



# NEET (UG) 2023

## (MANIPUR)

### Questions, Answer Key & Solutions | Subject : Biology

Date: 06 June, 2023 | TIME: (12:00 Noon to 03:20 PM)

Duration: 200 minutes (03 Hrs. 20 Min.) | Max. Marks: 720

#### Important Instructions:

- The Answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars on OFFICE Copy carefully with **blue/black** ball point pen only.
- The test is of **3 hours 20 minutes** duration and Test Booklet contains **200** multiple-choice questions (four options with a single correct answer) from **Physics, Chemistry and Biology (Botany and Zoology)**. **50** questions in each subject are divided into **two Sections (A and B)** as per details given below :
  - Section A** shall consist of **35 (Thirty-five)** Questions in each subject (Questions Nos – 1 to 35, 51 to 85, 101 to 135 and 151 to 185). All questions are compulsory.
  - Section B** shall consist of **15 (Fifteen)** questions in each subject (Question Nos - 36 to 50, 86 to 100, 136 to 150 and 186 to 200). In Section B, a candidate needs to **attempt any 10 (Ten) questions out of 15 (Fifteen)** in each subject.  
**Candidates are advised to read all 15 questions in each subject of Section B** before they start attempting the question paper. In the event of a candidate attempting more than ten questions, **the first ten questions answered by the candidate shall be evaluated.**
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In case of any ambiguity in translation of any question, English version shall be treated as final.

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Name of the Candidate (in Capital letters): \_\_\_\_\_

Roll Number: in figures:

in words: \_\_\_\_\_

Name of Examination Centre (in Capital letters): \_\_\_\_\_

Candidate's Signature: \_\_\_\_\_

Invigilator's Signature: \_\_\_\_\_

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**PART-C : BIOLOGY**

**Section- A (Biology : Botany)**

101. Match List-I with List-II.

**List - I**

- (A) Protein
- (B) Unsaturated fatty acid
- (C) Nucleic acid
- (D) Polysaccharide

**List - II**

- (I) C = C double bonds
- (II) Phosphodiester bond
- (III) Glycosidic bonds
- (IV) Peptide bonds

Choose the correct answer from the options given below :

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

Ans. (3)

102. Match List-I with List-II.

**List - I**

- (A) Hydrarch succession
- (B) Xerarch succession
- (C) Ecological succession
- (D) Secondary succession

**List-II**

- (I) Gradual change in the species composition
- (II) Faster and climax reached quickly
- (III) Lichens to mesic conditions
- (IV) Phytoplankton to mesic conditions

Choose the correct answer from the options given below :

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

Ans. (4)

103. In calotropis, aestivation is :

- (1) Valvate
- (2) Vexillary
- (3) Imbricate
- (4) Twisted

Ans. (1)

104. Match List-I with List-II.

**List-I**

- (A) Chlorophyll a
- (B) Chlorophyll b
- (C) Xanthophyll
- (D) Carotenoid

**List-II**

- (I) Yellow to yellow orange
- (II) Yellow green
- (III) Blue green
- (IV) Yellow

Choose the correct answer from the options given below:

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

Ans. (1)

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105. Nitrates and phosphates flowing from agricultural farms into water bodies are a significant cause of:

- (1) Eutrophication (2) Humification (3) Mineralisation (4) Stratification

Ans. (1)

106. Match List-I with List-II.

**List-I**

**(Type of cross)**

- (A) Monohybrid Cross  
(B) Dihybrid Cross  
(C) Incomplete dominance  
(D) Test Cross

**List-II**

**(Phenotypic ratio)**

- (I) 1 : 1  
(II) 1 : 2 : 1  
(III) 3 : 1  
(IV) 9 : 3 : 3 : 1

Choose the correct answer from the options given below :

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

Ans. (1)

107. How many times decarboxylation occurs during each TCA cycle?

- (1) Thrice (2) Many (3) Once (4) Twice

Ans. (4)

108. The dissolution of synaptonemal complex occurs during

- (1) Pachytene (2) Diplotene (3) Diakinesis (4) Leptotene

Ans. (2)

109. Identify the correct statements regarding Mass flow hypothesis.

- (A) Mass flow is faster than diffusion.  
(B) Mass flow is the result of pressure difference between the end points.  
(C) Different substances involved in mass flow move at different paces.  
(D) Mass flow can result through either a positive or a negative hydrostatic pressure gradient.

Choose the correct answer from the options given below:

- (1) (A), (C), (D) only (2) (B), (C), (D) only  
(3) (A), (B), (C) only (4) (A), (B), (D) only

Ans. (4)

110. Doubling of the number of chromosomes can be achieved by disrupting mitotic cell division soon after

- (1) Anaphase (2) Telophase (3) Prophase (4) Metaphase

Ans. (1)

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111. **Statement I:** RuBisCO is the most abundant enzyme in the world.

**Statement II:** Photorespiration does not occur in C<sub>1</sub>, plants.

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

- (1) Statement I is correct but Statement II is incorrect  
 (2) Statement I is incorrect but Statement II is correct  
 (3) Both Statement I and Statement II are correct  
 (4) Both Statement I and Statement II are incorrect

Ans. (3)

112. In rivet popper hypothesis', Paul Ehrlich compared the rivets in an airplane to

- (1) species within a genus (2) genetic diversity  
 (3) ecosystem (4) genera within a family

Ans. (1)

113. In a pea flower, five petals are arranged in a specialized manner with one posterior, two lateral and two anterior. These are named as \_\_\_\_\_ and \_\_\_\_\_ respectively.

- (1) Keel, Wings and Standard (2) Vexillum, Keel and Standard  
 (3) Keel, Standard and Carina (4) Standard, Wings and Keel

Ans. (4)

114. In which of the following sets of families, the pollen grains are viable for months?

- (1) Solanaceae, Poaceae and Liliaceae  
 (2) Brassicaceae, Liliaceae and Poaceae  
 (3) Rosaceae, Liliaceae and Poaceae  
 (4) Leguminosae, Solanaceae and Rosaceae

Ans. (4)

115. Transfer of pollen grains from anther to stigma of another flower of same plant is known as:

- (1) Geitonogamy (2) Xenogamy (3) Autogamy (4) Cleistogamy

Ans. (1)

116. The phenomenon which is influenced by auxin and also played a major role in its discovery:

- (1) Phototropism (2) Root initiation (3) Gravitropism (4) Apical Dominance

Ans. (1)

117. A transverse section of a plant part showed polyarch, radial and exarch xylem, with endodermis and pericycle. The plant part is identified as :

- (1) Monocot root (2) Dicot root (3) Dicot stem (4) Monocot stem

Ans. (1)

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118. What will happen if fresh water lake gets contaminated by addition of polluted water with high BOD?

- (1) Amount of dissolved oxygen in the lake will decrease
- (2) The lake will remain unaffected
- (3) Number of submerged aquatic plants in the lake will increase
- (4) Number of aquatic animals in the lake will increase

Ans. (1)

119. The last chromosome sequenced in Human Genome Project was:

- (1) Chromosome 6
- (2) Chromosome 1
- (3) Chromosome 22
- (4) Chromosome 14

Ans. (2)

120. The amount of nutrients such as carbon, nitrogen, potassium and calcium present in the soil at any given time is referred to as:

- (1) Standing state
- (2) Standing crop
- (3) Humus
- (4) Detritus

Ans. (1)

121. Plants offer rewards to animals in the form of pollen and nectar and the animals facilitate the pollination process. This is an example of:

- (1) Amensalism
- (2) Competition
- (3) Commensalism
- (4) Mutualism

Ans. (4)

122. The species of plants that plays a vital role in controlling the relative abundance of other species in a community is called \_\_\_\_\_.

- (1) alien species
- (2) endemic species
- (3) exotic species
- (4) keystone species

Ans. (4)

123. Match List-I with List-II.

**List-I**

- (A) Pteropsida
- (B) Lycopsida
- (C) Psilopsida
- (D) Sphenopsida

**List-II**

- (I) Psilotum
- (II) Equisetum
- (III) Adiantum
- (IV) Selaginella

Choose the correct answer from the options given below:

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

Ans. (4)

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124. Inulin is a polymer of:

- (1) Fructose (2) Galactose (3) Amino Acids (4) Glucose

Ans. (1)

125. Thermostable DNA polymerase used in PCR was isolated from:

- (1) *Thermus aquaticus* (2) *Escherichia coli*  
(3) *Agrobacterium tumifaciens* (4) *Bacillus thuringiensis*

Ans. (1)

126. Name the component that binds to the operator region of an operon and prevents RNA polymerase from transcribing the operon.

- (1) Promotor (2) Regulator protein (3) Repressor protein (4) Inducer

Ans. (3)

127. A heterozygous pea plant with violet flowers was crossed with a homozygous pea plant with white flowers. Violet is dominant over white. Which one of the following represents the expected combinations among 40 progenies formed?

- (1) 30 produced violet and 10 produced white flowers  
(2) 20 produced violet and 20 produced white flowers  
(3) All 40 produced violet flowers  
(4) All 40 produced white flowers

Ans. (2)

128. Fatty acids are connected with the respiratory pathway through:

- (1) Acetyl CoA (2)  $\alpha$ -Ketoglutaric acid  
(3) Dihydroxy acetone phosphate (4) Pyruvic acid

Ans. (1)

129. Ligation of foreign DNA at which of the following site will result in loss of tetracyclin resistance of PBR322?

- (1) Pst I (2) Pvu I (3) EcoR I (4) BamH I

Ans. (4)

130. Match List-I with List-II.

**List-I**

- (A) Auxin  
(B) Gibberellin  
(C) Cytokinin  
(D) Ethylene

**List-II**

- (I) Promotes female flower formation in cucumber  
(II) Overcoming apical dominance  
(III) Increase in the length of grape stalks  
(IV) Promotes flowering in pineapple

Choose the correct answer from the options given below:

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

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131. During symport two different molecules move across the membrane

- (1) in same direction with the help of different carriers located at a common site
- (2) in same direction with the help of different carriers located at different sites in the same cell
- (3) in same direction with the help of same carrier
- (4) in opposite direction with the help of same carrier

Ans. (3)

132. Which classes of algae possess pigment fucoxanthin and pigment phycoerythrin, respectively?

- (1) Phaeophyceae and Chlorophyceae
- (2) Phaeophyceae and Rhodophyceae
- (3) Chlorophyceae and Rhodophyceae
- (4) Rhodophyceae and Phaeophyceae

Ans. (2)

133. In which disorder change of single base pair in the gene for beta globin chain results in change of glutamic acid to valine?

- (1) Thalassemia
- (2) Sickle cell anemia
- (3) Haemophilia
- (4) Phenylketonuria

Ans. (2)

134. For chemical defence against herbivores, *Calotropis* has

- (1) cardiac glycosides
- (2) strychnine
- (3) toxic ricin
- (4) distasteful quinine

Ans. (1)

135. Consider the following tissues of a stem showing secondary growth.

- (A) Primary xylem
- (B) Secondary xylem
- (C) Primary phloem
- (D) Secondary phloem

Arrange these in the **correct** sequence of their position from pith towards cortex.

- (1) (A), (B), (D), (C)
- (2) (B), (A), (C), (D)
- (3) (A), (B), (C), (D)
- (4) (B), (A), (D), (C)

Ans. (1)

## Section – B (Biology: Botany)

136. Which of the following mineral ion is not remobilized in plants?

- (1) Potassium
- (2) Calcium
- (3) Nitrogen
- (4) Phosphorus

Ans. (2)

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137. Which out of the following statements is incorrect?

- (1) Grana lamellae have both PSI and PSII
- (2) Cyclic photophosphorylation involves both PSI and PS II
- (3) Both ATP and NADPH+H<sup>+</sup> are synthesised during non-cyclic photophosphorylation.
- (4) Stroma lamellae lack PS II and NADP reductase

Ans. (2)

138. Match Column-I with Column-II.

**Column-I**

- (A) Nitrococcus
- (B) Rhizobium
- (C) Thiobacillus
- (D) Nitrobacter

**Column-II**

- (I) Denitrification.
- (II) Conversion of ammonia to nitrite
- (III) Conversion of nitrite to nitrate
- (IV) Conversion of atmospheric nitrogen to ammonia

Choose the correct option.

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

Ans. (3)

139. In angiosperms the correct sequence of formation of female gametophyte in the oval even

- (A) 3 successive free nuclear division functional megaspore.
- (B) Degeneration of 3 megaspores
- (C) Meiotic division in megaspore mother cell
- (D) Migration of 3 nuclei towards each pole.
- (E) Formation of wall resulting in seven cellular embryo sac.

Choose the correct answer from the options below:

- (1) (A), (B), (C), (D), (E)
- (2) (C), (E), (A), (D), (B)
- (3) (B), (C), (A), (D), (E)
- (4) (C), (B), (A), (D), (E)

Ans. (4)

140. Which of the following statements is true?

- (1) All pteridophytes exhibit haplo-diplont pattern
- (2) Seed bearing plants follow haplontic pattern
- (3) Most algal genera are diplontic
- (4) Most bryophytes do not have haplo-diplo life cycle

Ans. (1)

141. Which of the following statement is incorrect about Agrobacterium tumifaciens?

- (1) It is used to deliver gene of interest in a prokaryotic as well as eukaryotic host cells
- (2) 'Ti' plasmid from Agrobacterium tumifaciens used for gene transfer is not pathogenic: plant cells.
- (3) It transforms normal plant cells into tumors cells.
- (4) It delivers 'T-DNA' into plant cell.

Ans. (1)

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142. Consider the following plant tissues:

- (A) Axillary buds
- (B) Fascicular vascular cambium
- (C) Interfascicular cambium
- (D) Cork cambium
- (E) Intercalary meristem

Identify the lateral meristems among the above.

- (1) (A), (C) and (D) only
- (2) (B), (C) and (D) only
- (3) (A), (B), (C) and (E) only
- (4) (A), (B), (D) and (E) only

Ans. (2)

143. Match List-I with List-II.

**List-I**

- (A) Kanamycin
- (B) Clal
- (C) Disarmed retroviruses
- (D) Kanamycin gene

**List-II**

- (I) Delivers genes into animal cells
- (II) Selectable marker
- (III) Restriction site.
- (IV) Antibiotic resistance

Choose the correct answer from the options given below:

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

Ans. (3)

144. Given below are two statements:

**Statement I:**

The process of copying genetic information from one strand of the DNA into RNA is termed as transcription.

**Statement II:**

A transcription unit in DNA is defined primarily by the three regions in the DNA i.e. a promoter, the structural gene and a terminator.

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

- (1) Statement I is true but Statement II is false
- (2) Statement I is false but Statement II is true
- (3) Both Statement I and Statement II are true
- (4) Both Statement I and Statement II are false

Ans. (3)

145. Which scientist conducted an experiment with <sup>32</sup>P and <sup>35</sup>S labelled phages for demonstrating that DNA is the genetic material?

- (1) James D. Watson and F.H.C. Crick
- (2) A.D. Hershey and M.J. Chase
- (3) F.Griffith
- (4) O.T. Avery, C.M. MacLeod and M. McCarty

Ans. (2)

146. A certain plant homozygous for yellow seeds and red flowers was crossed with a plant homozygous for green seeds and white flowers. The F<sub>1</sub> plants had yellow seeds and pink flowers. The F<sub>1</sub> plants were selfed to get F<sub>2</sub> progeny. Assuming independent assortment of the two characters, how many phenotypic categories are expected for these characters in the F<sub>2</sub> generation?

- (1) 9
- (2) 16
- (3) 4
- (4) 6

Ans. (4)

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147. During which stages of mitosis and meiosis, respectively does the centromere of each chromosome split?  
 (1) Metaphase, Metaphase II (2) Prophase, Telophase I  
 (3) Telophase, Anaphase I (4) Anaphase, Anaphase II

Ans. (4)

148. Which of the following statements is not correct?  
 (1) Phase of cell elongation of plant cells is characterized by increased vacuolation.  
 (2) Cells in the meristematic phase of growth exhibit abundant plasmodesmatal connections.  
 (3) Plant growth is generally determinate.  
 (4) Plant growth is measurable.

Ans. (3)

149. Match the following:

**Type of flower**

- (A) Zygomorphic  
 (B) Hypogynous  
 (C) Perigynous  
 (D) Epigynous

**Example**

- (I) Mustard  
 (II) Plum  
 (III) Cassia  
 (IV) Cucumber

Select the correct option:

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

Ans. (4)

150. Given below are two statements:

**Statement 1:**

The process of translocation through phloem is unidirectional but through xylem, it is bidirectional.

**Statement II:**

The most readily mobilized elements are phosphorus, sulphur, nitrogen and potassium.

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

- (1) Statement I is correct but Statement II is incorrect  
 (2) Statement I is incorrect but Statement II is correct  
 (3) Both Statement I and Statement II are correct  
 (4) Both Statement I and Statement II are incorrect

Ans. (2)

**Section – A (Biology – Zoology)**

151. Which of the following sexually transmitted infections are completely curable?  
 (1) HIV infection and Trichomoniasis (2) Syphilis and Trichomoniasis  
 (3) Hepatitis-B and Genital herpes (4) Genital herpes and Genital warts

Ans. (2)

152. Match List-I with List-II.

**List-I**

- (A) Typhoid  
 (B) Elephantiasis  
 (C) Ringworm  
 (D) Malaria

**List-II**

- (I) Protozoan  
 (II) Salmonella  
 (III) Aschelminthes  
 (IV) Microsporium

Choose the correct answer from the options given below:

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






Ans. (3)

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153. Which of the following is not a secondary metabolite?

- (1) Curcumin (2) Morphine (3) Anthocyanin (4) Lecithin

Ans. (4)

154. Arrange the sequence of different hormones for their role during gametogenesis.

- (A) Gonadotropin LH stimulates synthesis and secretion of Androgen  
(B) Gonadotropin releasing hormone from hypothalamus  
(C) Androgen stimulates spermatogenesis  
(D) Gonadotropin FSH helps in the process of spermiogenesis  
(E) Gonadotropins from anterior pituitary gland

Choose the correct answer from the options given below:

- (1) (E), (A), (D), (B), (C) (2) (C), (A), (D), (E), (B)  
(3) (B), (E), (A), (C), (D) (4) (D), (B), (A), (C), (E)

Ans. (3)

155. House fly belongs to\_\_\_\_\_ family.

- (1) Cyprinidae (2) Hominidae (3) Calliphoridae (4) Muscidae

Ans. (4)

156. Select incorrect statement, regarding chemical structure of insulin.

- (1) Mature insulin molecule consists of three polypeptide chains-A, B and C.  
(2) Insulin is synthesized as prohormone which contains extra stretch of C-peptide.  
(3) C-peptide is not present in mature insuli molecule.  
(4) Polypeptide chains A and B are linked b disulphide bridges.

Ans. (1)

157. Which one of the following is the quiescent stage cell cycle?

- (1) M (2) G<sub>2</sub> (3) G<sub>1</sub> (4) G<sub>0</sub>

Ans. (4)

158. Given below are two statements:

**Statement I:**

RNA being unstable, mutate at a faster rate.

**Statement II:**

RNA can directly code for synthesis of proteins hence can easily express the characters.

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

- (1) Statement I is correct but Statement II is false  
(2) Statement I is incorrect but Statement II is true  
(3) Both Statement I and Statement II are true  
(4) Both Statement I and Statement II are false






Ans. (3)

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159. Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R). Assertion (A):  
Ascending limb of loop of Henle is impermeable to water and allows transport of electrolytes actively or passively.  
Reason (R):  
Dilution of filtrate takes place due to efflux of electrolytes in the medullary fluid.  
In the light of the above statements, choose the correct answer from the options given below:
- (1) (A) is true but (R) is false
  - (2) (A) is false but (R) is true
  - (3) Both (A) and (R) are true and (R) is the correct explanation of (A)
  - (4) Both (A) and (R) are true but (R) is not the correct explanation of (A)

Ans. (3)

160. The Cockroach is:
- (1) Ammonotelic only
  - (2) Uricotelic only
  - (3) Ureotelic only
  - (4) Ureotelic and Uricotelic

Ans. (2)

161. Which of the following statements are correct with respect to the hormone and its function?
- (A) Thyrocalcitonin (TCT) regulates the blood calcium level.
  - (B) In males, FSH and androgens regulate spermatogenesis.
  - (C) Hyperthyroidism can lead to goitre.
  - (D) Glucocorticoids are secreted in Adrenal Medulla.
  - (E) Parathyroid hormone is regulated by circulating levels of sodium ions.

Choose the most appropriate answer from the options given below:

- (1) (C) and (E) only
- (2) (A) and (B) only
- (3) (B) and (C) only
- (4) (A) and (D) only

Ans. (2)

162. Select the sequence of steps in Respiration
- (A) Diffusion of gases ( $O_2$  and  $CO_2$ ) across alveolar membrane.
  - (B) Diffusion of  $O_2$  and  $CO_2$ , between blood and tissues.
  - (C) Transport of gases by the blood.
  - (D) Pulmonary ventilation by which atmospheric air is drawn in and  $CO_2$ , rich alveolar air is released out.
  - (E) Utilisation of  $O_2$  by the cells for catabolic reactions and resultant release of  $CO_2$

Choose the correct answer from the options given below:

- (1) (D), (A), (C), (B), (E)
- (2) (C), (B), (A), (E), (D)
- (3) (B), (C), (E), (D), (A)
- (4) (A), (C), (B), (E), (D)

Ans. (1)

163. Which of the following is/are cause(s) of biodiversity losses?

- (1) Over-exploitation, habitat loss and fragmentation
- (2) Climate change only
- (3) Over-exploitation only
- (4) Habitat loss and fragmentation only

Ans. (1)

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164. Match List-I with List-II.

**List-I**

- (A) Contractile vacuole
- (B) Water vascular system
- (C) Canal system
- (D) Flame cells

**List-II**

- (I) Asterias
- (II) Amoeba
- (III) Spongilla
- (IV) Taenia

Choose the correct answer from the options given below:

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

Ans. (4)

165. Match List - I with List - II.

**List-I**

- (A) Palm bones
- (B) Wrist bones
- (C) Ankle bones
- (D) Digit bones

**List-II**

- (I) Phalanges
- (II) Metacarpals
- (III) Carpals
- (IV) Tarsals

Choose the correct answer from the options given below:

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

Ans. (4)

166. Match List-I with List-II.

**List-1**

- (A) Non-medicated IUDS
- (B) Copper releasing IUDS
- (C) Hormone releasing
- (D) Vaults

**List-II**

- (I) Multiload 375
- (II) Rubber barrier
- (III) Lippes loop
- (IV) LNG-20

Choose the correct answer from the options given below:

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

Ans. (3)

167. Which of the following can act as molecular scissors?

- (1) Restriction enzymes
- (2) DNA ligase
- (3) RNA polymerase
- (4) DNA polymerase

Ans. (1)

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168. Select the correct statements about sickle cell anaemia.

- (A) There is a change in gene for beta globin.
- (B) In the beta globin, there is valine in the place of Lysine.
- (C) It is an example of point mutation.
- (D) In the normal gene U is replaced by A.

Choose the correct answer from the options given below:

- (1) (B) (C) and (D) only
- (2) (B) and (D) only
- (3) (A), (B) and (D) only
- (4) (A) and (C) only

Ans. (4)

169. Given below are two statements:

Statement I:

Intra Cytoplasmic Sperm Injection (ICSI) is another specialised procedure of in-vivo fertilisation.

Statement II:

Infertility cases due to inability of the male part to inseminate female can be corrected by artificial insemination (A).

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

- (1) Statement I is correct but Statement II is
- (2) Statement I is incorrect but Statement II true
- (3) Both Statement I and Statement II are true
- (4) Both Statement I and Statement II are false

Ans. (2)

170. Match List-I with List-II.

**List-I**

(ECG)

- (A) P-wave
- (B) QRS complex
- (C) T-wave
- (D) End of T wave

**List-II**

(Electrical activity of heart)

- (I) Depolarisation of ventricles
- (II) End of systole
- (III) Depolarisation of atria
- (IV) Repolarisation of ventricles

Choose the correct answer from the options given below:

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

Ans. (4)

171. Match List-I with List - II.

**List-I**

- (A) Eosinophils
- (B) Lymphocytes
- (C) Neutrophils
- (D) Monocytes

**List-II**

- (I) 6-8%
- (II) 2-3%
- (III) 20-25%
- (IV) 60-65%

Choose the correct answer from the options given below:

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

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Ans. (3)

172. Given below are two statements:

**Statement I:**

Goblet cells are unicellular glands.

**Statement II:**

Earwax is the secretion of exocrine gland.

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

- (1) Statement I is true but Statement II is false
- (2) Statement I is false but Statement II is true
- (3) Both Statement I and Statement II are true
- (4) Both Statement I and Statement II are false

Ans. (3)

173. Given below are two statements regarding oogenesis

**Statement I:**

The primary follicles get surrounded by more layers of granulosa cells, a theca and shows fluid filled cavity antrum. Now it is called secondary follicle.

**Statement II:**

Graafian follicle ruptures to release the secondary oocyte from the ovary by the process called ovulation.

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

- (1) Statement I is correct but Statement II is false
- (2) Statement I is incorrect but Statement II is true
- (3) Both Statement I and Statement II are true
- (4) Both Statement I and Statement II are false

Ans. (2)

174. If there are 250 snails in a pond, and within a year their number increases to 2500 by reproduction. What should be their birth rate per snail per year?

- (1) 10
- (2) 9
- (3) 25
- (4) 15

Ans. (2)

175. Given below are two statements:

**Statement I:**

The nose contains mucus-coated receptors which are specialised for receiving the sense of smell and are called olfactory receptors.

**Statement II:**

Wall of the eye ball has three layers. The external layer is called choroid (dense connective tissue), middle layer is sclera (thin pigmented layer) and internal layer is retina (ganglion cells, bipolar cells and photoreceptor cells).

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

- (1) Statement I is true but Statement II is false
- (2) Statement I is false but Statement II is true
- (3) Both Statement I and Statement II are true
- (4) Both Statement I and Statement II are false

Ans. (1)

176. Which one of the following acts as an inducer for lac operon?

- (1) Sucrose
- (2) Lactose
- (3) Glucose
- (4) Galactose

Ans. (2)

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177. Match List-I with List - II.

**List-I**

- (A) Deforestation
- (B) Reforestation
- (C) Green-house effect
- (D) Eutrophication

**List-II**

- (I) Responsible for heating of Earth's surface and atmosphere
- (II) Conversion of forested areas to non-forested areas
- (III) Natural ageing of lake by nutrient enrichment of its water
- (IV) Process of restoring a forest that once existed but was removed

Choose the correct answer from the options given below:

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

Ans. (4)

178. Diacetyl morphine is also called as:

- (1) Amphetamine
- (2) Barbiturate
- (3) Crack
- (4) Smack

Ans. (4)

179. 'X' and 'Y' are the components of Binomial nomenclature. This naming system was proposed by 'Z':

- (1) X-Generic name, Y-Specific epithet, Z-Carolus Linnaeus
- (2) X-Specific epithet, Y-Generic name, Z-R Whittaker
- (3) X-Specific epithet, Y - Generic name, Z-Carolus Linnaeus
- (4) X-Generic name, Y-Specific epithet, Z-R.H Whittaker

Ans. (1)

180. Which of the following statements are correct?

- (A) Reproductive health refers to total well-being in all aspects of reproduction.
- (B) Amniocentesis is legally banned for sex determination in India.
- (C) "Saheli" - a new oral contraceptive for females was developed in collaboration with ICMR (New Delhi).
- (D) Amniocentesis is used to determine genetic disorders and survivability of foetus.

Choose the most appropriate answer from the options given below:

- (1) (B) and (C) only
- (2) (D) and (C) only
- (3) (A), (B) and (D) only
- (4) (A) and (C) only

Ans. (3)

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181. Match List-I with List-II

**List-I**

- (A) Terpenoides
- (B) Lectins
- (C) Alkaloids
- (D) Toxins

**List-II**

- (I) Codeine
- (II) Diterpenes
- (III) Ricin
- (IV) Concanavalin A

Choose the correct answer from the options below:

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

Ans. (4)

182. Given below are two statements:

Statement I: In bacteria, the mesosomes are formed by the extensions of plasma membrane

Statement II: The mesosomes, in bacteria, help in DNA replication and cell wall formation.

In the light of the above statements, choose the most appropriate answer from the options given below.

- (1) Statement I is correct but Statement II is incorrect
- (2) Statement I is incorrect but Statement II correct
- (3) Both Statement I and Statement II are correct
- (4) Both Statement I and Statement II are incorrect

Ans. (3)

183. Select correct sequence of substages of Prophase-I of Meiotic division:

- (A) Zygotene
- (B) Pachytene
- (C) Diakinesis
- (D) Leptotene
- (E) Diplotene

Choose the correct answer from the options given below:

- (1) (D), (B), (A), (E), (C)
- (2) (A), (B), (D), (E), (C)
- (3) (D), (A), (B), (E), (C)
- (4) (A), (D), (B), (C), (E)

Ans. (3)

184. Brainstem of human brain consists of:

- (1) Mid-brain, Pons and Medulla Oblongata
- (2) Forebrain, Cerebellum and Pons
- (3) Thalamus, Hypothalamus and Corpora quadrigemina
- (4) Amygdala, Hippocampus and Corpus Callosum

Ans. (1)

185. Identify the fossil of man who showed the following characteristics.

- (A) Brain capacity of 1400 cc
- (B) Used hides to protect their body
- (C) Buried their dead bodies

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

- (1) Homo erectus
- (2) Neanderthal man
- (3) Homo habilis
- (4) Australopithecus

Ans. (2)

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**Section B (Biology: Zoology)**

- 186.** With reference to Hershey and Chase experiments. Select the correct statements.  
 (A) Viruses grown in the presence of radioactive phosphorus contained radioactive DNA.  
 (B) Viruses grown on radioactive sulphur contained radioactive proteins.  
 (C) Viruses grown on radioactive phosphorus contained radioactive protein.  
 (D) Viruses grown on radioactive sulphur contained radioactive DNA.  
 (E) Viruses grown on radioactive protein contained radioactive DNA.  
 Choose the most appropriate answer from the options given below:  
 (1) (D) and (E) only      (2) (A) and (B) only      (3) (A) and (C) only      (4) (B) and (D) only

**Ans. (2)**

- 187.** Select the correct sequential steps regarding absorption of fatty acids and glycerol, in intestine.  
 (A) Micelles are reformed into small protein coated fat globules called chylomicrons.  
 (B) Micelles move into intestinal mucosa.  
 (C) Fatty acids and glycerol are incorporated into small droplets called micelles.  
 (D) Lacteals release the absorbed substances into blood stream  
 (E) Chylomicrons are transported into lacteals  
 Choose the correct answer from the options given below:  
 (1) (A), (E), (B), (D), (C)      (2) (D), (E), (B), (C), (A)  
 (3) (C), (B), (A), (E), (D)      (4) (B), (C), (E), (A), (D)

**Ans. (3)**

- 188.** Given below are two statements: one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

**Assertion (A):**

A person goes to high altitude and experiences "Altitude Sickness" with symptoms like breathing difficulty and heart palpitations.

**Reason (R):**

Due to low atmospheric pressure at high altitude, the body does not get sufficient oxygen.

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

- (1) (A) is true but (R) is false  
 (2) (A) is false but (R) is true  
 (3) Both (A) and (R) are true and (R) is the correct explanation of (A)  
 (4) Both (A) and (R) are true but (R) is not correct explanation of (A)

**Ans. (3)**

- 189.** The salient features of genetic code are:  
 (A) The code is palindromic      (B) UGA act as initiator codon  
 (C) The code is unambiguous and specific      (D) The code is nearly universal  
 Choose the most appropriate answer from the options given below:  
 (1) (A) and (D) only      (2) (B) and (C) only      (3) (A) and (B) only      (4) (C) and (D) only

**Ans. (4)**

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190. Arrange the events of Renin - Angiotensin mechanism in correct sequence.

- (A) Activation of JG cells and release of renin.
- (B) Angiotensin II activates release of aldosterone
- (C) Fall in glomerular blood pressure.
- (D) Reabsorption of Na<sup>+</sup> and water from distal convoluted tubule.
- (E) Angiotensinogen is converted to Angiotensin I and then to Angiotensin II.

Choose the correct answer from the options given below:

- (1) (C), (A), (E), (B), (D)
- (2) (A), (D), (E), (C), (B)
- (3) (A), (D), (C), (B), (E)
- (4) (B), (A), (E), (D), (C)

Ans. (1)

191. Select the correct statements regarding dissolved Oxygen and Biochemical Oxygen Demand.

- (A) BOD is inversely related to dissolved oxygen.
- (B) Low dissolved oxygen and high BOD lead to loss of aquatic life.
- (C) High BOD leads to high dissolved oxygen.
- (D) Both BOD and dissolved oxygen indicator are of health of a water body
- (E) Both BOD and dissolved oxygen are affected by amount of organic matter in the water body.

Choose the most appropriate answer from the options given below:

- (1) (A), (B), (C), (E) only
- (2) (A), (B), (D), (E) only
- (3) (A), (B), (C), (D) only
- (4) (B), (C), (D), (E) only

Ans. (2)

192. Given below are two statements:

**Statement I:**

Parathyroid hormone acts on bones and stimulates the process of bone resorption.

**Statement II:**

Parathyroid hormone along with Thyrocalcitonin plays a significant role in carbohydrate metabolism.

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

- (1) **Statement I** is correct but **Statement II** is false
- (2) **Statement I** is incorrect but **Statement II** is true
- (3) Both **Statement I** and **Statement II** are true
- (4) Both **Statement I** and **Statement II** are false

Ans. (1)

193. Select the correct statements:

- (A) Platyhelminthes are triploblastic, pseudocoelomate and bilaterally symmetrical organisms.
- (B) Ctenophores reproduce only sexually and fertilization is external
- (C) In tapeworm, fertilization is internal but sexes are not separate.
- (D) Ctenophores are exclusively marine diploblastic and bioluminescent organisms
- (E) In sponges, fertilization is external and development is direct.

Choose the correct answer from the options give below:

- (1) (A), (C) and (D) only
- (2) (B), (C) and (D) only
- (3) (A) and (E) only
- (4) (B) and (D) only

Ans. (2)

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194. Match List-II with List-I.

**List-I**

- (A) Gene therapy
- (B) RNA interference
- (C) ELISA
- (D) Gel Electrophoresis

**List-II**

- (I) Separation of DNA fragments
- (II) Diagnostic test for AIDS
- (III) Cellular defence
- (IV) Allows correction of a gene defect

Choose the correct answer from the options given below:

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

Ans. (3)

195. Which of the following statements are correct with respect of Golgi apparatus ?

- (A) It is the important site of formation of glycoprotein and glycolipids.
- (B) It produces cellular energy in the form of ATP
- (C) It modifies the protein synthesized by ribosomes on ER.
- (D) It facilitates the transport of ions.
- (E) It provides mechanical support.

Choose the most appropriate answer from the options given below:

- (1) (B) and (C) only
- (2) (A) and (C) only
- (3) (A) and (D) only
- (4) (D) and (E) only

Ans. (2)

196. Select the incorrect statement with respect to Multiple Ovulation Embryo Transfer (MOET) Technology.

- (1) Fertilised eggs at 4 to 6 cells stages are recovered non-surgically from super-ovulating cow and transferred to surrogate mother.
- (2) It is used to increase herd size in a short time.
- (3) Cow is administered with hormones to induce super-ovulation.
- (4) Super-ovulating cow is either mated with elite bull or is artificially inseminated.

Ans. (1)

197. Given below are two statements:

**Statement I:**

In cockroach, the forewings are transparent and prothoracic in origin.

**Statement II:**

In cockroach, the hind wings are opaque, leathery and mesothoracic in origin.

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

- (1) Statement I is correct but Statement II is false
- (2) Statement I is incorrect but Statement II is true
- (3) Both Statement I and Statement II are true
- (4) Both Statement I and Statement II are false

Ans. (4)

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198. Match List-I with List-II.

**List-I**

- (A) Columnar epithelium
- (B) Ciliated epithelium
- (C) Squamous epithelium
- (D) Cuboidal epithelium

**List-II**

- (I) Ducts of glands
- (II) Inner lining of stomach and intestine
- (III) Inner lining of bronchioles
- (IV) Endothelium

Choose the correct answer from the options given below:

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

Ans. (4)

199. Match List-I with List-II.

**List-I**

- (A) Cytokine barriers
- (B) Cellular barriers
- (C) Physiological barriers
- (D) Physical barriers

**List-II**

- (I) Mucus coating of respiratory tract
- (II) Interferons
- (III) Neutrophils and Macrophages
- (IV) Tears and Saliva

Choose the correct answer from the options given below:

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

Ans. (1)

200. Select the correct statement/s with respect to mechanism of sex determination in Grasshopper.

- (A) It is an example of female heterogamety.
- (B) Male produces two different types of gametes either with or without X chromosome.
- (C) Total number of chromosomes (autosomes and sex chromosomes) is same in both males and females.
- (D) All eggs bear an additional X chromosome besides the autosomes.

Choose the correct answer from the options given below:

- (1) (B) and (D) only
- (2) (A), (C) and (D) only
- (3) (A) only
- (4) (A) and (C) only

Ans. (1)

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