

CORE XII [PRINCIPLE OF GENETICS]

Answer the following questions

1. Who coined the term linkage?

- a) Correns
- b) Mendel
- c) Morgan
- d) de Vries

2. Mendel did not observe linkage due to

- a) Mutation
- b) Synapasis
- c) Crossing over
- d) Independent assortment

3. The phenomenon of linkage was first observed in the plant

- a) *Lathyrus odoratus*
- b) *Pisum sativum*
- c) *Datura*
- d) *Mirabilis jalapa*

4. How many linkage groups of chromosomes will be present in case of maize, if all its genes are mapped?

- a) 5
- b) 10
- c) 15
- d) 100

5. Crossing over occurs during

- a) Pachytene
- b) diplotene
- c) diakinesis
- d) pachytene

6. Crossing over is more frequent in

- a) males
- b) females

- c) both
- d) None of these

7. Crossing over in diploid organism is responsible for

- a) dominance of genes
- b) Segregation of alleles
- c) Recombination of linked genes
- d) Linkage between genes

8. Complete linkage has been reported in

- a) Maize
- b) Human female
- c) Male *Drosophila*
- d) Female *Drosophila*

9. Coupling and repulsion phenomenon was concerned with

- a) Crossing over
- b) Mutation
- c) Linkage
- d) All of these

10. Linkage prevents

- a) Homozygous condition
- b) Segregation of alleles
- c) Hybrid formation
- d) Heterozygous condition

Answers

1. c) Morgan
2. d) Independent assortment
3. a) *Lathyrus odoratus*
4. b) 10
5. a) Pachytene
6. b) females
7. c) Recombination of linked genes
8. c) Male *Drosophila*
9. c) Linkage
10. b) Segregation of alleles

Answer the following questions in 2-3 sentences.

1. What is incomplete dominance?
2. What is codominance?
3. What is multiple allelism?
4. What do you understand by lethal alleles?
5. Give different types of lethal alleles.
6. What are complementary genes?
7. What are supplementary genes?
8. What are duplicate genes?
9. What is pleiotropy?
10. Give examples of sex linked character's.
11. What is criss cross pattern of inheritance?
12. Give the characteristics features of polygenic inheritance.
13. What are linkage groups?
14. What is crossing over?
15. How to calculate recombination frequency?
16. Define interference and coincidence
17. What is hybridoma?
18. Give the application of somatic cell hybridisation .
19. What are two factor and three factor cross?
20. Define polygenic inheritance and give suitable example

Answer the following questions in 75 words (2marks).

1. what are sex linked characters?
2. what are sex- influenced characters?
3. What are sex -limited characters?
4. state about the discovery of lethal alleles

5. What is thymine dimer?
6. Name the different uv photo products of DNA .
7. What are chemical mutagens?
8. Define intercalating agents. Give example.
9. Define base analogue. Gove suitable examples .
10. Give the chromosomal mechanism of sex determination in drosophila and man .
11. State criteria for extra chromosomal inheritance.
12. Defferentiate between maternal effect and maternal inheritance.
13. What is competence in bacteria?
14. What is function of sex pili?
15. What are the different methods of horizontal gene transfer in bacteria?
16. What are transposons?
17. Differentiate between transformation and transduction in bacteria.
18. Define bacterial conjugation.
19. What is complete and incomplete linkage?
20. Give some trisomic condition in humans.

Answer the following questions in 500 words(6marks).

1. Give the principles of inheritance.
2. Give the different types of gene mutation.
3. What are different types of chromosomal aberrations?
4. Describe cytological basis of crossing over.
5. Give the molecular mechanism of crossing over including models of recombination.
6. Write a short note on somatic cell hybridisation.
7. Give the molecular basis of mutation in relation to uv light and chemical mutagens.
8. State about CLB method and Attached X method of detection of mutation .
9. Write a short note on antibiotic resistance in chlamydomonas.

- 10.State about mitochondrial mutation in saccharomyces.
- 11.Give an account of infective heredity in paramecium .
- 12.What is maternal effect?
- 13.Describe conjugation.
- 14.Describe transformation.
- 15.Describe transduction.
16. Explain complementation test in bacteriophage .
- 17.Describe transposons in bacteria .
- 18.What are Ac ds elements in drosophila?
19. What are transposons in humans?
20. Give detailed account on linkage and crossing over.