



BIOLOGY

BOOKS - EVERGREEN BIOLOGY (ENGLISH)

GENETICS

Review Questions

1. The genetic make up of an organism.



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2. The unit of heredity.



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3. A hereditary disease in which blood does not clot.



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4. The type of gene, which in the presence of contrasting allele, is not expressed.



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5. The Physical expression of genes in an individual.



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6. A nitrogenous base in DNA.



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7. A cross between two parents having one pair of contrasting characters.



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8. The repeating components of each DNA strand lengthwise.



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9. A pair of corresponding chromosomes of the same shape and size and derived one from each parent.



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10.Is also known as bleeders disease.



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11. Small differences among individuals are called..... .



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12. chromosomes do not take part in sex determination.



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13. The chromosome number in humans is..... .



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14. Morphological expression of a gene is called.....



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15. Phenotype is the observable characteristic which is controlled.



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16. State whether the following statements are true or false. Rewrite the false statements in their correct form:

Linked genes are never separated.



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17. State whether the following statements are true or false. Rewrite the false statements in their correct form:

Sex of a child depends upon the health of the mother.



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18. State whether the following statements are true or false. Rewrite the false statements in their correct form:

Colour-blindness never passes from a father to a son.



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19. State whether the following statements are true or false. Rewrite the false statements in their correct form:

The two genes controlling one character separate from each other during gametogenesis.



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20. State whether the following statements are true or false. Rewrite the false statements in their correct form:

Crossing over produces recombinants.



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21. Give difference between Genotype and Phenotype



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22. Which of the following most appropriately describes haemophilia? (A) X-linked recessive gene disorder (B) Chromosomal disorder (C) Dominant gene disorder (D) Recessive gene disorder



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23. Differentiate between :

Haploid and Diploid



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24. Define the following terms:

Alleles



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25. Define the following terms:

Homozygous



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26. Define the following terms:

Linkage



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27. [A]: Mendelian recombinations are due to crossing over.

[R]: Crossing over brings about exchange of genes through chiasma formation.



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28. Define the following terms:

Phenotype



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29. Define the following terms:

Genotype



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30. Define the following terms:

Mutation



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31. State Mendel's law of segregation.



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32. Colourblindness is more frequent in males as compared to females. Comment.



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33. What is meant by sex-linked inheritance ?

Give few examples in man.



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34. Give any four reasons for Mendel's success.



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35. Why did Mendel select pea plant for his experiments on hybridization ?



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36. State Mendel's First law of inheritance and explain with the help of a suitable example.



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37. State Mendel's Second law of inheritance and explain with the help of a suitable example.



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38. Justify the statement that sex of the child is determined at the time of fertilization.



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39. Justify the statement that it is better to have colourblind father than to have colourblind mother.



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40. Name the pair of genes responsible for a particular characteristic in an individual.



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41. Name the chemical molecule that carries heredity from parent to offspring .



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42. Explain Mutation.



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43. Differentiate as directed :

Pure and hybrid strain (Definition).



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44. Differentiate as directed :

Monohybrid and Dihybrid cross (Phenotypic ratio)



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45. Differentiate as directed :

Human skin cell and Human ovum (Number of chromosomes).





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46. State Mendel's law of Independent assortment.



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47. Give biological/ technical terms for the following:

The type of gene in which the presence of a contrasting allele is not expressed.



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48. Give biological/ technical terms for the following:

The suppressed allele.



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49. Give biological/ technical terms for the following:

An alternation in the genetic material that can be inherited.



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50. Give biological/ technical terms for the following:

A pair of corresponding chromosomes of the same size and shape, one from each parent.



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51. Give biological/ technical terms for the following:

The condition in which a pair of chromosomes carry similar alleles of a particular character.



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52. Give difference between Genotype and Phenotype



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53. In a certain species of animals, black fur (B) is dominant over brown fur (b). Predict a

genotype and phenotype of the offsprings when both parents are Bb or have heterozygous black fur.



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54. State Mendel's law of dominance.



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55. What is a dihybrid ratio ?



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56. Define phenotype.



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57. What are autosomes ?



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58. Give the Dihybrid ratio. Name and state the law which explains the same.



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59. Explain the following terms :

Monohybrid cross

Gene

Phenotype.



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60. Name the two sex-linked diseases in males.



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61. State Mendel's law of segregation.



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62. State Mendel's Law of Dominance.



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63. A pure tall plant (TT) is crossed with a pure dwarf plant (tt). Draw Punnett squares to

show

F1 generation

F2 generation.



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64. Give the phenotype of the F_2 generation.



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65. Give the Phenotypic and Genotypic ratio of the F_1 and F_2 generation.



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66. Give an example of a sex-linked recessive disorder in humans.



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67. Find the odd-one out and name the category :

Haemophilia, colour blindness, albinism, night blindness.



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68. Find the odd-one out and name the category :

Thymine, Cytosine, Adenine, Pepsin.



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69. In each set of terms given below, there is an odd one and cannot be grouped in the same category to which the other three belong. Identify the odd term in each set and

name the category to which the remaining three belong.

Example: Ovary, Fallopian tube, Ureter, Uterus.

Odd term : Ureter

Category: Parts of female reproductive system.

Typhoid, Haemophilia, Albinism, Colour blindness.



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70. A homozygous plant having round (R) and yellow (Y) seed is crossed with a homozygous

plant having wrinkled (r) and green (y) seeds.

Give the scientific name of the plant on which Mendel conducted his hybridization experiments.



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71. A homozygous plant having round (R) and yellow (Y) seed is crossed with a homozygous plant having wrinkled (r) and green (y) seeds.

Give the genotype of F_1 generation.



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72. A homozygous plant having round (R) and yellow (Y) seed is crossed with a homozygous plant having wrinkled (r) and green (y) seeds.

Give the dihybrid phenotypic ratio and the phenotype of the offspring of the F_2 generation when two plants of the F_1 generation are crossed.



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73. A homozygous plant having round (R) and yellow (Y) seed is crossed with a homozygous plant having wrinkled (r) and green (y) seeds.

Name and state the law which explains the dihybrid ratio.



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74. A homozygous plant having round (R) and yellow (Y) seed is crossed with a homozygous plant having wrinkled (r) and green (y) seeds.

Give the possible combination of gametes that can be obtained from F_1 hybrid.



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75. Choose the correct answer from the four options :

The recessive gene is one that expresses itself in :

- A. Heterozygous condition
- B. Homozygous condition

C. F_2 generation

D. Y-linked inheritance

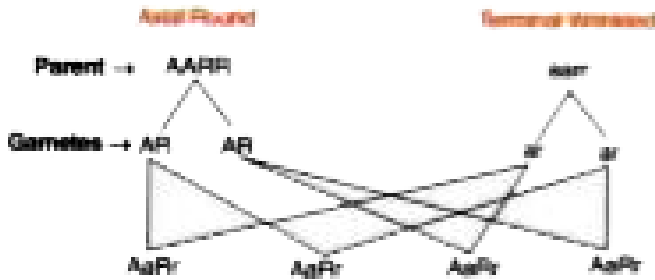
Answer:



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76. Given below is a schematic diagram showing Mendel's Experiment on sweet pea plants having axial flowers with round seeds (AARR) and Terminal flowers with wrinkled seeds (aarr). Study the same and answer the

questions that follow :



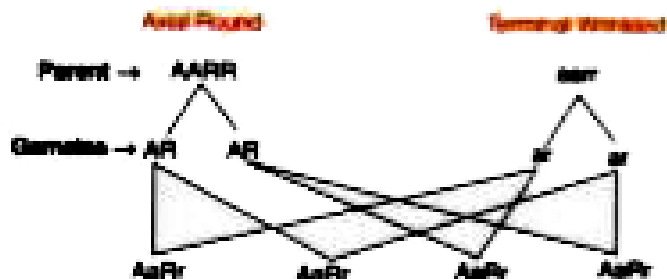
Give the phenotype of F_1 progeny.



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77. Given below is a schematic diagram showing Mendel's Experiment on sweet pea plants having axial flowers with round seeds (AARR) and Terminal flowers with wrinkled

seeds (aarr). Study the same and answer the questions that follow :



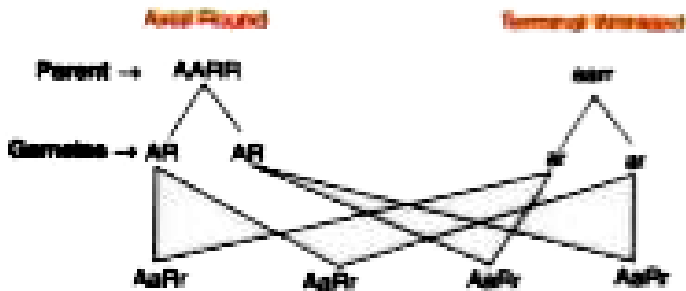
Give the phenotypes of F_2 progeny produced upon by the self pollination of F_1 progeny.



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78. Given below is a schematic diagram showing Mendel's Experiment on sweet pea

plants having axial flowers with round seeds (AARR) and Terminal flowers with wrinkled seeds (aarr). Study the same and answer the questions that follow :

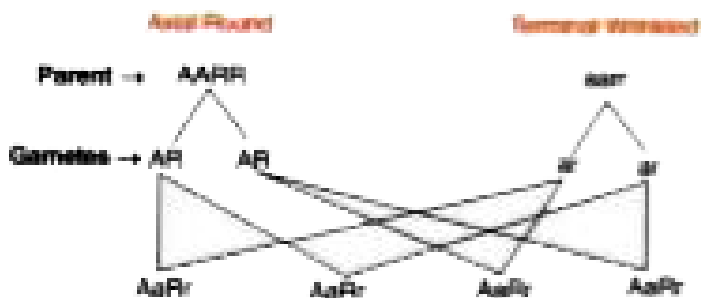


Give the phenotypic ratio of F_2 progeny.



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79. Given below is a schematic diagram showing Mendel's Experiment on sweet pea plants having axial flowers with round seeds (AARR) and Terminal flowers with wrinkled seeds (aarr). Study the same and answer the questions that follow :



Name and explain the law induced by Mendel on the basis of the above observation.



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80. In a homozygous plant round seeds (R) are dominant over wrinkled seeds (r):

Draw a Punnett square to show the gametes and offspring when both the plants have heterozygous round seeds (Rr).



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81. In a homozygous plant round seeds (R) are dominant over wrinkled seeds (r):

Mention the Phenotype and Genotype ratios of the offspring in F_2 generation.



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82. In a homozygous plant round seeds (R) are dominant over wrinkled seeds (r):

Name the sex chromosomes in human males and females.



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83. In a homozygous plant round seeds (R) are dominant over wrinkled seeds (r):

Briefly explain the term 'Mutation'.



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84. In a homozygous plant round seeds (R) are dominant over wrinkled seeds (r):

What is the number of chromosomes in the gametes of human beings?



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85. A homozygous tall plant (T) bearing red coloured (R) flowers is crossed with a homozygous dwarf (t) plant bearing white (r) flowers :

Give the genotype and phenotype of the plants of F_1 generation.



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86. A homozygous tall plant (T) bearing red coloured (R) flowers is crossed with a

homozygous dwarf (t) plant bearing white (r) flowers :

Mention the possible combinations of the gametes that can be obtained from the F1 hybrid plant.



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87. A homozygous tall plant (T) bearing red coloured (R) flowers is crossed with a homozygous dwarf (t) plant bearing white (r) flowers :

State the Mendel's law of Independent Assortment.



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88. A homozygous tall plant (T) bearing red coloured (R) flowers is crossed with a homozygous dwarf (t) plant bearing white (r) flowers :

Mention the phenotypes of the offspring obtained in F_2 generation.



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89. A homozygous tall plant (T) bearing red coloured (R) flowers is crossed with a homozygous dwarf (t) plant bearing white (r) flowers :

What is the phenotypic ratio obtained in F_2 generation ?



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90. What is the exact location of Centromere.



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91. Write the scientific name of common pea.



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92. Given below are groups of terms. In each group the first pair indicates the relationship between the two terms. Rewrite and complete the second pair on a similar basis.

TT : Homozygous :: Tt: _____



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93. In a homozygous pea plant, axial flowers (A) are dominant over terminal flowers (a).

What is the phenotype and genotype of the F_1 generation if a plant bearing pure axial flowers is crossed with a plant bearing pure terminal flowers?



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94. In a homozygous pea plant, axial flowers (A) are dominant over terminal flowers (a).

Draw a Punnett square board to show the gametes and offsprings when both the parent plants are heterozygous for axial flowers.



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95. In a homozygous pea plant, axial flowers (A) are dominant over terminal flowers (a).

What is the phenotypic ratio and genotypic ratio of the above cross shown in (ii)?



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96. In a homozygous pea plant, axial flowers (A) are dominant over terminal flowers (a).

State Mendel's Law of Dominance.



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97. In a homozygous pea plant, axial flowers (A) are dominant over terminal flowers (a).

Name two genetic disorders commonly seen in human males.



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98. A pea plant which is homozygous for Green pods which are inflated [GGII) is crossed with a homozygous plant for yellow pods which are constricted (ggii). Answer the following questions:

Give the phenotype and genotype of the F generation. Which type of pollination has occurred to produce F₁ generation?



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99. A pea plant which is homozygous for Green pods which are inflated [GGII) is crossed with a homozygous plant for yellow pods which are constricted (ggii). Answer the following questions:

Write the phenotypic ratio of the F generation.



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100. A pea plant which is homozygous for Green pods which are inflated [GGII) is crossed with a homozygous plant for yellow pods which are constricted (ggii). Answer the following questions:

Write the possible combinations of the gametes that can be obtained if two F hybrid plants are crossed.



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101. A pea plant which is homozygous for Green pods which are inflated [GGII) is crossed with a homozygous plant for yellow pods which are constricted (ggii). Answer the following questions:

State Mendel's law of 'Segregation of Gametes'.



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102. A pea plant which is homozygous for Green pods which are inflated [GGII) is crossed with a homozygous plant for yellow pods which are constricted (ggii). Answer the following questions:

What is the scientific name of the plant which Mendel used for his experiments on inheritance ?



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103. In Mendel's experiments, tall pea plants (T) are dominant over dwarf pea plants (t).

What is the phenotype and genotype of the F_1 generation if a homozygous tall plant is crossed with a homozygous dwarf plant ?



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104. In Mendel's experiments, tall pea plants (T) are dominant over dwarf pea plants (t).

Draw a Punnett square board to show the

gametes and offspring when both the parents are heterozygous for tallness.



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105. In Mendel's experiments, tall pea plants (T) are dominant over dwarf pea plants (t).

What is the phenotypic ratio and genotypic ratio of the above cross in (ii) ?



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106. In Mendel's experiments, tall pea plants (T) are dominant over dwarf pea plants (t).

State Mendel's Law of Dominance.



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107. In Mendel's experiments, tall pea plants (T) are dominant over dwarf pea plants (t).

What is a Dihybrid Cross?



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Choose The Correct Answer

1. Which sex chromosomes are present in all mature human sperm cells?

- A. Both X and Y chromosomes
- B. Either X and Y chromosomes(
- C. Only X chromosomes
- D. Only Y chromosomes

Answer: B



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2. Which one of the following is the phenotypic monihybrid ratio in F_2 generation ?

A. 2: 2

B. 1: 2: 1

C. 3: 1

D. 1: 3

Answer: C



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3. If a pure tall plant is crossed with a pure dwarf plant, then offspring will:

- A. All tall
- B. All dwarf
- C. 3 tall 1 dwarf
- D. 50% tall 50% dwarf

Answer: A



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4. After mitotic cell division, a female human cell will have :

A. 44+XX chromosomes

B. 44 +XYchromosomes

C. 22 +X chromosomes

D. 22 +Y chromosomes

Answer: A



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5. A cross was made between tall and dwarf plants. In F_1 generation all plants were tall, when the F_1 plants were selfed, the tall and dwarf plants appeared in 3:1 ratio in F_2 generation. This is due to :

- A. Dominance
- B. Hybridisation
- C. Crossing over
- D. Segregation

Answer: D



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6. The recessive gene is one that expresses itself in :

A. Heterozygous condition

B. Homozygous condition

C. F_2 generation

D. Y-linked inheritance

Answer: B



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7. Genetics is the study of:

- A. Development of organisms
- B. Mechanisms of inheritance
- C. Nuclear division
- D. Variation between species

Answer: B



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8. What is the transmission of genetic information from generation to generation known as?

A. cell division

B. Inheritance

C. Meiosis

D. Mitosis

Answer: B



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9. Which chromosomes can be found in a single sperm?

A. X and X

B. X and Y

C. X and X

D. X and Y

Answer: D



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10. Which structure will be found in the nucleus of a body cell in a woman?

A. X allele

B. X Chromosome

C. Y allele

D. Y chromosomes

Answer: B



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11. What are the chromosomes for the two sexes in human beings?

| | Male | Female |
|-----|------|--------|
| (a) | XY | XX |
| (b) | XX | YY |
| (c) | YY | XY |
| (d) | XY | XX |



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12. What is always found in female gametes and may be found in male gametes?

A. One X chromosome

B. One Y chromosome

C. Two X chromosomes

D. One X chromosome and one Y
chromosome

Answer: A



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13. In a plant species, the allele for red flowers, R, is dominant to the allele for white flowers, r. Homozygous red-flowered plants, RR, are

crossed with homozygous white-flowered plants, rr. What is the colour of the flowers produced by the offspring of this cross?

- A. All red
- B. All white
- C. Equal numbers of red and white
- D. Three white to one red

Answer: A



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14. Which word describes an individual who has two identical alleles for a particular gene?

- A. Dominant
- B. Heterozygous
- C. Homozygous
- D. Phenotype

Answer: C



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15. The allele for detached earlobes is dominant to the allele for attached earlobes. Two parents are heterozygous for detached earlobes. What is the probability of their first child having attached earlobes?

A. 0

B. 0.25

C. 0.5

D. 0.75

Answer: B



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16. Which term is used for an organism that has two different alleles of a particular gene?

- A. Dominant
- B. Heterozygous
- C. Homozygous
- D. Recessive

Answer: B



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17. The phenotype of an organism is its:

- A. Combination of alleles
- B. Family pedigree
- C. Genetic make-up
- D. Observable features

Answer: D



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18. What will be the genotypes of the offspring resulting from a genetic cross between two individuals, one of which is homozygous dominant, (TT), and the other heterozygous?

A. All Tt

B. 50% TT, 50% tt

C. 50% TT, 50% Tt

D. 25%TT, 50%Tt, 25% tt

Answer: C



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19. When white-flowered pea plants are crossed with red-flowered pea plants, the offspring (F_1) all have red flowers. If these F_1 plants pollinate themselves, the next generation (F_2) contains both red and white flowered plants. Which statement explains this?

A. The allele for red flowers is dominant and the F_1 plants are heterozygous.

B. The allele for red flowers is dominant and the F_1 plants are homozygous.

C. The allele for red flowers is recessive and the F_1 plants are heterozygous.

D. The allele for red flowers is recessive and the F_1 plants are homozygous.

Answer: A



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20. A cross between a tall plant (TT) and short pea plant (tt) resulted in progeny that were all tall plants because:

A. Tallness is the dominant trait

B. Shortness is the dominant trait

C. Tallness is the recessive trait

D. Height of pea plant is not governed by gene 'T' or 't'

Answer: A





21. In human males all the chromosomes are paired perfectly except one. This/these unpaired chromosome is/are:

(i) Large chromosome

(ii) Small chromosome

(iii) Y-chromosome

(iv) X-chromosome

A. (i) and (ii)

B. (iii) only

C. (iii) and (iv)

D. (ii) and (iv)

Answer: C



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22. Mendel selected which of the following traits for his studies:

A. Stem length, flower position

B. Flower colour, seed shape

C. Colour of pod, cotyledon colour

D. All of these

Answer: D



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23. Which of these characters is dominant?

A. Wrinkled shape of seeds

B. Apical position of flowers

C. Green colour of cotyledons

D. Axial position of flowers

Answer: D



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24. Which statement concerning a pair of alleles for a gene controlling a single characteristic in humans is true?

- A. Both genes come from the father.
- B. Both genes come from the mother.

C. One gene comes from the mother and one gene comes from the father.

D. The genes come randomly in pairs from either the mother or father.

Answer: C



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25. A genotype can be described as:

A. The genetic makeup of an organism.

B. Part of a chromosome that codes for a certain hereditary trait.

C. The outward, visible expression of the hereditary makeup of an organism.

D. The shifting of gene positions in chromosomes.

Answer: A



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26. The sex of a person depends on:

A. The genetic makeup of autosomes found in the egg cell.

B. The genetic makeup of autosomes found in the sperm cell.

C. Whether the unfertilized egg contains an X- or Y-chromosome.

D. Whether the sperm that fertilizes the egg contains an X-or Y-chromosome.

Answer: D



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27. F represents the gene for brown coat colour and f represents the gene for white coat colour. In the cross $FF \times ff$ all the offspring have a brown coat. Which genetic principle is illustrated by this cross?

- A. Crossing-over
- B. Multiple alleles

C. Co-dominance

D. Dominance

Answer: D



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28. In pea plants, yellow seeds are dominant to green. If heterozygous yellow seeded plant is crossed with a green seeded plant, what ratio of yellow and green plants would you expect in F_1 generation ?

A. 50:50

B. 9:1

C. 1:3

D. 3:1

Answer: A



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29. Among the following characters, which one was not considered by Mendel in his experiments on pea ?

A. Stem-Tall or Dwarf

B. Trichomes - Glandular or Non -glandular

C. Seed -Green or Yellow

D. Pod-Inflated or Constricted

Answer: B



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30. In a homozygous pea plant, axial flowers

(a) are dominant over terminal flowers. What

is the phenotype of the F_1 generation if a

plant bearing pure axial flowers is crossed with a plant bearing pure terminal flowers?

A. Phenotype - There are mix of both axial and terminal flowers.

B. Phenotype - All bear axial flowers.

C. Phenotype - The axial and terminal flowers are in the ratio of 3 : 1.

D. Phenotype - The axial and terminal flowers are in the ratio of 2:1.

Answer: B



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31. An individual has the genotype Rr. What is the correct description of this genotype?

A. Heterozygous, with two different genes of the same allele.

B. Homozygous, with two different alleles of the same gene.

C. Heterozygous, with two different alleles of the same gene.

D. Homozygous, with two different genes of the same allele.

Answer: C



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32. When white-flowered pea plants are crossed with red-flowered pea plants, the offspring (F_1) all have red flowers. If these F_1 plants pollinate themselves, the next generation (F_2) contains both red and white

flowered plants. Which statement explains this?

A. The allele for red flowers is dominant and the F_1 plants are homozygous.

B. The allele for red flowers is recessive and the F_1 plants are heterozygous.

C. The allele for red flowers is recessive and the F_1 plants are homozygous.

D. The allele for red flowers is dominant and the F_1 plants are heterozygous.

Answer: D



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33. Match the items of column A with those in Column B and select the correct option

Column A**Column B**

(i) Genetics

(a) Chromosomes similar in size and shape.

(ii) Autosomes

(b) The alternative forms of genes.

(iii) Recessive genes

(c) Study of laws of inheritance of characters.

(iv) Allele

(d) A gene that can express only when in a similar pair.

(v) Homologous chromosomes

(e) Chromosomes other than the pair of sex chromosomes.

(a) (i) - (c), (ii) - (e), (iii) - (d), (iv) - (b), (v) - (a)

(b) (i) - (e), (ii) - (c), (iii) - (d), (iv) - (b), (v) - (a)

(c) (i) - (c), (ii) - (e), (iii) - (d), (iv) - (a), (v) - (b)

(d) (i) - (a), (ii) - (c), (iii) - (b), (iv) - (d), (v) - (e)



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Complete The Following Statements

1. A pair of corresponding chromosomes of the same shape and size and derived one from each parent is known as _____.

A. Homologous chromosomes

B. Homozygous chromosomes

C. Autosomes

D. Allosomes

Answer: A



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2. Damage and errors in DNA cause _____.

A. Mutation

B. DNA repair

C. Translation

D. Transcription

Answer: A



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3. Any two matched genes that are _____ are called alleles.

A. Found only on autosomes.

B. At the same locus on homologous chromosomes.

C. Found only in the mother

D. At the same position on the sex chromosomes

Answer: B



4. The two members of a pair of factors separate during the formation of gametes.

This is Mendel's _____.

A. Law of Dominance

B. Law of segregation

C. Law of Independent Assortment

D. Law of Codominance

Answer: B



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5. The recessive gene is one of that expresses itself in _____.

A. Heterozygous condition

B. Homozygous condition

C. F_2 generation

D. F_1 generation

Answer: B



6. A genetic cross between two organisms may be shown as $Gg \times Gg$. The letter 'g' represent _____.

- A. A dominant allele
- B. A dominant chromosome
- C. A recessive allele
- D. A recessive chromosome

Answer: C



7. In one type of plant, the allele for red flowers (R) is dominant to the allele for white flowers (r). A plant with red flowers is crossed with a plant with white flowers. Half of the offspring have red flowers and half have white flowers. The genotypes of the parent plants are _____.

A. R and r

B. Rr and rr

C. RR and rr

D. Rr and Rr

Answer: B



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Name The Following

1. When an individual has both the genes of a contrasting characters, it is said to be :

A. Homozygous

B. Heterozygous

C. Phenotype

D. Genotype

Answer: B



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2. When two individuals differing in atleast one character are crossed, the process is known as :

A. Hybridization

B. Selection

C. Pedigree

D. None of these

Answer: A



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3. A cross was made between tall and dwarf plants. In F_1 generation all plants were tall, when the F_1 plants were self-pollinated , the

tall and dwarf plants appeared in 3:1 ratio in F_2 generation . This phenomenon is known as :

- A. Dominance
- B. Segregation
- C. Hybridization
- D. Crossing over

Answer: B



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4. Alternate forms of genes are known as :

A. Alleles

B. Linked genes

C. Chromosomes

D. Homologous chromosomes

Answer: A



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5. The crossing of a homozygous tall plant with a dwarf would yield plants in the ratio of :

A. All heterozygous tall

B. Two tall and two dwarf

C. One homozygous tall, two heterozygous tall and one homozygous dwarf

D. All homozygous dwarf

Answer: C



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Explain The Following Terms

1. Law of segregation

A. The two members of a pair of factors join during the formation of gametes.

B. The two members of a pair of factors separate during the formation of gametes.

C. The two chromosomes of a pair of factors separate during the formation of gametes.

D. The two members of a pair of factors separate during the process of germination.\

Answer: B



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2. Mutation

A. A permanent alteration in the nucleotide sequence of one or more genes or in the number or structure of one or more chromosomes.

B. A temporary alteration in the nucleotide sequence of one or more genes or in the number or structure of one or more chromosomes.

C. A permanent alteration in the sequence of RNA or on the number or structure of one or more chromosomes.

D. A temporary alteration in the sequence of RNA or in the number or structure of one or more chromosomes.

Answer: A



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3. Recessive Character

A. The character which is dominant in the F_1 generation and hidden in the second generation.

B. The character which is dominant both in F_1 generation and F_2 generation.

C. The character which remains hidden both in F_1 and F_2 generation.

D. The character which remains hidden in F_1 generation and expressed in the second generation.

Answer: A



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4. Heredity

A. Transmission of both the recessive and dominant characters to the progeny

from generations to generations.

B. Transmission of dominant characters to the progeny from generations to generations.

C. Transmission of potential characters to the progeny from generations to generations.

D. Transmission of recessive characters to the progeny from generations to generations.

Answer: C



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5. Phenotype

- A. Set of observable characteristics or traits of an organism
- B. Set of hidden characteristics or traits of an organism.
- C. Set of recessive traits of an organisms.

D. Set of traits of an organism.

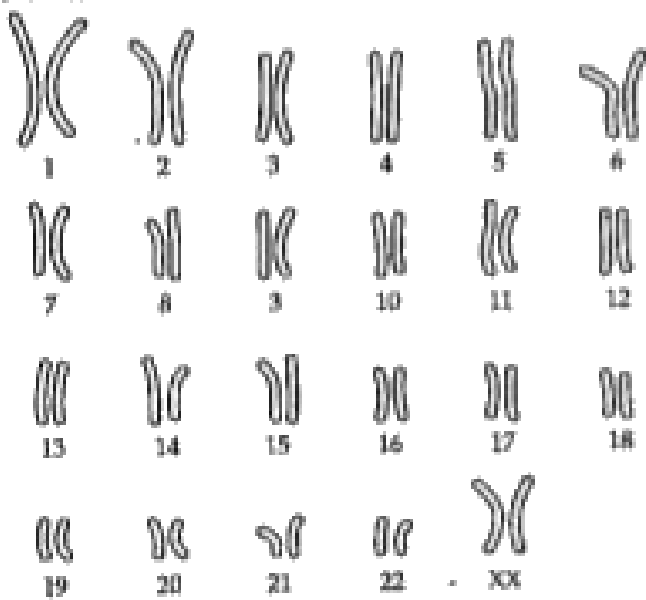
Answer: A



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Diagram Based Questions

1. The diagram shows the chromosomes in one human cell :



What can be concluded from the chromosomes in this cell ?

- A. The cell is from a man.
- B. The cell is from a woman.
- C. There are only 23 chromosomes per cell.

D. There are only 46 pairs of chromosomes per cell.

Answer: B



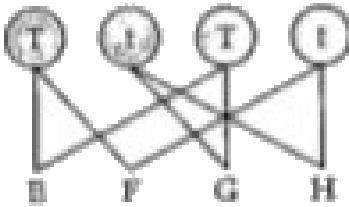
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2. The diagram shows a cross between heterozygous tall pea plants :

Parental genotypes

Tt × Tt

Gametes



Offspring

Which statement is not correct ?

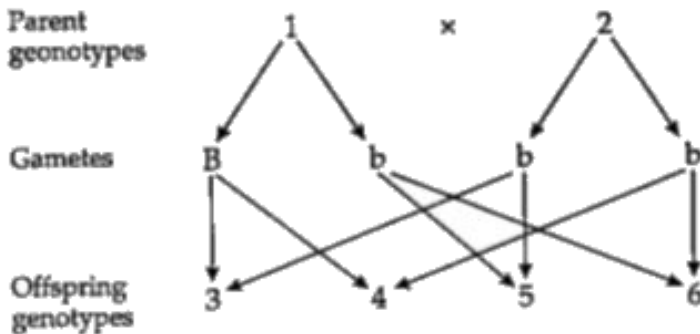
- A. Offspring E and H are both homozygous.
- B. Offspring F and G are both heterozygous.
- C. The phenotypes of offspring E, F and G are the same.
- D. The ratio of different phenotypes in the offspring is 1: 1.

Answer: D



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3. The genetic diagram shows a monohybrid cross. B is the dominant allele and b is the recessive allele:



Which

of the parents and offspring are heterozygous

?

A. 1,3 and 4

B. 1,5 and 6

C. 2,3 and 4

D. 2,5 and 6

Answer: A



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4. If 'A' represents the dominant gene and 'a' represents its recessive allele, which of the following would be the most likely result in

the first generation offspring when Aa is crossed with aa ?

- A. All will exhibit dominant phenotype.
- B. All will exhibit recessive phenotype.
- C. Dominant and recessive phenotypes will be 50% each.
- D. Dominant phenotype will be 75%

Answer: C



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5. In pea plants, the allele for tall stems is dominant to the allele for short stems. A heterozygous tall plant is crossed with a short plant, and 100 offspring are produced. How many of the offspring are likely to be tall?

A. 25

B. 50

C. 75

D. 100

Answer: B



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6. In a species of plant, the allele for red flowers (R) is dominant over the allele for white flowers (r). Two red-flowered plants were crossed.

| | |
|-----------|---|
| Parents | Plants with red flowers X plant with red flowers |
| | ↓ |
| Offspring | 93 red-flowered and 28 white-flowered |

What are the genotype of the parents ?

A. RR and rr

B. RR and Rr

C. Rr and Rr

D. Rr and rr

Answer: C



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7. A tall true breeding garden pea plant is crossed with a dwarf true breeding garden pea plant. When the F_1 plants were selfed the resulting genotypes were in the ratio of:

A. 1:2:1::Tall heterozygous: tall homozygous

: Dwarf

B. 3:1::Tall: Dwarf

C. 3:1:: Dwarf: Tall

D. 1:2:1: Tall homozygous: Tall heterozygous

: Dwarf

Answer: A



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8. In humans, the ability to roll the tongue is dominant over the inability to roll the tongue.

If two parents who are homozygous dominant for this trait have 8 children, how many children would be expected to be unable to roll their tongues?

A. 0

B. 2

C. 8

D. 4

Answer: A



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9. In human, tongue rolling is a dominant trait (R), those with the recessive condition cannot roll their tongues. Mohan can roll his tongue, but his mother could not. He is married to Surekha, who cannot roll her tongue. What is the probability that their first born child will not be able to roll his tongue?

A. 0

B. 0.3

C. 1

D. 0.5

Answer: D



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Assertion And Reason

1. Assertion: In a monohybrid cross, F_1 generation indicate dominant characters.

Reason: Dominance occurs only in heterozygous state.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true and reason is the correct explanation of assertion.

C. If both assertion and reason are true and reason is the correct explanation of assertion.

D. If both assertion and reason are true and reason is the correct explanation of assertion.

Answer: C



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2. Assertion, Mendel was successful in his hybridization.

Reason: Garden pea proved ideal experimental material.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true and reason is the correct explanation of assertion.

C. If both assertion and reason are true and reason is the correct explanation of assertion.

D. If both assertion and reason are true and reason is the correct explanation of assertion.

Answer: B



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3. Assertion: Genes pass from one generation to another.

Reason: The units of inheritance are genes.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true and reason is the correct explanation of assertion.

C. If both assertion and reason are true and reason is the correct explanation of assertion.

D. If both assertion and reason are true and reason is the correct explanation of assertion.

Answer: A



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4. Assertion: Autosomes are the chromosome other than the sex chromosome.

Reason: Sex chromosomes help in determination of sex.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true and reason is the correct explanation of assertion.

C. If both assertion and reason are true and reason is the correct explanation of assertion.

D. If both assertion and reason are true and reason is the correct explanation of assertion.

Answer: B



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5. Assertion: Mendel used true-breeding pea lines for artificial pollination experiments for his genetic studies.

Reason: For several generations, a true-breeding line shows the stable trait inheritance and expression.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true and reason is the correct explanation of assertion.

C. If both assertion and reason are true and reason is the correct explanation of assertion.

D. If both assertion and reason are true and reason is the correct explanation of assertion.

Answer: A



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6. Assertion: The genetic complement of an organism is called as genotype.

Reason: Genotype is an inherited property of an organism.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true and reason is the correct explanation of assertion.

C. If both assertion and reason are true and reason is the correct explanation of assertion.

D. If both assertion and reason are true and reason is the correct explanation of assertion.

Answer: B



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7. Assertion: Dominant allele is an allele whose phenotype expresses even in the presence of another allele of that gene .

Reason: It is represented by a capital letter, e.g. T

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true and reason is the correct explanation of assertion.

C. If both assertion and reason are true and reason is the correct explanation of assertion.

D. If both assertion and reason are true and reason is the correct explanation of assertion.

Answer: B



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8. Assertion: The sex of the children will be determined by chromosome received from the father.

Reason: A human male has one X and one Y - chromosome.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true and reason is the correct explanation of assertion.

C. If both assertion and reason are true and reason is the correct explanation of assertion.

D. If both assertion and reason are true and reason is the correct explanation of assertion.

Answer: A



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9. Assertion: It is possible to study several generations of pea within a short span of time.

Reason: The pea plant completes its life-cycle in one season.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true and reason is the correct explanation of assertion.

C. If both assertion and reason are true and reason is the correct explanation of assertion.

D. If both assertion and reason are true and reason is the correct explanation of assertion.

Answer: A



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10. Assertion: Pea plants are with bisexual flowers, a condition that favours self-pollination.

Reason: Self-fertilisation makes it easy to obtain pure lines for several generations.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true and reason is the correct explanation of assertion.

C. If both assertion and reason are true and reason is the correct explanation of assertion.

D. If both assertion and reason are true and reason is the correct explanation of assertion.

Answer: B



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