar neurons with one axon and one dendrite. Electrical synapses are rarely present in human. In a resting neuron, the axonal membrane is high permeable to K^+ ions as compare to Na^+ ions. As a result, it contains low concentration of Na^+ .
157. (2) Insulin lowers blood sugar levels, while Glucagon raises blood sugar levels.
158. (2) Synergid cell is haploid (n). If angiosperm plant is $2n = 14$, then $n = 7$.
159. (1)
160. (3) The germ layer mesoderm forms in the embryos of animals more complex than cnidarians, making them triploblastic. Mesoderm forms during gastrulation when some of the cells migrating inward to the endoderm form an additional layer between the endoderm and the ectoderm. This key innovation evolved hundreds of millions of years ago and led to the evolution of nearly all large, complex animals. The formation of a mesoderm led to the formation of a coelom. Organs formed inside a coelom (body cavity) can freely move, grow, and develop independently of the body wall while fluid cushions and protects them from shocks.
161. (4)
- | | | |
|-------------------|---|--------------|
| Hypothalamus | – | GnRH |
| Acrosome | – | Sperm lysins |
| Graafian follicle | – | Estrogen |
| Leydig cells | – | Testosterone |
| Parturition | – | Relaxin |
162. (1) Osmoconformers are the organisms that change the osmotic concentration of their body with the change in ambient conditions. Their body fluids are in osmotic balance with the environment. For many marine invertebrates, the osmolarity and ionic concentrations of their body fluids are similar to those of the seawater in which they live.
163. (3)
164. (2) Different age groups have different reproduction capabilities. Pre-reproductive individuals are the young individuals which will enter the reproductive age after some time. They are the potential source of increase in population. Reproductive individuals are the ones which are actually adding new members to the population. Post-reproductive individuals are older individuals which no longer take part in reproduction.

165. (3) (1) - Partial regulators
(2) - Regulators
(3) - Conformers
Conformers :
Majority of the animals (up to 99%) and nearly all plants, cannot maintain a constant internal environment. Their body temperature and osmotic concentration changes according to the surrounding conditions. Such animal and plants are called conformers.
Regulators :
Some animals maintain their homeostasis by physiological or behavioural means. All birds and mammals (homeothermic or warm blooded) and a few lower vertebrates and invertebrates can maintain constant body temperature and constant osmotic concentration regardless of the surrounding conditions. Such organisms are called regulators.
Partial regulators :
If the stressful conditions are localized, the animals can 'escape in place' and migrate to nearby region, having better environmental conditions. If the unfavourable conditions are for a shorter duration then the animals can 'escape in time' and avoid those conditions suspending their activities. Such organisms are partial regulators.
166. (1) LNG - 20 and progestasert are the hormone producing intra uterine Devices (IUDs).
167. (5)
168. (4) Cytokine barrier is interferon. Virus infected cells secrete proteins called interferons which protect non-infected cells from further viral infection.
169. (1) The adult echinoderms are radially symmetrical but larvae are bilaterally symmetrical. They are triploblastic and coelomate animals. Fertilization is usually external and indirect development is observed.
170. (3) 171. (2)
172. (3) It is mode of fertilization of seed plant, that involves passage of pollen tube into ovule by the micropyle.
173. (1) AIH is artificial insemination by husband.
174. (1) The level of progesterone and estrogen is essential during pregnancy. Progesterone is essential for the establishment and maintenance of foetus and estrogen promotes parturition by inducing labor and delivery.
175. (1) A- IV ; B- I; C- II; D- III
176. (4) GAG is replaced by GTG
177. (2)
178. (4) Topoisomerase releases the tension in the DNA during replication.
179. (3) F.Griffith performed transformation experiment on *Streptococcus pneumoniae*. Avery, Macleod and Mac Carty used protease, RNase and DNase. DNase inhibits transformation.
180. (3) A- IV ; B- III; C- II; D- I