



BIOLOGY

BOOKS - SURA BIOLOGY (TAMIL ENGLISH)

HEREDITY

Textbook Evaluation Choose The Correct Answer

1. According to Mendal ,alletes have the following character

- A. Pair of gene
- B. Responsible for character
- C. Peoduction of gametes
- D. Recessive factors

Answer: A::B::C



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2. 9:3:3:1 ratio is due to _____

- A. Segregation
- B. Crossing over
- C. Independent assortment
- D. Recessiveness

Answer: A::D



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3. The region of the chromosome where the spindle fibre get attached during cell division.

- A. Chromomere
- B. Centrosome

C. Centromere

D. Chromonema

Answer: C



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4. The centromere is found at the centre of the _____ chromosome.

A. Telocentric

B. Metacentric

C. Sub-metacentric

D. Acrocentric

Answer: A::C



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5. The _____ units form the backbone of the DNA.

- A. 5 carbon sugar
- B. Phosphate
- C. Nitrogenous bases
- D. Sugar phosphate

Answer: A



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6. Okazaki fragments are joined together by _____.

- A. Helicase
- B. DNA polymerase
- C. DNA primer
- D. DNA ligase

Answer: A::D



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7. The number of chromosomes found in human beings are _____

- A. 22 pairs of autosomes and 1 pair of allosomes
- B. 22 autosomes and 1 allosome
- C. 46 pairs autosome and 1 pair of allosomes.
- D.

Answer:



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8. The loss of one more chromosome in a ploidy is called _____.

- A. etraploidy

B. Aneuploidy

C. Euploidy

D. Polyploidy

Answer:



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Textbook Evaluation Fill In The Blank

1. The pairs of contrasting character (traits) of Mendal are called _____



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2. Physical expression of a gene is called _____



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3. The thin thread like structures found in the nucleus of each cell are called _____



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4. DNA consists of two _____ chains



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5. An inheritable change in the amount or the structure of a chromosome is called



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**Textbook Evaluation Identify Whether The Statement Are True Or False
Correct The False Statement**

1. A typical Mendelian dihybrid ratio of F_2 generation is 3:1



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2. A recessive factor is altered by the presence of a dominant factor.



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3. Each gamete has only one allele of a gene.



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4. Hybrid is an offspring from a cross between genetically different parent.



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5. Some of the chromosomes have an elongated knob-like appendage known as telomere.

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6. New nucleotides are added and new complimentary strand of DNA is formed with the help of enzyme DNA polymerase.

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7. Down's syndrome is the genetic condition with 45 chromosomes.

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Textbook Evaluation Match The Following

1. 

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Textbook Evaluation Answer In A Sentence

1. What is a cross in which inheritance of two pairs of contrasting characters are studied?

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2. Name the conditions when both the alleles are identical.

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3. A garden pea plant produced axial white flowers. Another of the same species produced terminal violet flowers. Identify the dominant traits.

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4. What is the name given to the segments of DNA, which are responsible for the inheritance of a particular character?

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5. Name the bond which binds the nucleotides in a DNA

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Textbook Evaluation Short Answer Questions

1. Why did Mendel select pea plant for this experiments?

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2. What do you understand by the term phenotype and genotype?

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3. What are allosomes?

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4. What are Okazaki fragments?

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5. Why is euploidy considered to be advantageous to both plants and animals?

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6. A pure tall plant (TT) is crossed with pure dwarf plant (tt), What would be the F_1 and F_2 generations? Explain.


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7. (i) What are allosomes?

(ii) Explain the structure of a chromosome.



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8. Label the parts of the DNA in the diagram given below. Explain the structure briefly. 



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Textbook Evaluation Long Answer Questions

1. Explain with an example the inheritance of dihybrid cross. How is it different from monohybrid cross?



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2. How is the structure of DNA organized? What is the biological significance of DNA?



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3. The sex of the new born child is a matter of chance and neither of the parents may be considered responsible for it. What would be the possible fusion of gametes to determine the sex of the child?



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Textbook Evaluation High Order Thinking Skills Hots

1. Flowers of the garden pea are bisexual and self-pollinated. Therefore, it is difficult to perform hybridization experiment by crossing a particular pistil with the specific pollen grains. How Mendel made it possible in his monohybrid and dihybrid crosses?

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2. $\geq \neq$ ratiorethencross - bred $\rightarrow \prod$ uceF_(2)
 $\geq \neq$ ratiionofpeaplants. (a)W \hat{d} otheplantsofF_(1)
 $\geq \neq$ ratiion ∞ klike? (b)W \hat{i} stheratiooftallplants \rightarrow dwar fplantns \in
F_(2) $\geq \neq$ ratiion? ©Whichtypeofplantsweremis sin g \in F_(1)
 $\geq \neq$ ratiionbutreappeared \in F_(2)` generation?

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3. Kavitha gave birth to a female baby.Her family members say that she can give birth to only female babies because of her family history .Is the statement given by her family members true.Justify your answer .

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Textbook Evaluation Value Based Question

1. Under which conditions does the law of independent assortment hold good and why?



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Additional Questions Answers Choose The Correct Answer

1. V shaped chromosomes are called_____

- A. Metacentric
- B. acrocentric
- C. submetacentric
- D. telocentric

Answer: A:C



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2. The sex chromosomes in a human cell refer to the _____.

A. 22nd pair

B. 20th pair

C. 23rd pair

D. 21st pair

Answer: A::B::C::D



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3. The haploid condition in a human cell refers to ___ chromosomes.

A. 44

B. 23

C. 46

D. 22

Answer: B::C



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4. L shape chromosomes are described as _____

- A. acrocentric
- B. metacentric
- C. submetacentric
- D. telocentric

Answer: A::B::C



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5. _____ is not a nitrogenous base

- A. Adenine

B. Thymine

C. Leucine

D. Cytosine

Answer: C



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6. Choose the correct pair _____

A. $A \equiv T$

B. $G \equiv A$

C. $A \equiv C$

D. $G \equiv C$

Answer: D



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7. Franklin and Wilkin were awarded nobel prize for _____

- A. studying DNA replication.
- B. Studying about RNA.
- C. X-ray diffraction studeis of DNA.
- D. isolating DNA.

Answer: A::C::D



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8. Down's syndrome is a case of _____

- A. Euploidy
- B. Deletion
- C. Translocation
- D. Aneuploidy

Answer: A::D



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9. _____ is a gene mutation.

A. Deletion

B. Duplication

C. Translocation

D. Ploidy

Answer: D



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10. The enzyme called _____ bind to the origin of replication site.

A. Replicase

B. Helicase

C. Amylase

D. Ligase

Answer: A::C



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11. In human, each cell normally consists ___ of chromosomes.

A. 23 pairs

B. 22 pairs

C. 20 pairs

D. 12 pairs

Answer: A::B::C



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12. hydrogen bonds between the nitrogenous bases make the DNA molecule_____

- A. unstable
- B. stable
- C. unbalanced
- D. disturbed

Answer: A::B



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Additional Questions Answers Fill In The Blanks

1. The protein part of which molecule is disturbed in sickle cell anemia_____



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2. Mendel was a native of _____



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3. A cross involving two traits is called _____



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4. The laws of heredity were proposed by _____



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5. The number of chromosomes present in a human cell is _____



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6. The spindle fibre are attached to the ___ of the chromosme.



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7. The end of a chromosome is called _____



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8. _____ stated base pair rule.



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9. DNA is a _____ chain.



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10. The enzyme called ___ bind to the origin of replication site.



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11. The term mutation was coined by_____ in1901.



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12. Plant in which De vries first observed mutation_____.



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13. Adenine and Guanine are called_____



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14. Thymine and cytosine are called_____



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15. There are _____ base pairs in one complete turn of a DNA molecule.



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16. _____ are two types of nitrogenous bases in DNA.



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17. sex is determined by the _____ of an individual.



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18. An inheritable change in the amount or the structure of a chromosome is called



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19. The sudden change in the structure of number of chromosomes is called ____ mutation.



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20. Structural changes in the chromosomes usually occurs due to errors in _____



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21. The addition or deletion in the number of chromosomes present in a cell is called _____



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22. _____ is the condition in which the individual bears more than the usual number of diploid ($2n$) chromosomes



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23. If an individual has three _____ of chromosomes, the condition is called triploidy



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24. Triploidy plants and animals are typically _____.



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25. _____ plants are advantageous as they often result in increased fruit and flower size.



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26. _____ is the loss or gain of one or more chromosomes in a set.



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27. Down's syndrome is a genetic condition, in which there is an extra copy of ____

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28. Gene mutation is the abnormal protein formation in an organism.

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29. ____ result in abnormal protein formation of a single gene.

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30. _____ is a disease caused by the mutation of a single gene.

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31. Each human cell contain _____ pair of chromosomes.



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32. The eukaryotic chromosomes are classified into _____ and _____



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33. _____ contain genes that determine the somatic characters



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34. _____ are responsible for determining the sex of an individual.



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35. _____ is the number ,size and shape of chromosomes in the cell nucleus of an organism.



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36. _____ is the diagrammatic representation of Karyotype of a species.



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37. _____ is the most important constituent of a chromosome.



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38. The most widely accepted model of DNA is the _____ structure.



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39. Purines and pyrimidines are _____ bases in DNA.



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40. Pairing between the nitrogenous bases in the DNA is linked by _____ bonds



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41. Adenine links _____ with two hydrogen bonds.



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42. Watson, Crick and Wilkins were awarded Nobel prize for medicine in _____.



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43. DNA consists of millions of _____.



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44. DNA is also called as _____ chain.



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45. _____ between the nitrogenous bases makes the DNA molecules stable.



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46. The chromosomes with _____ are called as the sat-chromosomes.



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47. _____ are protective sequences of nucleotides found in chromosomes.



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48. The centromere is found on the proximal end in ___ chromosome.



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49. Acrocentric chromosomes are also described as _____ shaped chromosomes.



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50. _____ chromosomes are J-shaped or L-shaped chromosomes.



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51. The term 'chromosomes' was first coined by ___ in 1888.



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52. ___ are the carrier of genetic material which contain the heredity information.



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53. What is the name given to the segments of DNA, which are responsible for the inheritance of a particular character?



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54. ___ are made up of DNA, RNA, chromosomal proteins and metallic ions.



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55. External expression of a particular trait is known as _____.



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56. Mendel's famous experiments was performed on ____ plant.



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57. Two character making up a pair of contrasting are called alleles
or _____



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58. The character which expresses itself is called _____ character.



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59. The character which is masked is called ___ character.



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60. The character which is masked is called ___ character.



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61. Chromosomes consists of two identical strands called _____



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62. The two arms of a chromosomes meet at a point called _____



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63. _____ is transmission of characters, from one generation to the next generation.

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64. _____ refers to the differences shown by the individuals of the same species.

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65. _____ is the father of Genetics.

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66. The genotypic ratio in Mendel's monohybrid cross is _____.

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67. Tallness is represented as ___ character.



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68. Dwarfness is represented as ___ character.



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69. The elongated knob-like appendages at one end of some chromosome is called as _____



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70. The region of the chromosome where the spindle fibre get attached during cell division.



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71. The end of a chromosome is called _____



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72. The centromere is found at the centre of the _____ chromosome.



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73. Metacentric chromosomes are ____ shaped chromosomes.



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74. _____ are also called as sex chromosomes.



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75. The two DNA strands open and separate at a point forming the _____

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76. _____ enzyme separate the two strands of the DNA during replication.

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77. The enzyme _____ separates the double helix above the unwinding process.

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78. In replication _____ removes the twists formed during the unwinding process.



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79. RNA primer is a short segment of _____.



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80. The short segments of DNA are synthesized in a fragments.



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81. The short segments of DNA are called _____ fragments.



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Additional Questions Answers State Whether The Following Statements Are True Or False Correct The False Statement

1. Deletion is kind of point mutation



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2. Triploid plants and animals produce many offsprings.



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3. Tetraploid plants cause loss to the farmer.



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4. RNA is not a hereditary material.



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5. Male and female have equal number of autosomes.



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6. Rod shaped chromosomes are described as acrocentric.



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7. There are 12 base pairs in a complete turn of DNA.



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8. Ligase separates the two strands of the DNA



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[Additional Questions Answers Assertion And Reason](#)

1. Assertion:sex of the baby depends on human male .

Reason :They are homogametic.

A. Both Assertion and reason are true and reason is not the correct explanation of assertion.

B. Both assertion and reason are true but Reason is not the correct explanation of Assertion.

C. Assertion is true Reason is false.

D. Both Assertion and Reason are false.

Answer:



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2. Assertion:There is an equal proportion of purines and pyrimidines in DNA.

Reason:Adenine links with Thymine and Guanine links with Cytosine.



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3. Assertion: Law of independent assortment is based on dihybrid cross.

Reason: The factors of one pair assort independently of the other pair.



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4. Assertion : The enzyme helicase binds to the origin of replication site.

Reason : Helicase separates the two strands of the DNA.



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5. Assertion: DNA is responsible for the transmission of hereditary information of hereditary information from one generation to next generation.



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6. Assertion :Human female are homogametic

Reason:In female,the gametes or the eggs formed are similar in their sex chromosome type.



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Additional Questions Answers Answer In One Word

1. The unit responsible for transmission of hereditary characters.



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2. The number of contrasting characters chosen by Mendel for his experiments.



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3. Dominant trait for pod colour in peas.



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4. Recessive trait for seed colour in peas.



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5. Dominant trait for seed colour in peas



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6. Phenotypic ration of monohybrid cross



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7. Genotypic ration of monohybrid cross



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8. Graphical representation to calculate probability of genotypes in a genetic cross



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9. Ration obtained in a dihybrid cross.



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10. Who received the Nobel prize for his work on role of chromosomes in heredity?



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11. Who gave the term 'Chromosome' ?



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12. What does DNA stand for?



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13. Point of location of a gene on a chromosome.



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14. Point of attachment of chromatids of a chromosome



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15. Bead like structures along the length of a chromosome.



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16. Another name for secondary constriction of a chromosome.



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17. Knob like appendages present at one end of the chromosome.



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18. Combination of a sugar ,phosphate and nitrogenous base.



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19. Name the process by which DNA makes copies of itself.



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20. _____ enzyme separate the two strands of the DNA during replication.

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21. Enzyme which helps in lengthening the new DNA strand during replication.

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22. ___ are the enzymes which help in ligating the broken DNA fragments.

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23. Short segments of DNA formed in the newstrand during replication of DNA.



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24. Condition involving changes in number of chromosomes present in a cell.



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25. Another name for Down's syndrome.



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26. Chromosomal composition of a human sperm.



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27. Chromosomal composition of a human egg.



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28. Type of bonds found between nitrogenous bases in DNA.



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29. Name the bond which binds the nucleotides in a DNA



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Additional Questions Answers Give Reasons For The Following Statements

1. DNA molecule is also called as polynucleotide.



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2. The human male are called heterogametic





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3. Sickle cell anaemia is caused by the mutation of a single gene.



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Additional Questions Answers Very Short Answers

1. What is a checker board or Punnett square?



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2. Define a gene.



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3. What is a Karyotype?

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4. What is an idiogram?

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5. What is replication of DNA?

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6. What is RNA primer?

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7. Name the enzyme involved in DNA replication.

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8. Define mutation.



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9. Mention the types of gene or point mutation.



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10. Define heredity & variation.



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11. State the law of independent assortment.



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12. What are nucleolar organisers ?



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13. List any three traits of pea plant selected by Mendel for his experiments and mention their dominant & recessive form.



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14. Mention the symptoms of Down's syndrome.



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15. State the law of segregation.



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16. What are Okazaki fragments?



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17. Write a note on euploidy.



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18. How are chromosomes classified based on the position of centromere ?



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Additional Questions Answers Long Answers

1. Write a note on DNA replication.



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2. Write a note on mutation.



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Additional Questions Answers Higher Order Thinking Skills Hots

1. Why do all the gametes formed in human females have an X-chromosome?



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Additional Questions Answers Value Based Questions

1. Mala had a huge scar on her cheek after she met with fire accident during her college days. She is worried if her baby would inherit the scar she had acquired. She clarified with her doctor, she need not worry about

it,as her scar is an acquired trait.

(ii)How is it different from inherited traits?



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Additional Questions Answers Expand The Following Abbereviations

1. Expand the abbereviation of "DNA" ?



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2. Expand the abbereviations of "RNA"



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3. Expand the abbereviations of "RBC"



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