

QB365 Question Bank Software Study Materials

Botany - Chromosomal Basis of Inheritance Important 2 Marks Questions With Answers (Book Back and Creative)

12th Standard

Biology

Total Marks : 40

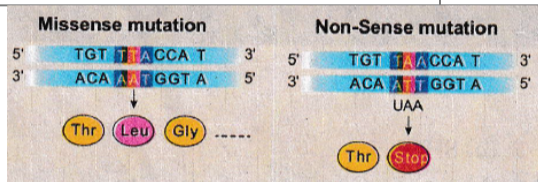
2 Marks

20 x 2 = 40

- 1) What is the difference between missense and nonsense mutation?

Answer :

Missense Mutation	Non-sense Mutation
The mutation where the codon for one amino acid is changed into a codon for another amino acid.	The mutations where codon for one amino acid is changed into a termination or stop codon.



- 2)

From the above figure identify the type of mutation and explain it.

Answer : (i) A type of structural chromosomal abbreviation.

Reverse tandem duplication

(ii) The duplicated segment is located immediately after the normal segment but the gene sequence order will be reversed.

- 3) Mention the major stages involved in crossing over.

Answer : Crossing over is a precise process that includes stages like synapsis, tetrad formation, cross over and terminalization.

- 4) What is meant by synaptonemal complex?

Answer : Synaptonemal complex is a highly organised structure or filaments that facilitates the synapsis and chiasma formation during crossing over mechanism.

- 5) Why do we call papaya a dimorphic plant.

Answer : Papaya is a dimorphic plant since their sexes are separate i.e., male plant produces flowers with stamens and female plants produces flowers with carpels

- 6) Name any four chemical mutagens.

Answer : (a) Ethyl methane sulphonate (EMS)

(b) Mustardgas

(c) Magnoussalt

(d) Formaldehyde

- 7) What is ploidy?

Answer : Sometimes, the chromosome number of somatic cells changed due to addition or elimination of individual chromosome or basic set of chromosomes. This condition is known as ploidy.

- 8) Differentiate Aneuploidy from Euploidy.

Answer :

Aneuploidy	Euploidy
Ploidy involving individual chromosomes within a diploid	Ploidy involving entire sets of

chromosomes within a diploid set..	chromosomes
E.g: Trisomy.	E.g: Polyploidy

9) Name any 3 auto tetraploids and one natural auto triploid plant species

Answer : (a) Autotetraploids : Rye, potato and coffee.
 (b) Natural autotriploid : *Cyanodon dactylon* (common doob grass).

10) What are deficiency loops?

Answer : Deletions are observable during meiotic pachytene stage and polytene chromosome. The unpaired loop formed in the normal chromosomal part at the time of chromosomal pairing. Such loops are called as deficiency loops and it can be seen in meiotic prophase.

11) What is the function of Genes?

Answer : Genes carry information from one generation to the next generation.

12) States chromosomal theory of W.S. Sutton (1902)

Answer : He independently recognized a parallelism (similarity) between the behaviour of chromosomes and Mendelian factors during gamete formation.

13) What is meant by linked genes?

Answer : Genes located close together on the same chromosome and inherited together are called linked genes.

14) What is repulsion?

Answer : If dominant or recessive alleles are present on two different, but homologous chromosomes they inherit apart into different gamete are called repulsion.

15) What is locus ?

Answer : Genes are present in a linear order along the chromosome. They are present in a specific location called locus.

16) What is genetic mapping.

Answer : The diagrammatic representation of position of genes and related distances between the adjacent genes is called genetic mapping.

17) What is called base substitutions ?

Answer : one base pair is replaced by another base pair in the DNA is called base substitutions.

18) Define trisomy

Answer : The addition of single chromosome to diploid set is called Simple trisomy ($2n+1$)

19) What is pentasomy ?

Answer : The addition of three individual chromosome from different chromosomal pairs to normal diploid set are called pentasomy ($2n+3$)

20) Define monosomy

Answer : The loss of a single chromosome from the diploid set are called monosomy ($2n-1$)