

PRINCIPLES OF GENETICS

CC-12

UNIT-I

Mendelian genetics, linkage, crossing over, chromosomal mapping

Fill in the blanks

1 marks

1. Ratio of incomplete dominance is _____.
2. The degree of expression of a gene is _____.
3. A phenotype not genetically controlled but looks like genetically controlled one is _____.
4. Chromosomal basis of inheritance was proposed by _____.
5. Ratio of dominant epistasis is _____.
6. Transmission of linked genes is _____.
7. Mendel's law of independent assortment is related to _____.
8. Morgan worked on _____ organism.
9. Number of Linkage groups of a male is _____.
10. Measurement unit of linkage is _____.

Answer the followings.

1.5/2.5 marks

1. Write Mendel's laws of inheritance.
2. What is epistasis? Write an example.
3. What is linkage?
4. What is crossing over?
5. What is recombination?
6. Define interference?
7. What is somatic cell hybridization?
8. Define pleiotropy with example.
9. What is polygenic inheritance?
10. What are lethal alleles?

Long answer questions.

6 marks

1. Write the dihybrid cross and Mendelian principles.
2. Describe polygenic inheritance with suitable examples.
3. Write the cytological basis of crossing over.
4. Write the molecular basis of crossing over including models of recombination.

UNIT-II

Mutations

Fill in the blanks

1 marks

1. The process of mutation is called _____.
2. Change in individual gene is _____.

3. Mutations without any effect are called _____.
4. Removal of an amino group from a molecule is called _____.
5. 5- bromouracil (5-BU) is an analogue of _____.
6. 2- aminopurine (2-AP) is an analogue of _____.

Answer the followings.

1.5/2.5 marks

1. Define mutation?
2. Write different types of mutations.
3. What is chromosomal aberration?
4. Write a note on point mutation.
5. Write the role of mutation.
6. Write the characteristics of a mutation.
7. Write a note on chemical mutagen.
8. Write a note on suppressor mutation
9. Differentiate missense and non-sense mutation.
10. What is conditional mutation?

Long answer questions.

6 marks

1. Define mutation. Write different types of mutations.
2. What is chromosomal aberration? Write its types.
3. Describe the chemical mutagens.
4. Write the methods of mutation detection.

UNIT-III

Sex determination and extra chromosomal inheritance

Fill in the blanks

1 marks

1. X-O system of sex determination is seen in _____.
2. TDF is present in _____ chromosome.
3. $X/A = 0.67$, is a _____.
4. SRY gene is present on _____ chromosome.
5. Breast development limited to female is a _____ trait.
6. Baldness is an example of _____.
7. Criss-cross pattern of inheritance is defined to _____ chromosome.

Answer the followings.

1.5/2.5 marks

1. What is the sex determination method in birds?
2. What is haplodiploid system of sex determination?
3. What is heterogametic sex?
4. Write the sex determination in humans?
5. What is a gynandromorph?
6. Differentiate a gynandromorph and intersex.
7. What is mosaicism?
8. What is sex limited traits?

Long answer questions.

6 marks

1. Write the chromosomal basis of sex determination in *Drosophila*.
2. Describe the sex-linked, sex-influenced and sex-limited characters.
3. What is maternal effect? Write its example.

UNIT-IV

Recombination in bacteria and viruses and transposable elements

Fill in the blanks

1 marks

1. Process responsible for crossing over is _____.
2. Exchange of homologous segments between any two homologous DNA molecule is _____.
3. Homologous recombination was studied by _____.
4. Holiday model is also known as _____.
5. Conjugation tube is formed by _____.

Answer the followings.

1.5/2.5 marks

1. What is recombination?
2. Define homologous recombination?
3. What is transposition?
4. What is conjugation? Write its steps.
5. What is transformation?
6. What is transduction?

Long answer questions.

6 marks

1. What is conjugation? Write the types and steps of conjugation.
2. Describe transformation.
3. Describe transduction.
4. What is transposition? Describe its mechanism.

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