



# NEET 2023

## Questions, Answer Key & Solutions

Date: 07 May, 2023 | TIME: (02:00 PM to 05:20 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 **Chemistry, Physics 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.**
- Each question carries **4 marks**. For each correct response, the candidate will get 4 marks. For each incorrect response, **one mark** will be deducted from the total scores. **The maximum marks are 720.**
- Use **Blue/Black Ball Point Pen only** for writing particulars on this page/markings responses on Answer Sheet.
- Rough work is to be done on the space provided for this purpose in the Test Booklet only.
- On completion of the test, the candidate **must hand over the Answer Sheet (ORIGINAL and OFFICE Copy) to the Invigilator** before leaving the Room/Hall. The candidates are allowed to take away this Test Booklet with them.
- The CODE for this Booklet is F6. Make sure that the CODE printed on the Original Copy of the Answer Sheet is the same as that on this Test Booklet.** In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
- The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your Roll No. anywhere else except in the specified space in the Test Booklet/Answer Sheet.
- Use of white fluid for correction is **NOT** permissible on the Answer Sheet.
- Each candidate must show on-demand his/her Admit Card to the Invigilator.
- No candidate, without special permission of the centre Superintendent or Invigilator, would leave his/her seat.
- The candidates should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and sign (with time) the Attendance Sheet twice. **Cases, where a candidate has not signed the Attendance Sheet second time, will be deemed not to have handed over the Answer Sheet and dealt with as an Unfair Means case.**
- Use of Electronic/ Manual Calculator is prohibited.
- The candidates are governed by all Rules and Regulations of the examination with regard to their conduct in the Examination Room/Hall. All cases of unfair means will be dealt with as per the Rules and Regulations of this examination.
- No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.**
- The candidates will write the Correct Test Booklet Code as given in the Test Booklet/Answer Sheet in the Attendance Sheet.
- Compensatory time of one hour five minutes will be provided for the examination of three hours and 20 minutes duration, whether such candidate (having a physical limitation to write) uses the facility of scribe or not.

In case of any ambiguity in translation of any question, English version shall be treated as final.

प्रश्नों के अनुवाद में किसी अस्पष्टता की स्थिति में, अंग्रेजी संस्करण को ही अन्तिम माना जायेगा।

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 : BIOLOGY**

101. Movement and accumulation of ions across a membrane against their concentration gradient can be explained by

- (1) Facilitated diffusion (2) Passive transport (3) Active transport (4) Osmosis

Ans. (3)

102. Among 'The Evil Quartet', which one is considered the most important cause driving extinction species ?

- (1) Over exploitation for economic gain (2) Alien species invasions  
(3) Co-extinctions (4) Habitat loss and fragmentation

Ans. (4)

103. Identify the pair of heterosporous pteridophytes among the following :

- (1) Selaginella and Salvinia (2) Psilotum and Salvinia  
(3) Equisetum and Salvinia (4) Lycopodium and Selaginella

Ans. (1)

104. Frequency of recombination between gene pairs on same chromosome as a measure of the distance between genes to map their position on chromosome, was used for the first time by

- (1) Sutton and Boveri (2) Alfred sturtevant  
(3) Henking (4) Thomas Hunt Morgan

Ans. (2)

105. What is the function of tassels in the corn cob ?

- (1) To trap pollen grains (2) To disperse pollen grains  
(3) To protect seeds (4) To attract insects

Ans. (1)

106. Identify the **correct** statements :

- A. Detrivores perform fragmentation.  
B. The humus is further degraded by some microbes during mineralization.  
C. Water soluble inorganic nutrients go down into the soil and get precipitated by a process called leaching.  
D. The detritus food chain begins with living organisms.  
E. Earthworms break down detritus into smaller particles by a process called catabolism.

Choose the **correct** answer from the options given below :

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

Ans. (4)

107. Given below are two statements : One is labelled as

**Assertion A** and the other is labelled as **Reason R**:

**Assertion A** : Late wood has fewer xylary elements with narrow vessels.

**Reason R** : Cambium is less active in winters. In the light of the above statements, choose the **correct** answer from the options given below :

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

Ans. (4)

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108. The process of appearance of recombination nodules occurs at which sub stage of prophase I in meiosis?  
 (1) Pachytene (2) Diplotene (3) Diakinesis (4) Zygotene  
**Ans.** (1)
109. Which of the following stages of meiosis involves division of centromere ?  
 (1) Metaphase II (2) Anaphase II (3) Telophase (4) Metaphase I  
**Ans.** (2)
110. During the purification process for recombinant DNA technology, addition of chilled ethanol precipitates out  
 (1) DNA (2) Histones (3) Polysaccharides (4) RNA  
**Ans.** (1)
111. Family fabaceae differs from Solanaceae and Liliaceae. With respect to the stamens, pick out the characteristics specific to family Fabaceae but not found in Solanaceae or Liliaceae.  
 (1) Polyadelphous and epipetalous stamens (2) Monoadelphous and Monothcous anthers  
 (3) Epiphylous and Dithecous anthers (4) Diadelphous and Dithecous anthers  
**Ans.** (4)
112. Large, colourful, fragrant flowers with nectar are seen in :  
 (1) bird pollinated plants (2) bat pollinated plants  
 (3) wind pollinated plants (4) insect pollinated plants  
**Ans.** (4)
113. Spraying of which of the following phytohormone on juvenile conifers helps in hastening the maturity period that leads to early seed production ?  
 (1) Gibberellic Acid (2) Zeatin  
 (3) Abscisic Acid (4) Indole-3-butyric Acid  
**Ans.** (1)
114. Axile placentation is observe in  
 (1) China rose, Beans and Lupin (2) Tomato, Dianthus and Pea  
 (3) China rose, Petunia and Lemon (4) Mustard, Cucumber and Primrose  
**Ans.** (3)
115. Among eukaryotes, replication of DNA takes place in :  
 (1) S phase (2) G<sub>1</sub> phase (3) G<sub>2</sub> phase (4) M phase  
**Ans.** (1)
116. How many ATP and NADPH<sub>2</sub> are required for the synthesis of one molecule of Glucose during Calvin cycle?  
 (1) 18 ATP and 12 NADPH<sub>2</sub> (2) 12 ATP and 16 NADPH<sub>2</sub>  
 (3) 18 ATP and 16 NADPH<sub>2</sub> (4) 12 ATP and 12 NADPH<sub>2</sub>  
**Ans.** (1)

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117. In gene gun method used to introduce alien DNA into host cells microparticles of \_\_\_\_\_ metal are used.  
(1) Zinc (2) Tungsten or gold (3) Silver (4) Copper  
**Ans.** (2)
118. The thickness of ozone in a column of air in the atmosphere is measured in terms of :  
(1) Decibels (2) Decameter (3) Kilobase (4) Dobson units  
**Ans.** (4)
119. Unequivocal proof that DNA is the genetic material was first proposed by :  
(1) Alfred Hershey and Martha Chase (2) Avery, Macleoid and McCarthy  
(3) Wilkins and Franklin (4) Frederick Griffith  
**Ans.** (1)
120. In the equation  
$$GPP - R = NPP$$
  
GPP is Gross Primary Productivity  
NPP is Net Primary Productivity  
R here is \_\_\_\_\_.  
(1) Respiratory quotient (2) Respiratory loss  
(3) Reproductive allocation (4) Photosynthetically active radiation  
**Ans.** (2)
121. What is the role of RNA polymerase III in the process of transcription of Eukaryotes ?  
(1) Transcription of tRNA, 5srRNA and snRNA  
(2) Transcription of precursor of mRNA  
(3) Transcription of only snRNAs  
(4) Transcription of rRNAs (28S, 18S and 5.8S)  
**Ans.** (1)
122. Which micronutrient is required for splitting of water molecule during photosynthesis?  
(1) molybdenum (2) magnesium (3) copper (4) manganese  
**Ans.** (4)
123. In angiosperm, the haploid, diploid and triploid structures of a fertilized embryo sac sequentially are :  
(1) Antipodal, synergids, and primary endosperm nucleus  
(2) Synergids, Zygote and primary endosperm nucleus  
(3) Synergids, antipodal and Polar nuclei  
(4) Synergids, Primary endosperm nucleus and zygote  
**Ans.** (2)
124. The phenomenon of pleiotropism refers to  
(1) presence of two alleles, each of the two genes controlling a single trait  
(2) a single gene affecting multiple phenotypic expression.  
(3) more than two genes affecting a single character  
(4) presence of several alleles of a single gene controlling a single crossover.  
**Ans.** (2)

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125. Given below are two statements. One is labelled as **Assertion A** and the other is labelled as **Reason R**:  
**Assertion A** : ATP is used at two steps in glycolysis.

**Reason R** : First ATP is used in converting glucose into glucose-6-phosphate and second ATP is used in conversion of fructose-6- phosphate into fructose -1-6-diphosphate.

In the light of the above statement, choose the correct answer from the statements, choose the **correct** answer from the options give below:

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

Ans. (4)

126. Cellulose does not form blue colour with Iodine because

- (1) It is a helical molecule.
- (2) It does not contain complex helices and hence cannot hold iodine molecules.
- (3) It breaks down when iodine reacts with it.
- (4) It is a disaccharide.

Ans. (2)

127. Which hormone promotes internode/petiole elongation in deep water rice?

- (1) Kinetin
- (2) Ethylene
- (3) 2,4-D
- (4) GA<sub>3</sub>

Ans. (2)

128. Expressed Sequence Tags (ESTs) refers to

- (1) All genes that are expressed as proteins.
- (2) All genes whether expressed or unexpressed.
- (3) Certain important expressed genes.
- (4) All genes that are expressed as RNA.

Ans. (4)

129. Given below are two statements:

Statement I The forces generated by transpiration can lift a xylem-sized column of water over 130 meters height.

Statement II: Transpiration cools leaf surfaces sometimes 10 to 15 degrees, by evaporative cooling.

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

- (1) Both Statement I and Statement II are incorrect.
- (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 correct.

Ans. (4)

130. Upon exposure to UV radiation, DNA stained with ethidium bromide will show

- (1) Bright blue colour
- (2) Bright yellow colour
- (3) Bright orange colour
- (4) Bright red colour






Ans. (3)

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131. The historic Convention on Biological Diversity, 'The Earth Summit' was held in Rio de Janeiro in the year:  
(1) 1992 (2) 1986 (3) 2002 (4) 1985
- Ans. (1)
132. The reaction centre in PS II has an absorption maxima at  
(1) 700 nm (2) 660 nm (3) 780 nm (4) 680 nm
- Ans. (4)
133. Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R:  
Assertion A: The first stage of gametophyte in the life cycle of moss is protonema stage.  
Reason R: Protonema develops directly from spores produced in capsule. In the light of the above statements, choose the most appropriate answer from the options given below:  
(1) Both A and R are correct but R is NOT the correct explanation of A.  
(2) A is correct but R is not correct.  
(3) A is not correct but R is correct.  
(4) Both A and R are correct and R is the correct explanation of A.
- Ans. (4)
134. In tissue culture experiments, leaf mesophyll cells are put in a culture medium to form callus. This phenomenon may be called as :  
(1) Dedifferentiation (2) Development  
(3) Senescence (4) Differentiation
- Ans. (1)
135. Given below are two statements: Statement I: End arch and exarch are the terms often used for describing the position of secondary xylem in the plant body.  
Statement II: Exarch condition is the most common feature of the root system. In the light of the above statements, choose the correct answer from the options given below:  
(1) Both Statement I and Statement II are false.  
(2) Statement I is correct but Statement II is false.  
(3) Statement I is incorrect but Statement II is true.  
(4) Both Statement I and Statement II are true.
- Ans. (3)
136. Identify the correct statements:  
A. Lenticels are the lens-shaped openings permitting the exchange of gases.  
B. Bark formed early in the season is called hard bark.  
C. Bark is a technical term that refers to all tissues exterior to vascular cambium.  
D. Bark refers to periderm and secondary phloem.  
E. Phellogen is single-layered in thickness.  
Choose the correct answer from the options given below:  
(1) A and D only (2) A, B and D only  
(3) B and C only (4) B, C and E only
- Ans. (1)

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137. Match List I with List II:

**List I**

- A. Cohesion
- B. Adhesion
- C. Surface tension
- D. Guttation

**List II**

- I. More attraction in liquid phase
- II. Mutual attraction among water molecules
- III. Water loss in liquid phase
- IV. Attraction towards polar surfaces

Choose the correct answer from the options given below:

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

Ans. (4)

138. Match List I with List II

**List I**

- A. M Phase
- B. G<sub>2</sub> Phase
- C. Quiescent stage
- D. G<sub>1</sub> Phase:

**List II**

- I. Proteins are synthesized
- II. Inactive phase
- III. Interval between mitosis and initiation of DNA replication
- IV. Equational division

Choose the correct answer from the options given below:

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

Ans. (2)

139. Which of the following statements are correct about Klinefelter's Syndrome?

- A. This disorder was first described by Langdon Down (1866).
- B. Such an individual has overall masculine development. However, the feminine development is also expressed.
- C. The affected individual is short statured.
- D. Physical, psychomotor and mental development is retarded.
- E. Such individuals are sterile. Choose the correct answer from the options given below:

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

Ans. (2)

140. Given below are two statements:

**Statement I:** Gause's 'Competitive Exclusion Principle' states that two closely related species competing for the same resources cannot co-exist indefinitely and competitively inferior one will be eliminated eventually.

**Statement II:** In general, carnivores are more adversely affected by competition than herbivores.

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

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

Ans. (2)

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141. How many different proteins does the ribosome consist of?  
(1) 60 (2) 40 (3) 20 (4) 80

Ans. (4)

142. Which of the following combinations is required for chemiosmosis?

- (1) membrane, proton pump, proton gradient, NADP synthase  
(2) proton pump, electron gradient, ATP synthase  
(3) proton pump, electron gradient, NADP synthase  
(4) membrane, proton pump, proton gradient, ATP synthase

Ans. (4)

143. Which one of the following statements is NOT correct?

- (1) Algal blooms caused by excess of organic matter in water improve water quality and promote fisheries.  
(2) Water hyacinth grows abundantly in eutrophic water bodies and leads to an imbalance in the ecosystem dynamics of the water body.  
(3) The amount of some toxic substances of industrial waste water increases in the organisms at successive trophic levels.  
(4) The micro-organisms involved in biodegradation of organic matter in a sewage polluted water body consume a lot of oxygen causing the death of aquatic organisms.

Ans. (1)

144. Match List I with List II:

**List I**  
(Interaction)

- A. Mutualism  
B. Commensalism  
C. Amensalism  
D. Parasitism

**List II**  
(Species A and B)

- I. +(A), O(B)  
II. (A), O(B)  
III. (A), (B)  
IV. +(A), (B)

Choose the correct answer from the options given below:

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

Ans. (1)

145. Main steps in the formation of Recombinant DNA are given below. Arrange these steps in a correct sequence.

- A. Insertion of recombinant DNA into the host cell.  
B. Cutting of DNA at specific location by restriction enzyme.  
C. Isolation of desired DNA fragment. D. Amplification of gene of interest using PCR. Choose the correct answer from the options given below:

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






Ans. (2)

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146. Match List I with List II:

**List I**

- A. Iron
- B. Zinc
- C. Boron
- D. Molybdenum

**List II**

- I. Synthesis of auxin
- II. Component of nitrate reductase
- III. Activator of catalase
- IV. Cell elongation and differentiation

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

Ans. (2)

147. Match List I with List II:

**List I**

- A. Oxidative decarboxylation
- B. Glycolysis
- C. Oxidative phosphorylation
- D. Tricarboxylic acid cycle

**List II**

- I. Citrate synthase
- II. Pyruvate dehydrogenase
- III. Electron transport system
- IV. EMP pathway

Choose the correct answer from the options given below:

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

Ans. (3)

148. Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R:  
**Assertion A:** In gymnosperms the pollen grains are released from the microsporangium and carried by air currents.

**Reason R:** Air currents carry the pollen grains to the mouth of the archegonia where the male gametes are discharged and pollen tube is not formed.

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

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

Ans. (2)

149. Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R  
**Assertion A:** A flower is defined as modified shoot wherein the shoot apical meristem changes to floral meristem.

**Reason R:** Internode of the shoot gets condensed to produce different floral appendages laterally at successive nodes instead of leaves. In the light of the above statements, choose the correct answer from the options given below:

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

Ans. (4)

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150. Melonate inhibits the growth of pathogenic bacteria by inhibiting the activity of

- (1) Amylase
- (2) Lipase
- (3) Dinitrogenase
- (4) Succinic dehydrogenase

Ans. (4)

151. Given below are two statements:

Statement I: A protein is imagined as a line, the left end represented by first amino acid (C-terminal) and the right end represented by last amino acid (N-terminal)

Statement II: Adult human haemoglobin, consists of 4 subunits (two subunits of  $\alpha$  type and two subunits of  $\beta$  type.)

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

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

Ans. (3)

152. Radial symmetry is NOT found in adults of phylum

- (1) Hemichordata
- (2) Coelenterata
- (3) Echinodermata
- (4) Ctenophora

Ans. (1)

153. Which of the following statements are correct regarding female reproductive cycle?

- A. In non-primate mammals cyclical changes during reproduction are called oestrus cycle.
- B. First menstrual cycle begins at puberty and is called menopause.
- C. Lack of menstruation may be indicative of pregnancy.
- D. Cyclic menstruation extends between menarche and menopause.

Choose the most appropriate answer from the options given below:

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

Ans. (3)

154. Given below are statements: one is labelled as Assertion A and the other is labelled as Reason R.

**Assertion A:** Nephrons are of two types: Cortical & Juxta medullary, based on their relative position in cortex and medulla.

**Reason R:** Juxta medullary nephrons have short loop of Henle whereas, cortical nephrons have longer loop of Henle.

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

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

Ans. (2)

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155. Match List I with List II with respect to human eye.

List I

- A. Fovea
- B. Iris
- C. Blind spot
- D. Sclera

List II

- I. Visible coloured portion of eye that regulates diameter of pupil.
- II. External layer of eye formed of dense connective tissue.
- III. Point of greatest visual acuity or resolution.
- IV. Point where optic nerve leaves the eyeball and photoreceptor cells are absent.

Choose the correct answer from the options given below:

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

Ans. (4)

156. Which of the following are NOT considered as the part of endomembrane system?

- A. Mitochondria
- B. Endoplasmic Reticulum
- C. Chloroplasts
- D. Golgi complex
- E. Peroxisomes

Choose the most appropriate answer from the options given below:

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

Ans. (1)

157. Broad palm with single palm crease is visible in a person suffering from-

- (1) Turner's syndrome
- (2) Klinefelter's syndrome
- (3) Thalassemia
- (4) Down's syndrome

Ans. (4)

158. Match List I with List II.

List I

- A. P-wave
- B. Q-wave
- C. QRS complex ventricles
- D. T wave

List II

- I. Beginning of systole
- II. Repolarisation of
- III. Depolarisation of atria
- IV. Depolarisation of ventricles

Choose the correct answer from the options given below:

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

Ans. (4)

159. Which one of the following common sexually transmitted diseases is completely curable when detected early and treated properly?

- (1) Gonorrhoea
- (2) Hepatitis-B
- (3) HIV Infection
- (4) Genital herpes

Ans. (1)

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160. Match List I with List II.

List I

(Cells)

A. Peptic cells

B. Goblet cells

C. Oxyntic cells

D. Hepatic cells

List II

(Secretion)

I. Mucus

II. Bile juice

III. Proenzyme pepsinogen

IV. HCl and intrinsic factor for absorption of vitamin B<sub>12</sub>

Choose the correct answer from the options given below:

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

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

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

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

Ans. (2)

161. Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

**Assertion A:** Endometrium is necessary for implantation of blastocyst.

**Reason R:** In the absence of fertilization, the corpus luteum degenerates that causes disintegration of endometrium.

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

(1) Both A and R are true but R is NOT the correct explanation of A.

(2) A is true but R is false.

(3) A is false but R is true.

(4) Both A and R are true and R is the correct explanation of A.

Ans. (4)

162. Which of the following is not a cloning vector?

(1) YAC

(2) pBR322

(3) Probe

(4) BAC

Ans. (3)

163. Match List I with List II.

List I

A. Taenia

B. Paramoecium

C. Periplaneta

D. Pheretima

List II

I. Nephridia

II. Contractile vacuole

III. Flame cells

IV. Urecose gland

Choose the correct answer from the options give below:

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

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

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

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

Ans. (2)

164. Given below are two statements:

Statement I: Ligaments are dense irregular tissue.

Statement II: Cartilage is dense regular tissue.

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

(1) Both Statement I and Statement II are false.

(2) Statement I is true but Statement II is false.

(3) Statement I is false but Statement II is true.

(4) Both Statement I and Statement II are true.

Ans. (1)

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165. Which of the following functions is carried out by cytoskeleton in a cell?

- (1) Protein synthesis (2) Motility  
(3) Transportation (4) Nuclear division

Ans. (2)

166. Match List I with List II.

List I

- A. Gene 'a'  
B. Gene 'y'  
C. Gene 'i'  
D. Gene 'z'

List II

- I.  $\beta$ -galactosidase  
II. Transacetylase  
III. Permease  
IV. Repressor protein

Choose the correct answer from the options given below:

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

Ans. (1)

167. Which of the following statements is correct?

- (1) Biomagnification refers to increase in concentration of the toxicant at successive trophic levels.  
(2) Presence of large amount of nutrients in water restricts 'Algal Bloom'  
(3) Algal Bloom decreases fish mortality  
(4) Eutrophication refers to increase in domestic sewage and waste water in lakes.

Ans. (1)

168. Which one of the following symbols represents mating between relatives in human pedigree analysis?



Ans. (1)

169. Once the undigested and unabsorbed substances enter the caecum, their backflow is prevented by-

- (1) Ileo caecal valve (2) Gastro-oesophageal sphincter  
(3) Pyloric sphincter (4) Sphincter of Oddi

Ans. (1)

170. Which one of the following techniques does not serve the purpose of early diagnosis of a disease for its early treatment?

- (1) Serum and Urine analysis  
(2) Polymerase Chain Reaction (PCR) technique  
(3) Enzyme Linked Immuno-Sorbent Assay (ELISA) technique  
(4) Recombinant DNA Technology

Ans. (1)

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171. Given below are two statements:

**Statement I:** Low temperature preserves the enzyme in a temporarily inactive state whereas high temperature destroys enzymatic activity because proteins are denatured by heat.

**Statement II:** When the inhibitor closely resembles the substrate in its molecular structure and inhibits the activity of the enzyme, it is known as competitive inhibitor.

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

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

Ans. (4)

172. Match List I with List II.

List I

(Type of Joint)

- A. Cartilaginous Joint
- B. Ball and Socket Joint
- C. Fibrous Joint
- D. Saddle Joint

List II

(Found between)

- I. Between flat skull bones
- II. Between adjacent vertebrae in vertebral column
- III. Between carpal and metacarpal of thumb
- IV. Between Humerus and Pectoral girdle

Choose the correct answer from the options given below:

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

Ans. (1)

173. Given below are two statements:

**Statement I:** Vas deferens receives a duct from seminal vesicle and opens into urethra as the ejaculatory duct.

**Statement II:** The cavity of the cervix is called cervical canal which along with vagina forms birth canal.

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

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

Ans. (4)

174. In which blood corpuscles, the HIV undergoes replication and produces progeny viruses?

- (1) B-lymphocytes
- (2) Basophils
- (3) Eosinophils
- (4) T<sub>H</sub> cells

Ans. (4)

175. Match List I with List II.

List I

- A. Heroin
- B. Marijuana
- C. Cocaine
- D. Morphine

List II

- I. Effect on cardiovascular system
- II. Slow down body function
- III. Painkiller
- IV. Interfere with transport of dopamine

Choose the correct answer from the options given below:

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

Ans. (4)

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176. Vital capacity of lung is  
 (1) IRV + ERV + TV + RV  
 (2) IRV + ERV + TV + RV  
 (3) IRV + ERV + TV  
 (4) IRV + ERV

Ans (3)

177. Select the correct group/set of Australian Marsupials exhibiting adaptive radiation.  
 (1) Numbat, Spotted cuscus, Flying Phalanger  
 (2) Mole, Flying squirrel, Tasmanian tiger cat  
 (3) Lemur, Anteater, Wolf  
 (4) Tasmanian wolf, Bobcat, Marsupial mole

Ans (1)

178. Match List I with List II.

	List I	List II
A.	CCK	I. Kidney
B.	GIP	II. Heart
C.	ANF	III. Gastric gland
D.	ADH	IV. Pancreas

Choose the correct answer from the options given below :

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

Ans (4)

179. Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.  
**Assertion A** and the other is labelled as Reason R.  
**Assertion A** : Amniocentesis for sex determination is one of the strategies of Reproductive and Child Health Care Programme.

**Reason R** : Ban on amniocentesis checks increasing menace of female foeticide.

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

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

Ans (3)

180. Given below are two statements:  
**Statement I** : RNA mutates at a faster rate.

**Statement II** : Viruses having RNA genome and shorter life span mutate and evolve faster.

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

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

Ans (4)

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181. Match List I with List II.

**List I**

- A. Vasectomy
- B. Coitus interruptus
- C. Cervical caps
- D. Saheli

**List II**

- I. Oral method
- II. Barrier method
- III. Surgical method
- IV. Natural method

Choose the correct answer from the options given below:

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

Ans (1)

182. Given below are two statements:

**Statements I:** Electrostatic precipitator is most widely used in thermal power plant.

**Statements II:** Electrostatic precipitator in thermal power plant removes ionising radiations.

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

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

Ans (2)

183. Given below are two statements:

**Statement I:** In prokaryotes, the positively charged DNA is held with some negatively charged proteins in a region called nucleoid.

**Statement II:** In eukaryotes, the negatively charged DNA is wrapped around the positively charged histone octamer to form nucleosome.

In the light of the above statements. Choose the correct answer from the option below:

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

Ans (3)

184. Match List I with List II.

**List I**

- A. Ringworm
- B. Filariasis
- C. Malaria
- D. Pneumonia

**List II**

- I. Haemophilus influenzae
- II. Trichophyton
- III. Wuchereria bancrofti
- IV. Plasmodium vivax

Choose the correct answer from the options given below:

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

Ans (1)

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185. Match List I and List II.

**List I**

**(Interacting species)**

- A. A Leopard and a Lion in a forest/grassland  
 B. A Cuckoo laying egg in a Crow's nest  
 C. Fungi and root of a higher plant in Mycorrhizae  
 D. A cattle egret and a Cattle in a field

**List II**

**(Name of Interaction)**

- I. Competition  
 II. Brood parasitism  
 III. Mutualism  
 IV. Commensalism

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

Ans (4)

186. Which of the following statements are correct ?

- A. Basophils are most abundant cells of the total WBCs  
 B. Basophils secrete histamine, serotonin and heparin  
 C. Basophils are involved in inflammatory response.  
 D. Basophils have kidney shaped nucleus  
 E. Basophils are agranulocytes

Choose the correct answer from the options given below:

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

Ans (2)

187. Match List I with List II.

**List I**

- A. Mast cells  
 B. Inner surface of bronchiole  
 C. Blood  
 D. Tubular parts of nephron

**List II**

- I. Ciliated epithelium  
 II. Areolar connective tissue  
 III. Cuboidal epithelium  
 IV. specialised connective tissue

Choose the correct answer from the options give below :

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

Ans (2)

188. Select the correct statements.

- A. Tetrad formation is seen during Leptotene.  
 B. During Anaphase, the centromeres split and chromatids separate.  
 C. Terminalization takes place during Pachytene.  
 D. Nucleolus, Golgi complex and ER are reformed during Telophase.  
 E. Crossing over takes place between sister chromatid of homologous chromosome.

Choose the correct answer from the options given below:

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

Ans (1)

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189. In cockroach, excretion is brought about by-

- A. Phallic gland
- B. Ureose gland
- C. Nephrocytes
- D. Fat body
- E. Collateral glands

Choose the correct answer from the options given below.:

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

Ans (2)

190. Given below are two statements:

Statement I: During G<sub>0</sub> phase of cell cycle, the cell is metabolically inactive.

Statement II: The centrosome undergoes duplication during S phase of interphase. In the light of the above statements, choose the most appropriate answer from the options given below:

- (1) Both Statement I and Statement II are incorrect.
- (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 correct.

Ans (3)

191. Select the correct statements with reference to chordates.

- A. Presence of a mid-dorsal, solid and double nerve cord.
- B. Presence of closed circulatory system.
- C. Presence of paired pharyngeal gillslits.
- D. Presence of dorsal heart
- E. Triploblastic pseudocoelomate animals.

Choose the correct answer from the options given below:

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

Ans (1)

192. Match List I with List II.

List I

- A. Logistic growth
- B. Exponential growth
- C. Expanding age pyramid
- D. Stable age pyramid

List II

- I. Unlimited resource availability condition
- II. Limited resource availability growth
- III. The percent individuals of pre-reproductive age is largest followed by reproductive and post reproductive age groups
- IV. The percent individuals of pre-reproductives and reproductive age group are same

Choose the correct answer from the options given below:

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

Ans (4)

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193. Which one of the following is the sequence on corresponding coding strand, if the sequence on mRNA formed is as follows  
5' AUCGAUCGAUCGAUCGAUCG AUCGAUCG 3'?
- (1) 3' UAGCUAGCUAGCUAGCUA GCUAGCUAGC 5'
  - (2) 5' ATCGATCGATCGATCGATCG ATCGATCG 3'
  - (3) 3' ATCGATCGATCGATCGATCG ATCGATCG 5'
  - (4) 5' UAGCUAGCUAGCUAGCUA GCUAGC UAGC 3'

Ans (2)

194. Which of the following is characteristic feature of cockroach regarding sexual dimorphism?
- (1) Presence of anal styles
  - (2) Presence of sclerites
  - (3) Presence of anal cerci
  - (4) Dark brown body colour and anal cerci

Ans (1)

195. Which of the following statements are correct regarding skeletal muscle?
- A. Muscle bundles are held together by collagenous connective tissue layer called fascicle.
  - B. Sarcoplasmic reticulum of muscle fibre is a store house of calcium ions.
  - C. Striated appearance of skeletal muscle fibre is due to distribution pattern of actin and myosin proteins.
  - D. M line is considered as functional unit of contraction called sarcomere.
- Choose the most appropriate answer from the options given below:

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

Ans (1)

196. The unique mammalian characteristics are:
- (1) hairs, pinna and mammary glands
  - (2) hairs, pinna and indirect development
  - (3) pinna, monocondylic skull and mammary glands
  - (4) hairs, tympanic membrane and mammary glands

Ans (1)

197. Which one of the following is NOT an advantage of inbreeding?
- (1) It exposes harmful recessive genes that are eliminated by selection.
  - (2) Elimination of less desirable genes and accumulation of superior genes takes place due to it.
  - (3) It decreases the productivity of inbred population, after continuous inbreeding.
  - (4) It decreases homozygosity.

Ans (3)

198. The parts of human brain that helps in regulation of sexual behaviour, expression of excitement, pleasure, rage, fear etc. are:
- (1) Corpora quadrigemina & hippocampus
  - (2) Brain stem & epithalamus
  - (3) Corpus callosum and thalamus
  - (4) Limbic system & hypothalamus

Ans (4)

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199. Which of the following statements are correct?
- A. An excessive loss of body fluid from the body switches off osmoreceptors.
  - B. ADH facilitates water reabsorption to prevent diuresis.
  - C. ANF causes vasodilation.
  - D. ADH causes increase in blood pressure.
  - E. ADH is responsible for decrease in GFR.

Choose the correct answer from the options given below:

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

Ans (1)

200. Which of the following are NOT under the control of thyroid hormone?
- A. Maintenance of water and electrolyte balance
  - B. Regulation of basal metabolic rate
  - C. Normal rhythm of sleep-wake cycle
  - D. Development of immune system
  - E. Support the process of R.B.Cs formation

Choose the correct answer from the options given below:

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

Ans (3)

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