

**CLASS: XII WORKSHEET – BIOLOGY DATE: 18.8.19**

**PRINCIPLES OF INHERITANCE AND VARIATION**

1. Define heredity, genetics, and inheritance.
2. Why did Mendel select pea plant for his experiments?
3. How did Mendel make sure that the pea plants were true breeding?
4. List the traits in garden pea plant which Mendel studied in his breeding experiments.
5. What is emasculation technique?
6. Define the following terms:
   1. Allele (ii) homozygous (iii) Heterozygous

(iv) Dominant gene (v) Recessive gene (vi) Genotype (vii) Phenotype

1. (a) What is monohybrid cross? How did Mendel carry out this cross? Show with help of Punnet square.
2. Explain Law of Dominance.
3. Explain Law of Segregation of gametes.
4. What kind of gametes would be produced by the organisms having the following genotypes?
   1. AaBB (ii) aaBB (iii) Aabb (iv) AaBBCc
5. In human beings, blue eye colour is recessive to brown eye colour. A brown-eyed man has a blue- eyed mother.
6. What is the genotype of the man and his mother?
7. What are the possible genotypes of his father?
8. If a man marries a blue-eyed woman, what are the possible genotypes of their offspring?
9. What is test cross? Give its use.
10. In dogs black coat colour is dominant over white. What coloured dog will you choose to breed a given black dog to find its genotype? What is this type of cross known as?

12 (a) What is incomplete dominance? Describe one example of incomplete dominance.

(b) What is the difference between dominance and incomplete dominance?

1. What is multiple allelism? Give its suitable example.
2. What is codominance? Give suitable example.
3. How is codominance different from incomplete dominance?

16 (a) Describe briefly the dihydrid cross conducted by Mendel.

(b) State the Law of Independent Assortment.

1. When seeds from a cross between two plants of a certain species were germinated, they produced the following plants: - 30 tall plants with red fruits & 20 dwarf plants with yellow fruits. It was shown that both tallness and red fruit colour in this plant were dominant characters but the genotypes of the parents of the cross were not known. Explain why this result was obtained?
2. In an experiment a phenotypic ratio of 3:3:1:1 was obtained in the offspring on crossing yellow seeded tall stem (YyTt) variety of pea plant with yellow seeded dwarf stem variety. Determine the accuracy of this data by Punnet Square.
3. Red fruit (R) is dominant to yellow (r) and tallness (T) is dominant to short (t) in tomato plants. What phenotype and genotype ratios would result if one of parent is red homozygous and tall homozygous and other is red heterozygous and tall heterozygous?
4. How would you correlate the behaviour of chromosomes at meiosis to:-
   1. Segregation of an allele pairs
   2. Independent assortment of two genes
5. List the similarities between the behaviour of genes (Mendel factors) during inheritance and chromosomes during cell division.
6. State the reasons for which the published work for Mendel remained unrecognized for several years.
7. Who proposed the chromosome theory of inheritance? Give the salient features of this theory.
8. Why did Morgan select Drosophilia for his experiments?
9. What is linkage? Describe briefly the two types of linkage.
10. State the relationship between linkage and crossing over.
11. Briefly mention the contribution of T.H.Morgan in genetics.
12. What is the role of Henking in discovery of X-chromosome?
13. What are autosomes and sex chromosomes?
14. discuss briefly different types of sex determination

(a) XO-XX type (b) XX-XY type (c) ZW-ZZ type

1. What is male heterogamety and female heterogamety?
2. Define mutation and mutagens.
3. What is point mutation and chromosomal mutations?
4. What is pedigree analysis? What are the symbols used in such an analysis?
5. Give the use of pedigree analysis.
6. What is haemophilia? Why do generally only human males suffer from haemophilia? Can women also suffer? Explain
7. How is sickle cell anaemia caused? What are its symptoms?
8. Write short note on Phenylketouria.
9. What is aneuploidy? Differentiate between trisomic and haploid condition.
10. What is polyploidy?
11. Give the following features with respect to Down Syndrome, Klinefelters and Turner Syndrome
    1. Cause (ii) Sex (iii) features.