

# BIOLOGY

Board – ICSE

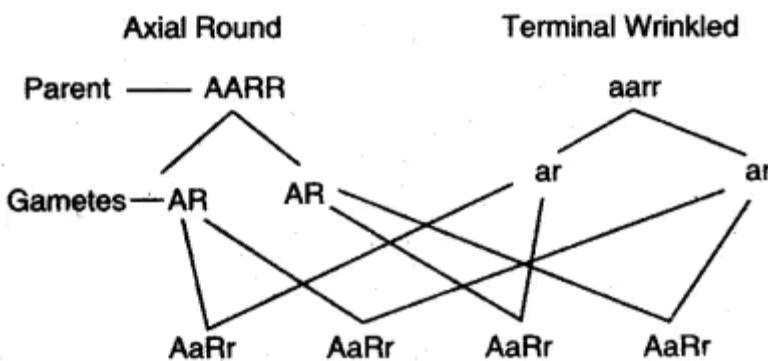
Class – 10

Topic – Genetics

1. Define mutation and give its significance.
2. A certain couple got four daughters in a sequence and no son. Does it mean that the husband does not produce Y-chromosome bearing sperms? Explain.  
What is the chance of this couple having a daughter?
3. Give reason, Law of independent assortment holds good for the gene pairs that occur in different pairs of chromosomes.
4. Give reason, Discontinuous variations are inheritable.
5. Give reason, Haemophilia shows criss-cross inheritance.
6. What is dihybrid cross? How Mendel did performed this cross.
7. (i) State Mendel's law of Independent Assortment.  
(ii) A homozygous Tall plant (T) bearing red coloured (R) flowers is crossed with a homozygous Dwarf plant (t) bearing white flowers (r):
  - (1) Give the Genotype and Phenotype of the F<sub>2</sub> generation.
  - (2) Give the possible combinations of the gametes that can be obtained from the F<sub>2</sub> hybrid.
  - (3) Give the dihybrid ratio and the phenotype of the offspring's of the F<sub>2</sub> generation when two plants of the F<sub>1</sub> generation above are crossed.
8. Explain the terms, Variation, Linkage, and Mutation.
9. Explain the terms, Crossing-over, Recessive character.
10. Differentiate between Y-linked inheritance and X-linked inheritance.
11. Define Mendel's law of segregation.
12. Why do men suffer from hemophilia and colour blindness? Under what conditions do women suffer from these disorders?
13. Give reason, Heritable variations are called genetic variations.
14. A woman had normal vision, but her father was colour blind. She marries a man, who is colour blind.  
Find out the probability of the first child being colour blind, whether it is a boy or girl.
15. Explain the terms, Genotype, Alleles.
16. Differentiate between Genotype and Phenotype.
17. (i) State Mendel's law of inheritance.  
(ii) A pure tall plant (TT) is crossed with a pure dwarf plant (tt). Draw a punnet square to show (a) F<sub>1</sub> generation (b) F<sub>2</sub> generation.

# BIOLOGY

- (iii) Give the phenotype of  $F_1$  generation.  
 (iv) Give the phenotype and genotype of  $F_2$  generation.  
 (v) Name one any sex linked disease found in humans.
18. What is dihybrid cross? How Mendel perform this cross.
19. Give below is a schematic diagram showing Mendel's experiment on sweet pea plant having axial flower with round seed (AARR) and terminal flower with wrinkled seed (aarr). Study the same and answer the question that follow:



- a) Give the phenotype of  $F_1$  progeny.  
 b) Give the phenotype of  $F_2$  progeny produced upon by the self-pollination of  $F_1$  progeny.
20. Name the following:  
 a) Cells having a single set of chromosome.  
 b) Pair of chromosome present in human egg cell.  
 c) Pairs of gene responsible for particular characteristics.