QB365 Question Bank Software Study Materials

Botany - Classical Genetics Important 2 Marks Questions With Answers (Book Back and Creative)

12th Standard

Biology

Total Marks : 40

2 Marks

20 x 2 = 40

1) Name the seven contrasting traits of Mendel.

Answer :

Character	Dominant Trait	Recessive Trait
Stem length	Tall	Dwarf
Pod shape	Inflated	Constricted
Seed shape	Round	Wrinkled
Seed colour	Yellow	Green
Flower position	Axial	Terminal
Flower colour	Purple	White
Pod colour	Green	Yellow

Seven characters of pisum satiyum studied by Mendel.

2) What is meant by true breeding or pure breeding lines / strain?

Answer : A true breeding lines means it has undergone continuous self pollination having stable trait inheritance from parent to off spring.

3) Give the names of the scientists who rediscovered Mendelism

Answer : (i) Hugo de Vries of Holland
(ii) Carl Correns of Germany
(iii) Erich von Tschermak of Austria

4) What is back cross?

Answer : (i) Back cross is a cross of F, hybrid with any one of the parental genotypes.
(ii) They are of two types - Dominant back cross recessive back cross.

5) Define Genetics.

Answer : "Genetics" is the branch of biological science which deals with the mechanism of transmission of characters from parents to off springs.

6) What are multiple alleles?

Answer : A group of genes that together determine a characteristic of an organism.

7) Explain Heredity and variations

Answer : Heredity - Transmission of characters from parents to off springs.
Variations - organisms belonging to the same natural population or species that shows a difference in the characteristics.

8) Mendel's theory is a particulate theory - justify

Answer : Mendel's theory of inheritance, known as the Particulate theory, establishes the existence of minute particles or hereditary units or factors, which are now called as genes.

9) Define the terms
(i) Emasculation
(ii) Alleles

Answer : Emasculation: Removal of anthers from the flower

Alleles: Alternate forms of a gene

10) Write the phenotypic and genotypic ratio of monohybrid cross.

Answer : (a) Phenotypic ratio = 3 : 1

(b) Genotypic ratio = 1 : 2 : 1

11) RrYy(Ft hybrid) X rryy (recessive parent). Name the type of cross. Mention its ratio.

Answer : Dihybrid test cross and the ratio is 1 : 1 : 1 : 1

12) How many types of gametes are produced by a dihybrid plant? If the same plant is self-fertilized, how many second-generation offsprings are developed?

Answer : Four different gametes are produced by a dihybrid plant and on selfing, it yield 16 offsprings.

13) Define gene interaction.

Answer : A single phenotype is controlled by more than one set of genes, each of which has two or more alleles.

14) What are plasmogenes?

Answer : Plasmogenes are independent, self-replicating, extra-chromosomal units located in cytoplasmic organelles, chloroplast, and mitochondrion.

15) What is phenotype?

Answer : The term phenotype refers to the observable characteristic of an organism.

16) What are the classification of gene interactions?

Answer : Interactions take place between the alleles of the same gene i.e., alleles at the same locus is called intragenic or intralocus gene interaction. It includes the following:

(i) Incomplete dominance

(ii) Codominance

(iii) Multiple alleles

(iv) Pleiotropic genes are common examples for intragenic interaction.

Intergenic gene interactions.

Interlocus interactions take place between the alleles at different loci i.e between alleles of different genes. This is called intergenic interaction. Ex: Complementary genes interaction.

17) What are molecular genetics?

Answer : Deals with the structure & function of a gene at molecular level.

18) Define Dihybrid cross.

Answer : It is a genetic cross which involves individuals differing in two characters. Dihybrid inheritance is the inheritance of two separate genes each with 2 alleles or a cross made between two plants or animals differing in two pairs of contrasting characters.

19) What are alleles?

Answer : Traits are expressed in different ways due to the fact that a gene can exist in alternate forms (versions) for the same trait is called alleles.

20) What is test cross? Why it is done?

Answer : Test cross is crossing an individual of unknown genotype with a homozygous recessive.

Test cross is used to identify whether an individual is homozygous or heterozygous for dominant character.