4.1 MENDELIAN GENETICS: MONOHYBRID & DIHYBRID



a) Define Terminologies Used in Genetic Inheritance: Allele, gene, locus, genotype, phenotype, homozygous, heterozygous, dominant, recessive, self cross and test cross.

Exercise 4.1 (a): Match the following terms with their correct description

Gene	A segment of DNA that serve as a unit of hereditary information Eg: Flower position
Allele	The genetic constitution for a certain character of an organism. Eg: *AA or Aa or aa*
Locus	A cross between male and female from the same plant or same generation. Eg: *Tt x Tt*
Dominant alelle	A cross between an individual of unknown genotype with a homozygous recessive individual. Eg : *T__ x tt*
Recessive allele	Allele that can be expressed in homozygous or heterozygous condition.
Homozygous	Alternative forms of a gene
Heterozygous	The position of a gene on a chromosome
Genotype	Allele that can only be expressed in homozygous condition. *Eg : aa*
Phenotype	Having 2 **identical** alleles for a certain gene. *Eg : AA or aa*
Test cross	Having 2 **different** alleles for a certain gene. Eg : Aa
Self cross	• Organisms that are homozygous for any given genotype • When they are self-fertilized, they produce offspring that has the same phenotype as the parent; generation after generation Eg: *TT @ tt, TTAA @ ttaa @ TTaa @ ttAA*
Pure or True breeding	The physical appearance for a certain character of an organism. Eg ; Terminal,Axial

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Symbols Used in Genetic Diagram

P

•Parental generation

F_1

•First **filial** generation (offspring produced from a cross between individuals of P generation)

F_2

•Second **filial** generation (offspring produced from a cross between individuals of F_1 generation)

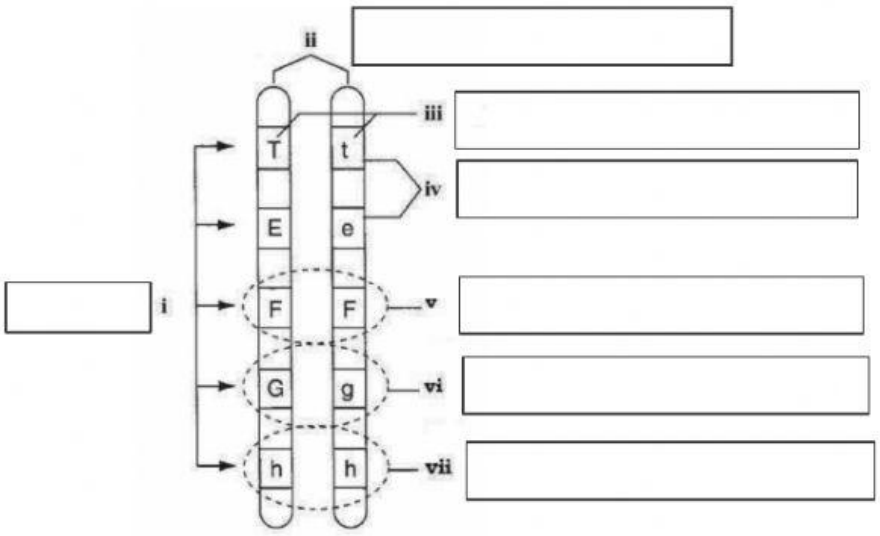
Punnet square

•A diagram used in the study of inheritance to show the predicted genotypic results of random fertilization in genetic crosses between individuals of known genotype

•Example : Aa x Aa

	A	a
A	AA	Aa
a	Aa	aa

Exercise 4.1 (b): Label i-vii using the given clue.



Homologous chromosome		**Alleles of the same genes**
Homozygous dominant allele		**Different genes**
Heterozygous allele	**Homozygous resessive allele**	**Loci**

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