

BYJU'S Study Planner for Board Term I (CBSE Grade 12)

Date: 15/11/2021

Subject: Biology

Topic : Principles of Inheritance and
Variation

Class: Standard XII

1. How many pairs of contrasting traits were studied by Mendel in pea plant ?
 - A. 6
 - B. 7
 - C. 8
 - D. 10

2. Mendel observed visible contrasting forms of a character. Each variant of a character is called _____.
 - A. inheritance
 - B. trait
 - C. genome
 - D. DNA

3. If linkage was known at the time of Mendel then which of the following laws, he would not have been able to explain?
 - A. Law of segregation
 - B. Law of purity of gametes
 - C. Law of dominance
 - D. Law of independent assortment

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4. A monohybrid cross is conducted in which a pea plant that produces yellow coloured seeds was crossed with a pea plant that produces green coloured seeds.

The plants with yellow coloured seeds are produced in:

- A. F_1 generation only
 - B. F_2 generation only
 - C. F_1 and F_2 generation
 - D. Difficult to predict
5. If hereditary units relate to the term genes carrying genetic information from one generation to next, then what will be related to the term coloured bodies found inside the nucleus?
- A. Chromosomes
 - B. Factors
 - C. Lysosomes
 - D. Genes
6. Which of the following is correct regarding monohybrid cross?
- A. It involves crossing between parents which differ in a single character
 - B. The genotypic ratio of the offspring in F_2 generation is 1 : 2 : 1
 - C. The phenotypic ratio of the offspring in F_2 generation is 3 : 1
 - D. All of the above

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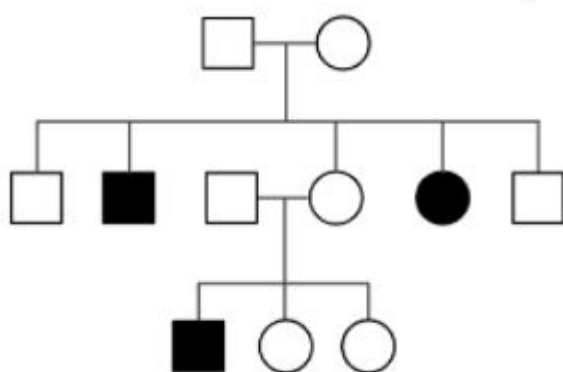
7. In a dihybrid cross $AABB \times aabb$, F₂ progeny of $AABB$, $AABb$, $AaBB$ and $AaBb$ occurs in ratio of _____.
- A. 1: 1: 1: 1
 - B. 9: 3: 3: 1
 - C. 1: 2: 2: 1
 - D. 1: 2: 2: 4
8. Identify the incorrect statements:
- i) Multiple alleles are produced due to repeated mutation of the same gene but in different directions.
 - ii) In co-dominance, both the alleles of the gene are dominant and express independently in the heterozygous condition.
 - iii) Incomplete dominance results in two different phenotypes in the hybrid.
- A. Statements i and ii
 - B. Statement iii only
 - C. Statements ii and iii
 - D. Statement i only
9. If you cross a roan cow with a roan bull, what percentage of the progeny would you expect to be roan?
- A. 10%
 - B. 25%
 - C. 50%
 - D. 75%

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10. What can be the blood group of offspring when both parents have an AB blood group?

- A. AB only
- B. A, B and AB
- C. A, B, AB and O
- D. A and B only

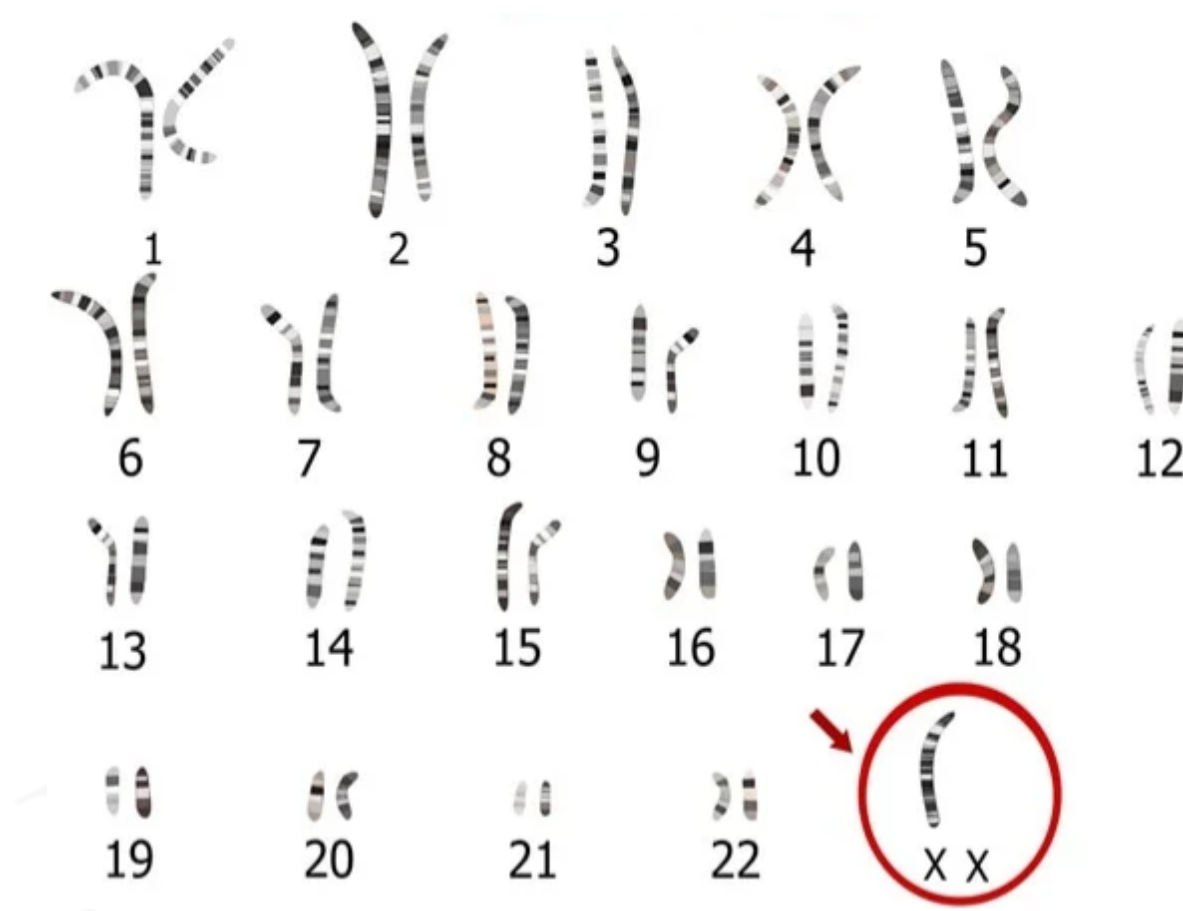
11. The pedigree chart represents



- A. autosomal dominant trait
- B. autosomal recessive trait
- C. X linked recessive trait
- D. Y linked trait

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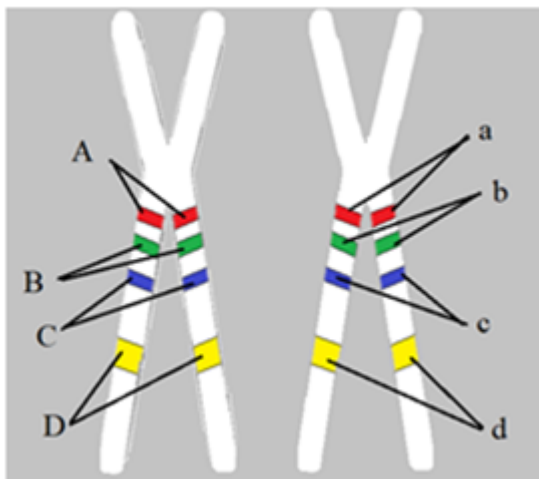
12. Study the human karyotype given below and identify the disorder:



- A. Down's syndrome
- B. Turner's syndrome
- C. Klinefelter's syndrome
- D. The karyotype is of a normal individual

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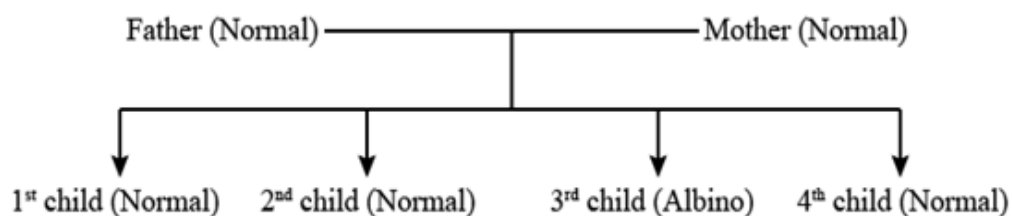
13. Given figure shows a pair of homologous chromosomes during meiosis.
Maximum crossing over will take place between genes



- A.** A and a, D and d
- B.** C and d, c and D
- C.** B and c, b and C
- D.** A and d, a and D

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14. Refer to the figure and give answer

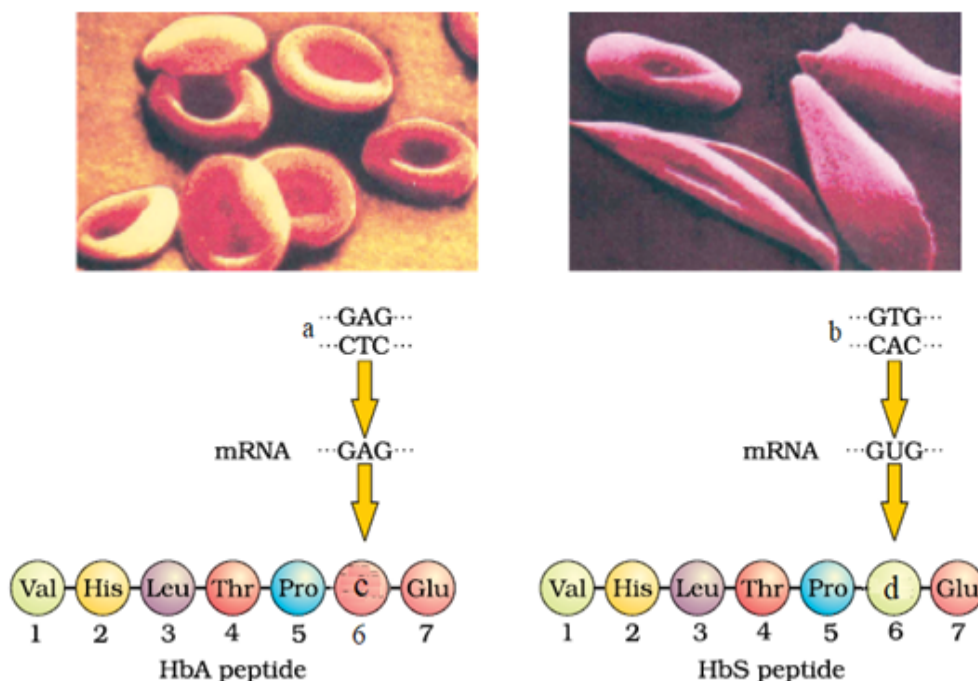


If A = Normal allele and a = Albino allele then genotypes of father and mother are respectively

- A.** Aa and Aa
- B.** AA and Aa
- C.** Aa and AA
- D.** Aa and aa

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15. Recognise the figure and find out the correct matching.



- A.** $c - \text{Glu}$, $d - \text{Val}$, $a - \text{normal-Hb-(A)-gene}$, $b - \text{sickle-cell-Hb-(S)-gene}$
- B.** $c - \text{Glu}$, $d - \text{Val}$, $b - \text{normal-Hb-(A)-gene}$, $a - \text{sickle-cell-Hb-(S)-gene}$
- C.** $d - \text{Glu}$, $c - \text{Val}$, $a - \text{normal-Hb-(A)-gene}$, $b - \text{sickle-cell-Hb-(S)-gene}$
- D.** $c - \text{Glu}$, $d - \text{Val}$, $b - \text{normal-Hb-(A)-gene}$, $a - \text{sickle-cell-Hb-(S)-gene}$
16. Assertion: Though the chromosome content of the daughter cells is halved by the end of meiosis I, meiosis II is essential for generation of haploid cells.

Reason: During meiosis II, the duplicated sister chromatids separate from each other and are distributed into the haploid daughter cells.

- A.** Both the assertion and reason are true and the reason is the correct explanation of the assertion
- B.** Both the assertion and reason are true but the reason is not the correct explanation for the assertion
- C.** The assertion is true but the reason is false
- D.** Both assertion and the reason are false

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17. Assertion : When yellow bodied, white eyed *Drosophila* females were hybridised with brown-bodied, red eyed males; and F_1 progeny were intercrossed, F_2 ratio deviated from 9:3:3:1.

Reason : When two genes in a dihybrid are on the same chromosome, the proportion of parental gene combinations in the offsprings are much higher than the non-parental type.

- A. Both assertion and reason are true and reason is the correct explanation of the assertion
 - B. Both assertion and reason are true but reason is not the correct explanation of the assertion
 - C. Assertion is true but the reason is false
 - D. Assertion and reason both are false
18. Given below is a list of features observed in an individual with L type of syndrome. This chromosomal disorder is caused due to trisomy of the K chromosome.
- i. Clenched fists with overlapping fingers
 - ii. Dysplastic or malformed ears
 - iii. Back part of the skull is prominent
- Identify L and K.

- A. L-Edwards syndrome; K-18th chromosome
- B. L-Down's syndrome; K-21st chromosome
- C. L-Klinefelter's syndrome; K-Sex chromosome
- D. L-Turner's syndrome; K-Sex chromosome

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19. A pure line tall pea plant was grown in nutrient deficient soil which resulted in its stunted growth. After crossing it with a dwarf pea plant, _____.
- A. all the offspring were dwarf
 - B. all the offspring were tall
 - C. 50% offspring were tall and 50% offspring were dwarf
 - D. 75% offspring were tall and 25% offspring were dwarf
20. A woman heterozygous for haemophilia marries a haemophilic man. What will be the ratios of carrier daughters, haemophilic daughters, normal sons and haemophilic sons in F_1 generation?
- A. 1: 2: 2:1
 - B. 2: 1: 1: 2
 - C. 1: 1: 1: 1
 - D. 1: 2: 1: 2