

BHARATIYA VIDYA BHAVAN'S V.M.PUBLIC SCHOOL, VADODARA
SESSION 2017-18
Question Bank

CHAPTER-5

PRINCIPLES OF INHERITANCE AND VARIATION

VERY SHORT ANSWER QUESTION (1 marks each)

- Q1 Define the term genetics.
- Q2 Who coined the term gene?
- Q3 Name the father of Genetics.
- Q4 What are alleles?
- Q5 What is hybridisation?
- Q6 What is hybrid?
- Q7 What is meant by genotype?
- Q8 What is meant by phenotype?
- Q9 Who rediscovered Mendel's law of heredity?
- Q10 What is monohybrid cross?
- Q11 Define dihybrid cross?
- Q12 Write two contrasting traits of pea plant worked by Mendel?
- Q13 Define a gene pool?
- Q14 What is genome?
- Q15 What are pleiotropic genes?
- Q16 Define heterozygous.
- Q17 Define recessive factor.
- Q18 What is gene locus?
- Q19 What are linked genes?
- Q20 What is linkage?

SHORT ANSWER QUESTIONS (2 marks each)

- Q1 Why did Mendel choose garden pea for his experiment? How did he make sure that the plants were true breeding?
- Q2 List any four symptoms of Down's syndrome. What is the basis of this disorder?
- Q3 Why are haemophilia and colour blindness usually seen in human males? Can women also develop this disorder? Explain?
- Q4 For flower color in pea, the allele for purple flower (P) is dominant to the allele for white flower (p). A purple flowered plant therefore could be genotype PP or Pp. What genetic cross would you make to determine the genotype of a purple flowered plant? Explain how your cross gives you the correct genotype of the purple flowered plant?
- Q5 Work out F₁ and F₂ generation to explain the inheritance of flower color in *Pisum Sativum*. Give the phenotype and genotype ratio (start with pure breeding)?
- Q6 What is the chromosomal basis of Turner's Syndrome? Mention the sex and any three symptoms of this disorder.
- Q7 In garden pea (*Pisum sativum*) a plant with red flowers was crossed with a plant with white flowers. Work out the possible genotypes and phenotypes of F₁ and F₂ generations. State any one of Mendel's laws that could be derived from this cross?
- Q8 In snap dragon a plant with red flowers was crossed with a plant with white flowers. Work out all the possible genotypes and phenotypes of F₁ and F₂ generations. Comment on the pattern of inheritance in this case.
- Q9 In garden pea a plant with yellow seeds was crossed with a plant with green seeds. Work out all the genotypes and phenotypes of F₁ and F₂ generations. Comment on the pattern of inheritance in this cross.
- Q10 (i) State the principle of independent assortment.
(ii) How would the following affect the phenomenon of independent assortment.
(a) Crossing over (b) Linkage
- Q11 List any four symptoms shown by Klinefelter's Syndrome sufferer. Explain the cause of this disease.
- Q12 List any four symptoms shown by a Down's syndrome affected child. Explain the causes of this disorder.
- Q13 What is aneuploidy? Differentiate between trisomic and triploid condition. Name any one trisomic condition found in human.

Q14 What is co-dominance? How does it differ from incomplete dominance?

Q15 How do you relate dominance, co-dominance and incomplete dominance in the inheritance of character?

LONG ANSWER QUESTIONS (5 marks each)

Q1 State Mendel's principle of independent assortment. Explain with suitable crosses, how Mendel arrived at this conclusion.

Q2 Describe the nature of inheritance of ABO type of blood group in human. In which ways does this inheritance differ from that of height of the plant in garden pea?

Q3 Describe the inheritance mechanism of ABO system of blood group, highlighting the principle of genetics involved in it.

Q4 State the three Mendelian principles of heredity. Describe any one cross in which Mendel got the phenotype ratio of 9 : 3 : 3 : 1.

Q5 Explain the chromosomal theory of inheritance.

Q6 How do you relate dominance, co-dominance and incomplete dominance in the inheritance of character?

Q7 List any four symptoms shown by Down's Syndrome affected child. Explain the causes of this disorder.

Q8 Give reasons why Mendel selected garden pea for his experiments? Give the biological name of this plant. State Mendel's Principle of Segregation.