BIOLOGY

BOOKS - SARAS PUBLICATION

CHROMOSOMAL BASIS OF INHERITANCE

Exercise

1. Which of the following sentences are correct?

1. The offspring exhibit only parental combinations due to incomplete linkage.

2. The linked genes exhibit some crossing over in complete linkage.

3. The separation of two linked genes are possible in incomplete linkage.

4. Crossing over is absent in complete linkage.

A. 1and 2

B. 2and 3

C. 3 and 4

D. 1 and 4

Answer:

Watch Video Solution

2. Changing the codon AGC to AGA represents

A. Missense mutation

B. Nonsense mutation

C. Frameshift mutation

D. Deletion mutation

Answer:

Watch Video Solution

3. How many map units separate two alleles A and B if the recombination frequency is 0.09?

A. 900cm

B. 90cm

C. 9 cm

D. 0.09

Answer:

Watch Video Solution

4. In which stage does crossing over occur in a cell

A. Leptotene

B. pachytene

C. Diplotene

D. Zygotene

Answer:

Watch Video Solution

5. Datura is a classical example of

A. Tetrasomy

B. Trisomy

C. Monosomy

D. Nullisomy

Answer:

 Watch Video Solution

6. Draw the diagram of different types of aneuploidy.

Watch Video Solution

7. What is the difference between mis-sense mutation and non-sense mutation?

Watch Video Solution

8. What is gene mapping? Write its uses.

Watch Video Solution

9. Write the salient features of Sutton and Boveri concept.

Watch Video Solution

10. What is colchicine? Will it affect the source plant?

Watch Video Solution

11. What is colchicine? Will it affect the source plant?

Watch Video Solution

12. What happens during inversion?

Watch Video Solution

13. Mention the name of man-made cereal. How it is developed?

Watch Video Solution

14. When two different genes came from same parent they tend to remain together.

Draw the cross with suitable example.

Watch Video Solution

15. Write the steps involved in molecular mechanism of DNA recombination.

Watch Video Solution

16. Write briefly about the type of linkage in male Drosophila.

Watch Video Solution

17. Multiple alleles may be present within a population, but an individual had only two of those alleles. Why?

Watch Video Solution

18. If you cross dominant genotype PV /PV male Drosophila with double recessive female and obtain F_1 hybrid. Now you cross F_1 male with double recessive female.

Draw the cross with correct genotype.

Watch Video Solution

19. If you cross dominant genotype PV /PV male Drosophila with double recessive female and obtain F_1 hybrid. Now you cross F_1 male

with double recessive female.

Draw the cross with correct genotype.

Watch Video Solution

20. If you cross dominant genotype PV /PV male Drosophila with double recessive female and obtain F_1 hybrid. Now you cross F_1 male with double recessive female.

Draw the cross with correct genotype.

Watch Video Solution

21. If you cross dominant genotype PV /PV male Drosophila with double recessive female and obtain F_1 hybrid. Now you cross F_1 male with double recessive female.

Draw the cross with correct genotype.

Watch Video Solution

22. If you cross dominant genotype PV /PV male Drosophila with double recessive female and obtain F_1 hybrid. Now you cross F_1 male

with double recessive female.

Draw the cross with correct genotype.

Watch Video Solution

23. An allohexaploidy contains

A. Six different genomes

B. Six copies of three different genomes

C. Two copies of three different genomes

D. Six copies of one genome

Answer:

Watch Video Solution

24. The A and B genes are 10 cM apart on a chromosome. If an AB/ab heterozygote is test crossed to ab/ab, how many of each progeny class would you expect out of 100 total progeny?

A. 25 ABlt 25 ab, 25 Ab, 25 aB

B. 10 AB, 10 ab

C. 45 AB, 45 ab

D. 45 AB, 45 ab, 5 Ab, 5 aB

Answer:

Watch Video Solution

25. Which of the following sentences are correct?

1. The offspring exhibit only parental combinations due to incomplete linkage.

2. The linked genes exhibit some crossing over

in complete linkage.

3. The separation of two linked genes are possible in incomplete linkage.

4. Crossing over is absent in complete linkage.

A. 1 and 2

B. 2 and 3

C. 3 and 4

D. 1 and 4

Answer:

 Watch Video Solution

26. Accurate mapping of genes can be done by three point test cross because increases

A. Possibility of single cross over

B. Possibility of double cross over

C. Possibility of multiple cross over

D. Possibility of recombination frequency

Answer:

 Watch Video Solution

27. Due to incomplete linkage in maize, the ratio of parental and recombinants are

A. $50:50$

B. 7:1:1:1

C. 96.4:3.6

D. 1:7:7:1

Answer:

 Watch Video Solution

28. Genes G S L H are located on same chromosome. The recombination percentage is between Land G is 15%, Sand Lis 50%, H and S are 20%. The correct order of genes is

A. GHSL

B. SHGL

C. SGHL

D. HSLG

Answer:

Watch Video Solution

29. The point mutation sequence for transition, transition, transversion and transversion in DNA are

A. A to T, T to A, C to G and G to C

B. A to G, C to T, C to G and T to A

C. C to G, A to G, T to A and G to A

D. G and C, A to T, T to A and C to G

Answer:

30. If haploid number in a cell is 18. The double monosomic and trisomic number will be

A. 35 and 37

B. 34 and 35

C. 37 and 35

D. 17 and 19

Answer:

Watch Video Solution

31. Changing the codon AGC to AGA represents

A. Missense mutation

B. Nonsense mutation

C. Frameshift mutation

D. Deletion mutation

Answer:

32. Asserlion (A) : Gamma rays are generally use to induce mutation in wheat varieties.

Reason (R) : Because they carry lower energy to non-ionize electrons from atom

A. A is correct. R is correct explanation of A

B. A is correct. R is not correct explanation of A

C. A is correct. R is wrong explanation of A

D. A and R is wrong.

Answer:

 Watch Video Solution

33. How many map units separate two alleles A and B if the recombination frequency is 0.09?

A. 900 cm

B. 90 cm

C. 9 cm

D. 0.9 cm d

Answer:

Watch Video Solution

34. Name the biologist who first suggested the occurrence of distinct pair of chromosomes.

A. T.Boveri

B. Montgomery

C. Wilhelm Roux

D. Correns

Answer:

Watch Video Solution

35. Who independently proposed the chromosome theory of inheritance?

A. Sutton and Boveri

B. De Vries and Tschermak

C. Mendel and Correns

D. Roux and Boveri

Answer:

Watch Video Solution

36. Thomas Morgan confirmed chromosomal theory of inheritance by studying on.

A. Pea plant

B. Maize plant

C. Drosophila melanogaster

D. Horsetail plant

Answer:

Watch Video Solution

37. During which phase do the homologous chromosomes segregate

A. Metaphase II

B. Telophase II

C. Anaphase I

D. Prophase I

Answer:

Watch Video Solution

38. The theory proposed by William Bateson and Reginald Punnett upon studying in sweet pea is.

A. Coupling and repulsion theory

B. Theory of gene linkage

C. Law of independent assortment

D. Chromosomal theory of heredity

Answer:

Watch Video Solution

39. How many types of linkage were foun by T.H. Morgan.

A. One type of linkage

B. Two types of linkage

C. Three types of linkage

D. Four types of linkage

Answer:

Watch Video Solution

40. Complete linkage was observed by C.B. Bridges in.

A. Male Drosophila

B. Maize

C. Neurospora

D. Mucor

Answer:

Watch Video Solution

41. Number of linkage groups found in maize is.

A. 2

B. 7

C. 4

D. 10

Answer:

Watch Video Solution

42. Who coined the term 'crossing over'?

A. Morgan

B. Bateson

C. Mendel

D. Reginald Punnett

Answer:

Watch Video Solution

43. Pairing of homologous chromosomes can be seen during

A. Leptotene

B. Diplotene

C. Pachytene

D. Zygotene

Answer:

Watch Video Solution

44. In which stage does crossing over occur in a cell

A. Leptotene

B. Pachytene

C. Diplotene

D. Zygotene

Answer:

Watch Video Solution

45. Synaptonemal complex formation is absent in.

A. Male Drosophila

B. Yeast

C. Female Drosophila

D. Bacteria

Answer:

 Watch Video Solution

46. Multiple alleles were observed by East in.

A. Maize

B. Sweet peas

C. Nicotiana

D. Papaya

Answer:

47. Who discovered sex determination in plants?

A. Bridges

B. Morgan

C. Punnett

D. Allen

Answer:

Watch Video Solution

48. How many chromosomes are found in Carica papaya?

A. 36 chromosomes

B. 34 chromosomes

C. 38 chromosomes

D. 32 chromosomes

Answer:

Watch Video Solution

49. How many alleles control sex determination in papaya?

A. Two alleles

B. Three alleles

C. Four alleles

D. Six alleles

Answer:

Watch Video Solution

50. Name the hormone that plays an important role in the suppression of stamens in maize.

A. AuXIIns

B. Abscisic acid

C. Cytokinin

D. Gibberellins

Answer:

 Watch Video Solution

51. Who coined the term 'mutation'?

A. Morgan

B. C.E. Allen

C. Hugo de Vries

D. Alfred Sturtevant

Answer:

 Watch Video Solution

52. Who developed the concept of gene mapping _____

A. Morgan

B. C.E. Allen

C. Hugo de Vries

D. Alfred Sturtevant

Answer:

Watch Video Solution

53. Mutation was observed by De Vries while studying on the plant.....

A. Oenothera lamarckiana

B. Equisetum

C. Zea mays

D. Melandrium album

Answer:

Watch Video Solution

54. What is the other name for silent mutation?

A. Missense mutation

B. Indel mutation

C. Frameshift mutation

D. Synonymous mutation

Answer:

Watch Video Solution

55. Who was the first to find out physical mutagen in Drosophila?

A. Muller

B. Mendel

C. Morgan

D. Montgomery

Answer:

Watch Video Solution

56. Sharbati sonora is a mutant variety of .

A. Maize

B. Corn

C. Wheat

D. Rice

Answer:

 Watch Video Solution

57. Sharbati sonora is developed from MeXIIcan variety by

A. Treating with beta rays

B. Irradicating with X-rays

C. Irradiating with cosmic rays

D. Irradiating with gamma rays

Answer:

Watch Video Solution

58. _____ is father of "Indian Green Revolution"

A. Birbal Sahni

B. M.S. Swaminathan

C. B.G.L Swamy

D. Janaki Ammal

Answer:

Watch Video Solution

59. Caster Aruna is developed by treatment of seeds with.....

A. Alpha rays

B. Ultraviolet rays

C. Cosmic rays

D. Neutrons

Answer:

 Watch Video Solution

60. Which is not a chemical mutagen?

A. Nitrous acid

B. Magnus salt

C. Ethyl alcohol

D. Eosin

Answer:

Watch Video Solution

61. Which chemical can enhance the effects of known mutagens?

A. Caffeine

B. Sodium chloride

C. Sulphuric acid

D. Carbon monoXIIde

Answer:

Watch Video Solution

62. What did Muller use for the first time to induce mutation in fruit fly?

A. Gamma rays

B. Cosmic rays

C. Beta rays

D. X rays

Answer:

Watch Video Solution

63. Who first reported chemcial mutagenesis?

A. Muller

B. Stadler

C. Auerbach

D. Hugo de Vries

Answer:

64. Type of ploidy seen in Raphanobrassica.

A. Autopolyploidy

B. Aneuploidy

C. Allopolyploidy

D. Hexaploidy

Answer:

Watch Video Solution

65. Which chemical induces polyploidy in plants?

A. Cochicine

B. Mustard gas

C. Methyl methane sulphonate

D. Erythrosine

Answer:

Watch Video Solution

66. Which is the first successful man made cereal?

A. Maize

B. Rye

C. Wheat

D. Triticale

Answer:

Watch Video Solution

67. Which is not a man made autotriploid?

A. Cynodon dactylon

B. Watermelon

C. Tomato

D. Sugar beet

Answer:

Watch Video Solution

68. Presence of some genes in more than two copies were first reported in.....

A. Maize

B. Pea

C. Drosophila

D. Corn

Answer:

Watch Video Solution

69. Duplication is not observed in.

A. Maize

B. Pea

C. Drosophila

D. Corn

Answer:

Watch Video Solution

70. Who first reported inversion in Drosophila.

A. Sturtevant

B. Muller

C. Hugo de Vries

D. C.E. Allen

Answer:

Watch Video Solution

71. Which statement is true about null mutation?

A. Increases normal function

B. Reduces normal function

C. Eliminates normal function

D. Gains function

Answer:

Watch Video Solution

72. What happens in nonsense mutation?

A. There is no change in the encoded amino acid

B. shifts triplet reading of codons out of correct phase

C. Changes the encoded amino acid

D. Creates traslational termination codon

Answer:

Watch Video Solution

73. What is known as procentric synapsis?

A. Initiation of intimate pairing between two homologous chromosomes from middle of the chromosome.

B. Initiation of intimate pairing between two homologous chromosomes from telomeres.

C. Initiation of intimate pairing between non homologous chromosomes from

telomeres.

D. Initiation of pairing from anywhere.

Answer:

Watch Video Solution

74. Monoploidy is a type of.....

A. Euploidy

B. Aneuploidy

C. Hyperploidy

D. Hypoploidy

Answer:

Watch Video Solution

75. Raphanobrassica is a cross between Raphanus sativus and.....

A. Brassica carinata

B. Brassica juncea

C. Brassica rapa

D. Brassica oleracea

Answer:

Watch Video Solution

76. What are linked genes connected together on sex chromosoes called as.

A. Complete linkage

B. Incomplete linkage

C. Sex linkage

D. Autosomal linkage

Answer:

Watch Video Solution

77. Datura is a classical example of.

A. Tetrasomy

B. Trisomy

C. Monosomy

D. Nullisomy

Answer:

Watch Video Solution

78. In a mutation event, when adenine is replaced by thymine, it is known as.

A. Silent mutation

B. Transition

C. Transversion

D. Nonsense mutation

Answer:

Watch Video Solution

79. Mutual exchange of genetic material between homologous chromosomes take place in.....

A. Translocation

B. Crossing over

C. Deletion

D. Duplication

Answer:

Watch Video Solution

80. If the recombination frequency value is more than 50% the two genes are.

A. Linked

B. Unlinked

C. Identical

D. Non-identical

Answer:

Watch Video Solution

81. One centi Morgan is equal to recombination frequency of.....

A. 0.1

B. 1

C. 0.01

D. 10

Answer:

Watch Video Solution

82. Distance between two linked genes is measured in map units that depict.....

A. Ratio of crossing over betwen them

B. Cross over value

C. Number of genes between them

D. None of the above

Answer:

Watch Video Solution

83. Sex determination in humans controlled by

A. x-chromosome.

B. y-chromosome.

C.

D.

Answer:

Watch Video Solution

Example

1. What is difference between missense and nonsense mutation.

Watch Video Solution

2. A B CC B D E F G H I

From the above figure identify the type of

mutation and explain it.

Watch Video Solution

3. Draw the diagram of different types of aneuploidy.

Watch Video Solution

4. Write the salient features of Sutton and Boveri concept.

Watch Video Solution

5. What is gene mapping? Write its uses.

Watch Video Solution

6. When two different genes came from same parent they tend to remain together.

What is the name of this phenomenon?

Watch Video Solution

7. What two different genes came from same parent, they tend to remain together.

Draw the cross with suitable example.

Watch Video Solution

8. When two different genes came from same parent they tend to remain together.

Write the observed phenotypic ratio.

Watch Video Solution

9. If you cross dominant genotype PV /PV male Drosophila with double recessive female and obtain F_1 hybrid. Now you cross F_1 male with double recessive female.

Draw the cross with correct genotype.

Watch Video Solution

10. If you cross dominant genotype PV /PV male Drosophila with double recessive female and obtain F_1 hybrid. Now you cross F_1 male

with double recessive female.

Draw the cross with correct genotype.

Watch Video Solution

11. If you cross dominant genotype PV /PV male Drosophila with double recessive female and obtain F_1 hybrid. Now you cross F_1 male with double recessive female.

Draw the cross with correct genotype.

Watch Video Solution

12. Explain the mechanism of crossing over.

Watch Video Solution

13. Write the steps involved in molecular mechanism of DNA recombination.

Watch Video Solution

14. How is Nicotiana exhibit self-incompatibility? Explain its mechanism.

Watch Video Solution

15. How is sex determined in maize? Write their genes involved in it.

Watch Video Solution

16. Mention the name of man-made cereal? How is it formed?

Watch Video Solution

17. State chromosomal theory of inheritance.

Watch Video Solution

18. Define sex linkage.

Watch Video Solution

19. What is meant by cis configuration?

Watch Video Solution

20. What is meant by trans configuration?

Watch Video Solution

21. What are the types of linkages found by Morgan?

Watch Video Solution

22. On what basis did Morgan classify linkages.

Watch Video Solution

23. Define linkage groups.

Watch Video Solution

24. Define linkage groups.

Watch Video Solution

25. How to construct a gene map?

Watch Video Solution

26. Differentiate tetrasomy from tetraploidy.

Watch Video Solution

27. What is difference between missense and nonsense mutation.

Watch Video Solution

28. What is the biological process that takes place during pachytene stage of prophase I of

meiosis?.

Watch Video Solution

29. Differentiate linked genes from synthetic genes.

Watch Video Solution

30. What are the two types of crossing over based on the site of occurrence? Write their differences.

Watch Video Solution

31. What is meant by bivalents?

Watch Video Solution

32. Define genetic codon

Watch Video Solution

33. Define chiasmata and explain what happens at chiasmata during crossing over.

Watch Video Solution

34. Define synaptonemal complex.

Watch Video Solution

35. What is the contribution of Montgomery to the historical development of chromosome

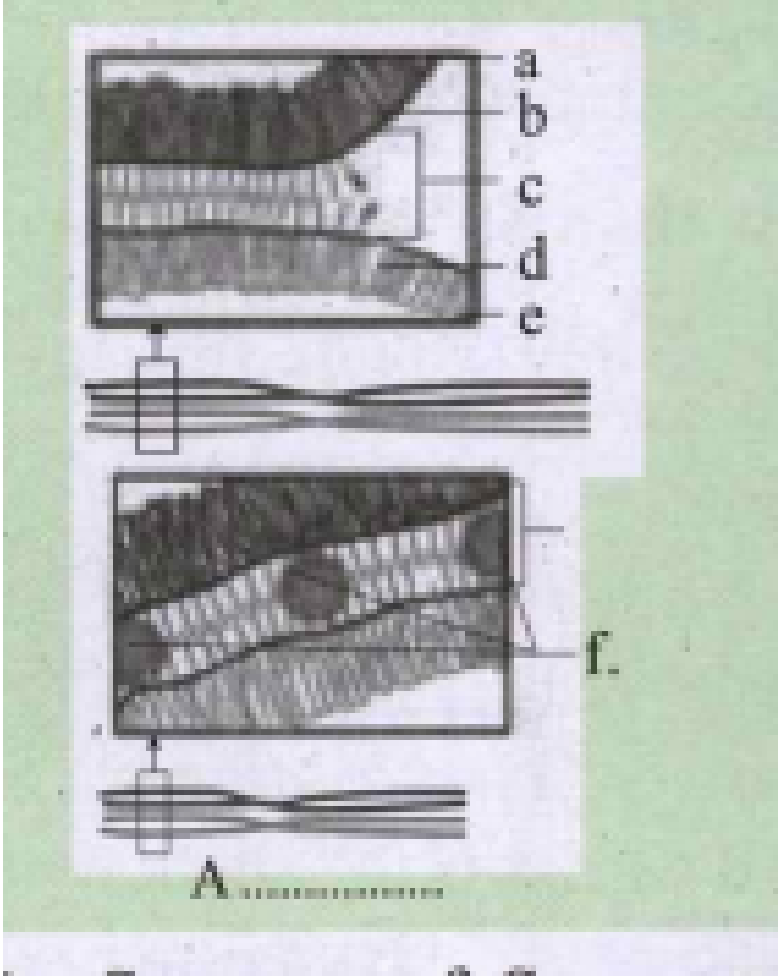
theory.

Watch Video Solution

36. Define recombinants.

Watch Video Solution

37. Identify the given diagram A and label the parts marked as a,b,c,d,e and f.



Watch Video Solution

38. Which is the widely accepted model of DNA replication? Who has proved it?

Watch Video Solution

39. Define recombination frequency.

Watch Video Solution

40. What is meant by map unit?

Watch Video Solution

41. What are multiple alleles?

Watch Video Solution

42. What is meant by self-incompatibility?

Watch Video Solution

43. Write the characteristic of sexually monomorphic plants?

Watch Video Solution

44. What are dimorphic plants?

Watch Video Solution

45. How is sex determined in maize? Write their genes involved in it.

Watch Video Solution

46. How is sex determination in Silence latifolia controlled?

Watch Video Solution

47. Does environment play a mojor role in the detetmine of sex in plants? Explain.

Watch Video Solution

48. What are the types of inflorescence in maize.

Watch Video Solution

49. List the major processes responsible for genetic variation.

Watch Video Solution

50. Define mutation. Who proposed mutation theory?

Watch Video Solution

51. On what bases, can mutation be classified?

Watch Video Solution

52. How can mutation be classified based on origin? Give its major features.

Watch Video Solution

53. How are mutations classified?

Watch Video Solution

54. Name types of mutagenesis.

Watch Video Solution

55. What is point mutation? Give one example.

Watch Video Solution

56. What are the two types of point mutation? Define them.

Watch Video Solution

57. What are the sub types of base substitutions?

Watch Video Solution

58. What is Sharbati sonora?

Watch Video Solution

59. Write a note on mutant variety of castor.

Watch Video Solution

60. What are physical mutagens? Give examples.

Watch Video Solution

61. Explain the action of nitrous oXIIde in mutation.

Watch Video Solution

62. Name and describe the interaction which is introduced by W. Bateson.

Watch Video Solution

63. How are chromosomal mutation classified?

Watch Video Solution

64. What is ploidy?

Watch Video Solution

65. Name the types of ploidy?

Watch Video Solution

66. Write briefly about aneuploidy?

Watch Video Solution

67. What is colchicine? Will it affect the source plant?

Watch Video Solution

68. Define structural chromosomal aberration.

Watch Video Solution

69. What causes structural chromosomal aberration occur?

Watch Video Solution

70. What are deficiency loops?

Watch Video Solution

71. DNA stands for

Watch Video Solution

72. Define deletion

Watch Video Solution

73. What happens during inversion?

Watch Video Solution

74. What are the types of inversion?

Watch Video Solution

75. Define translocation.

Watch Video Solution

76. Differentiate crossing over from translocation.

Watch Video Solution

77. What is meant by illegitimate crossing over?

Watch Video Solution

78. Describe allopolyploidy.

Watch Video Solution

79. What are allopolyploids?

Watch Video Solution

80. Define branch migration.

Watch Video Solution

81. Define Holliday. Junction.

Watch Video Solution

82. What is a three point test cross?

Watch Video Solution

83. What is meant by autopolyploidy?

Watch Video Solution

84. Explain the role of fossil genes in understanding evolution.

Watch Video Solution

85. What is meant by linkage?

Watch Video Solution

86. Some species of plants and animals identical have number of chromosomes. Can number of chromosomes differentiate the character of species from one another. Give reasons.

Watch Video Solution

87. What are autopolyploids?

Watch Video Solution

88. How is structural chromosomal aberration classified?

Watch Video Solution

89. Compare Mendelian factors with chromosome.

Watch Video Solution

90. Write briefly about gene

Watch Video Solution

91. Write briefly about the type of linkage in male Drosophila.

Watch Video Solution

92. Give a schematic representation of complete linkage in male Drosophila.

Watch Video Solution

93. Write the differences between linkage and crossing over.

Watch Video Solution

94. Why crossing over does not take place in some species of male Drosphila?

Watch Video Solution

95. How is crossing over classified? Explain its types.

Watch Video Solution

96. Give the importance of crossing over.

Watch Video Solution

97. Write about map unit in genetics.

Watch Video Solution

98. Write the characteristics of multiple allele's.

Watch Video Solution

99. How are mutations classified based on their effects on translation?

Watch Video Solution

100. Classify and explain autoimmune diseases.

Watch Video Solution

101. How are mutations classified based on their effects on translation?

Watch Video Solution

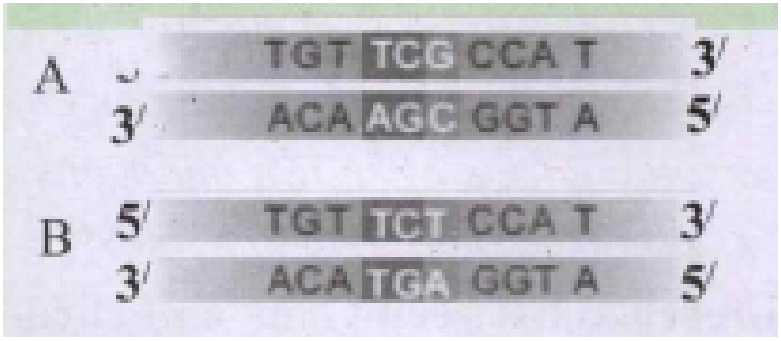
102. Define comutagens.

Watch Video Solution

103. What is the significance of ploidy?

Watch Video Solution

104. Identify the following figures



Watch Video Solution

105. Somatic cell having two sets of chromosomes is called diploidy. Half the number of somatic chromosome is called haploid. Is haploidy the same as monoploidy. Explain.

Watch Video Solution

106. Multiple alleles may be present within a population, but an individual had only two of those alleles. Why?

Watch Video Solution

107. Point out any three salient features of chromosomal theory of inheritance.

Watch Video Solution

108. What is a three point test cross?

Watch Video Solution

109. How is sex determined in papaya?

Watch Video Solution

110. Explain the sex determination of Bryophytes.

Watch Video Solution

111. What are mutagenic agents? How is mutation induced by physical agents?

Watch Video Solution

112. Define euploidy.

Watch Video Solution

113. What is meant by hyperploidy?

Watch Video Solution

114. Draw a flow chart depicting the various types of ploidy.

Watch Video Solution

115. What is the type of linkage reported in maize? Write short notes about it and give diagram to show it.

Watch Video Solution

116. Define hypoploidy. How is it classified?

Watch Video Solution

117. Define polyploidy. How is it classified? Write the merit and demerit of it.

Watch Video Solution

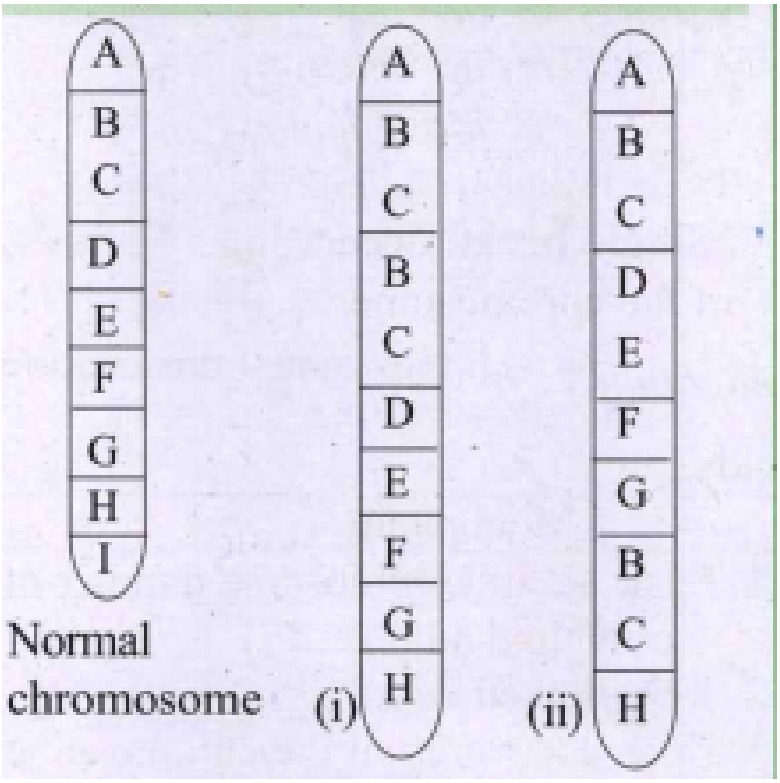
118. What is meant by autopolyploidy?

Watch Video Solution

119. What is deficiency loop? Which causes this? Explain about the cause with its types.

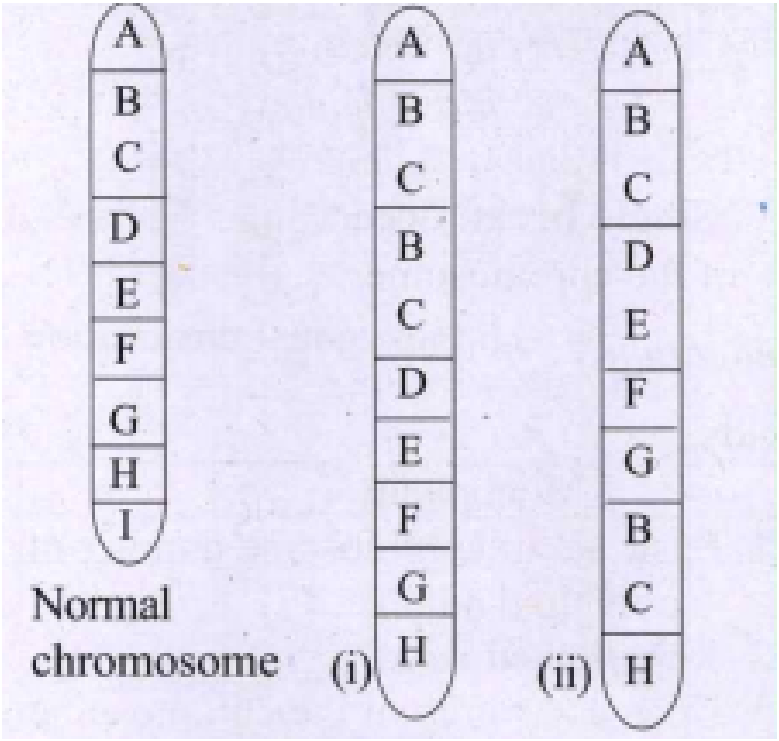
Watch Video Solution

120. Identify the following figures and define it.



Watch Video Solution

121. Explain the changes in (i) and (ii).



Watch Video Solution

122. Explain the types of translocation with diagram.

Watch Video Solution

123. Differentiate haploidy from monoploidy.

Watch Video Solution