BIOLOGY

BOOKS - ARIHANT PUBLICATION

SEX-DETERMINATION

Part I Questions For Practice Very Short Answer Type Questions

1. Non-homologous segment of Y-chromosome carries

A. dominant genes

B. recessive genes

C. holandric genes

D. None of the above

Answer: C

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2. In XO-type of sex-determination

A. females produce two different types of gametes

B. males produce two different types of gametes

C. females produce gametes with Y-chromosome

D. males produce single type of gametes

Answer: B

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3. Which of the following types of sex determination is found in grasshopper ?

A. XX female and XY male

B. ZW female and ZZ male

C. XX female and XO male

D. XX male and XO female

Answer: C

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4. Sex chromosomes of a female bird are represented by

A. XO

B. XX

C. ZW

D. ZZ

Answer: C

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5. Heterogametic individual produces similar type of gametes.

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6. D. melanogaster with 2A +XX chromosome complement is female.

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7. Gynandromorphs die due to failure of segregation.

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8. In humans, males are heterogametic, whereas females are

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9. In human, a ..... gene, present on the Y-chromosome influences the development of testes in the male.

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10. Freemartin females are .....

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11. The sex of the child developed from 44A+XX zygote.

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12. At high temperature, what sex of turtle is produced?

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Part I Questions For Practice Short Answer Type Questions

1. What is Barr body?

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2. How is sex determined in human beings ?

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3. Write a short note on sex-determination in human.

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4. What is male heterozygosity?

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5. Describe sex-determination in grasshoppers.

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6. Why grasshopper and Drosophila show male heterogamety? Explain.

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7. Explain female heterogamety with the help of examples.

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8. Write the types of sex-determination mechanisms of the following crosses. Give an example of each type.

Female XX with male XO

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9. Write the types of sex-determination mechanisms of the following crosses. Give an example of each type.

Female ZW with male ZZ

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10. Write short note on sex-determination in Bonellia viridis.

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Part I Questions For Practice Long Answer Type Questions

1. Explain the chromosomal basis of sex-determination in animals.

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2. Explain chromosomal theory of sex determination.

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3. Explain chromosomal theory of sex determination.

Watch Video Solution

4. Explain chromosomal theory of sex determination.

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5. In humans, males are heterogametic and females are homogametic, explain. Are there any examples where males are homogametic and females are heterogametic?

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6. Describe, who determines the sex of an unborn child?

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7. Describe various environmental factors that help in sex-determination.

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8. Describe various environmental factors that help in sex-determination.

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Part I Questions For Assessment Very Short Answer Type Questions

1. ZZ/ZW type of sex-determination is seen in

A. snails

B. peacock

C. platypus

D. cockroach

Answer: B

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2. In gynandromorph

A. all cells have XX genotype

B. all cells have XY genotype

C. all cells with XXY genotype

D. some cells of the body contain XX and some cells with XY genotype

Answer: D

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3. Mary F lyon discovered X-chromosome in female mice and described it as X-body.

4. In grasshopper, female is..... and the male is .....

5. Which factor determines the sex in Bonellia ?

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Part I Questions For Assessment Short Answer Type Questions

1. Which of the two, sperm or ovum determines the sex of the offsprings in fowl? Justify your answer.

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2. State the ploidy of (i) males (ii) females and (iii) workers in haplo-diploidy mechanism of sex-determination.

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3. Number of Barr bodies present in Turner.s syndrome is

A. 0

B. 1

C. 2

D. both (b) and (c)

Answer:

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Part I Questions For Assessment Long Answer Type Questions

1. Describe the different types of sex-determination in insects.

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Part Ii Questions For Practice Very Short Answer Questions

1. In which chromosome is the gene for haemophilia located?

A. X-chromosome

B. Y-chromosome

C. Autosome

D. Both (a) and (b)

Answer:

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2. A colourblind person cannot distinguish

A. all colours

B. green

C. red

D. red and green

Answer:

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3. Down.s syndrome is an example of

A. triploidy

B. polyteny

C. polyploidy

D. aneuploidy

Answer:

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4. Which chromosome-linked genes do cause the genetic metabolic Phenylketonuria (PKU)?

A. Somatic dominant gene

B. Somatic recessive gene

C. Y-linked gene

D. X-linked gene

Answer:

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5. In which of the following diseases, the man has an extra X-chromosome?

A. Bleeder.s disease

B. Turner.s syndrome

C. Klinefelter.s syndrome

D. Down.s syndrome

Answer:

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6. The genotype of a carrier haemophilia is $\underline{X^h X^h}$

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7. Cystic fibrosis is a sex-linked recessive disease, which is transmitted from an unaffected carrier female to some of the male offsprings.

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8. Down syndrome is an inherited blood disorder, in which the body makes an abnormal form of haemoglobin.

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9. Klinefelter syndrome is an abnormal condition caused by the presence of an extra Y chromosome.

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10. ..... is also known as bleeder.s disease.

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11. Down.s syndrome is due to ..... of chromosome 21.

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12. Turner.s syndrome is caused due to ..... of one of the X-chromosome.

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13. Name any one autosomal recessive disease.

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14. Name the scientist who discovered Down.s syndrome.

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Part Ii Questions For Practice Short Answer Questions

1. What is criss-cross inheritance?

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2. What is sexlinked inheritance ? Explain inheritance of haemophilia in man.

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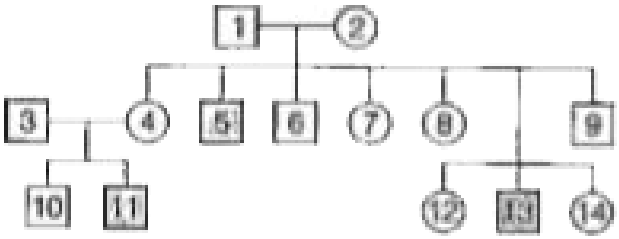
3. Haemophilia is a sex-linked inheritance condition in humans where a simple cut causes non-stop bleeding. Study the pedigree chart showing the inheritance of haemophilia in a family. Give reasons, which explain that

haemophilia is sex-linked



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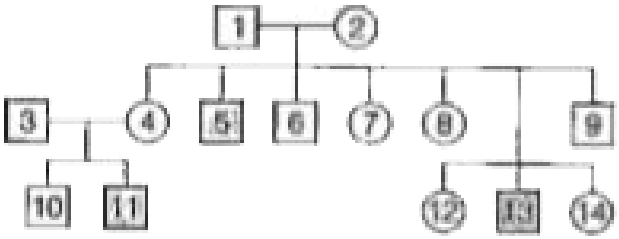

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5. Discuss the sex linked inheritance by taking colourblindness as an example.

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6. Write short note on inheritance of colour blindness in man.

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7. If a father and son are both defective in red-green colour vision, is it likely that the son inherited the trait from his father ? Comment.

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8. A colourblind child is born to a normal couple. Work out a cross to show how it is possible. Mention the sex of this child.

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9. Write the symptoms of Down.s syndrome.

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10. How is the child affected, if it has grown from the zygote formed by an XX-egg fertilised by a Y-carrying sperm? What do you call this abnormality?

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11. Name a disorder, give the karyotype and write the symptoms, where a human male suffers as a result of an additional X-chromosome.

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Part Ii Questions For Practice Long Answer Questions

1. Why are thalassemia and haemophilia categorised as Mendelian disorders? Write the symptoms of these diseases. Explain their pattern of inheritance in humans.

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2. Write the genotypes of the normal parents producing a haemophilic son.

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3. When was Down.s syndrome first described?.

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4. What is the frequency of occurrence of gynandromorphs in human and does it also

occur in other animals?

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5. What is Down's syndrome ?

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6. Relate it with chromosome dysfunctions.

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Part Ii Questions For Assessment Very Short Answer Questions

1. The extra inactive X-chromosome in karyotype of Klinefelter syndrome is called

A. Barr body

B. barr chromosome

C. dosage body

D. None of these

Answer: A

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2. In Turner.s syndrome, the chromosome number is 45 instead of 46.

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3. ..... is an inherited disorder which results in the failure to distinguish red and green colours.

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4. Aheritable disorder linked to genes on the non-sex chromosomes.

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5. A heritable disease caused by the presence of one defective allele.

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6. Chromosomes fail to sort properly during meiosis.

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Part Ii Questions For Assessment Short Answer Questions

1. What is thalassemia? Explain its types.

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2. A normal couple gave birth to one haemophilic son a normal daughter. Work out the cross to show the genotypes of the parents and their progeny.

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3. Give the possible genotypes of the parents, who can give birth to haemophilic daughters.

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Part Ii Questions For Assessment Long Answer Questions

1. How does a chromosomal disorder differ from a Mendelian disorder?

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2. Name any two chromosomal aberration associated disorders.

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3. List the characteristics of the disorder mentioned that help in their diagnosis of Thalassemia

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4. Describe the chromosomal basic of sex determination in human,honey bee and birds.

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5. Autosomal characters and Sex-linked characters.

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6. Male heterogamety and Female heterogamety.

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7. Turner.s syndrome and Klinefelter.s syndrome.

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Odisha Burau S Textbook Solutions A Very Short Answer Type Questions

1. A cross between F_1-hybrid and a recessive parent gives the ratio of

A. $3:1$

B. $2:1$

C. $1:1$

D. $4:1$

Answer: C

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2. A cross of F_1 with the recessive parent is known as

A. back cross

B. test cross

C. hybrid cross

D. double cross

Answer: B

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3. A woman with albinic father marries an albinic man. The proportion of her progeny is

A. 2 normal : 1 albinic

B. all normal

C. all albinic

D. 1 normal : 1 albinic

Answer: D

4. Y-chromosome is called

A. sex chromosome

B. androsome

C. autosome

D. gynosome

Answer: A

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5. Which one is a sex-linked disorder?

A. Leukemia

B. Cancer

C. Night blindness

D. Colour blindness

Answer: D

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6. A haemophilic man marries a normal homozygous woman. What is the probability that their son will be haemophilic?

A. $100\ \%$

B. $75\ \%$

C. $50\ \%$

D. $0\ \%$

Answer: D

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7. A haemophilic man marries a normal homozygous woman. What is the probability that their daughter will be haemophilic?

A. $100\ \%$

B. $75\ \%$

C. $50\ \%$

D. $0\ \%$

Answer: D

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8. A fruitfly exhibiting both male and female trait is

A. heterozygous

B. gynandromorph

C. hemizygous

D. gynandev

Answer: B

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9. Genes located on Y-chromosome are

A. mutant genes

B. autosomal genes

C. holandric genes

D. sex-linked genes

Answer: C

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10. A colourblind person cannot distinguish

A. all colours

B. red colour

C. green colour

D. red and green colours

Answer: D

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11. The gene responsible for haemophilia is linked to which chromosome?

A. X

B. Y

C. Both X and Y

D. Autosome

Answer: A

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12. Red-green colour blindness in man is.

A. sex-linked character

B. sex-limited character

C. sex influenced character

D. sexual character

Answer: A

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13. Sex-linked characters are

A. dominant

B. recessive

C. lethal

D. not inherited

Answer: B

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14. Which gene is present in the Y-chromosome that codes for the protein TDF?

A. cry

B. sry

C. try

D. tra

Answer: B

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15. In birds, which type of chromosomal basis of sex-determination is present?

A. XX - XY

B. XX-XO

C. ZW - ZZ

D. ZZ - ZO

Answer: C

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16. When the ratio of X/A=0.67 in genic balance theory, which type of sex is expressed?

A. Super female

B. Intersex

C. Super male

D. Triploid female

Answer: B

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17. Which type of sex-determination is found in Bonellia?

A. environmental dependent

B. Chemotactic

C. Holandric

D. Pseudoautosomal

Answer: B

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18. In a person with Turner syndrome, the number of X-chromosome is

A. 1

B. 2

C. 3

D. 0

Answer: A

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19. A Down syndrome will be

A. 45 + XX

B. 44 + XY

C. 44 + XXY

D. 22 + XY

Answer: A

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20. Number of Barr bodies present in Turner.s syndrome is

A. 0

B. 1

C. 2

D. Either (b) or (c)

Answer: A

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21. Name two sex-linked diseases of human being.

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22. How Down.s syndrome is caused?

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23. In which chromosome is the gene for haemophilia located?

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24. What is the chromosomal formula for Turner's syndrome?

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25. Which sex is usually a carrier?

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26. Who proposed the genic balance theory?

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27. What are holandric genes?

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28. In which chromosome, the factors for haemophilia and colour blindness are found?

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29. What is the other name of Bleeder.s disease?

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30. Which protein is in sry gene of Y-chromosome?

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31. What is gynandromorph?

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32. What is Free martin?

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33. What is criss-cross inheritance?

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34. Which type of defect is found in thalassemia?

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35. What is Klinefelter syndrome ?

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Odisha Burau S Textbook Solutions B Short Answer Type Questions

1. What is criss-cross inheritance?

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2. What are holandric genes?

 Watch Video Solution

3. Haplo-diploidy mechanism of sex-determination

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4. Who proposed genic balance theory for determination of sex in Drosophila ?

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5. Freemartin is an example of :

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6. In gynandromorph

Watch Video Solution

7. Single gene effect

Watch Video Solution

8. Sex reversal

Watch Video Solution

9. Explain Temperature dependent sex-determination with an example.

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10. Explain chemotactic sex determination. /Explain sex determination in Bonellia.

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11. Write notes on : Thalassemia.

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12. What is Down's syndrome ?

Watch Video Solution

13. What is Turner's syndrome ?

Watch Video Solution

14. What is Klinefelter syndrome ?

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Odisha Burau S Textbook Solutions C Differentiate Between Two Words In The Following Pairs Of Words

1. Distinguish between:Phenotype and genotype

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2. Distinguish between:Autosome and allosome

Watch Video Solution

3. X-chromosome and Y-chromosome.

Watch Video Solution

4. Supermale and Superfemale.

Watch Video Solution

5. Sex differentiation and Sex reversal.

Watch Video Solution

6. Gynandromorph and Freemartin

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7. Differentiate between any two of the following pair:Down's syndrome and Turner's syndrome

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Odisha Burau S Textbook Solutions D Long Answer Type Questions

1. Explain chromosomal theory of sex determination.

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2. Who proposed genic balance theory for determination of sex in Drosophila ?

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3. What is sex-linked inheritance? Discuss this taking colour blindness as an example.

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4. Give an account of sex linkage in Drosophila and man.

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Chapter Practice Very Short Answer Type Questions

1. If father shows normal genotype and mother shows a carrier trait for haemophilia then

A. all the female offsprings will be normal

B. all the female offsprings will be carriers

C. a male offspring has 50% chance of active disease

D. a female offspring has probability of 50% to have active disease

Answer: C

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2. The syndrome in humans in which individual contains the three sex chromosomes XXY is called

A. Superfemale

B. Turner.s syndrome

C. Down.s syndrome

D. Klinefelter.s syndrome

Answer: D

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3. The genic balance theory was originally proposed by Calvin Bridges in 1921.

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4. The key to sex-determination in humans is the sry gene located on the arm of the X-chromosome.

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5. Humans like other mammals have a sex-determination mechanism that depends on .....

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6. The recessive X-linked gene for haemophilia shows characteristic ..... like the gene for colour blindness.

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7. Name any two organisms which show sex reversal.

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8. Write the sex of the freemartin.

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Chapter Practice Short Answer Type I Questions

1. In birds, which type of chromosomal basis of sex-determination is present?

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2. Why is the possibility of a human female suffering from haemophilia rare? Explain.

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Chapter Practice Short Answer Type Ii Questions

1. Differentiate between haemophilia and colour blindness.

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Chapter Practice Long Answer Type Questions

1. Explain the causes, inheritance pattern and symptoms of any two Mendelian genetic disorders.

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2. Explain Turner.s syndrome, its symptoms, diagnosis, treatment and prevention.

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