



# BIOLOGY

## BOOKS - ARIHANT PRAKASHAN

### SEX-DETERMINATION

#### Topic 1 Practice Questions 1 Mark Questions

1. Y-chromosome is called

A. sex chromosome

B. androsome

C. autosome

D. gynosome

**Answer: A**



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2. A fruitfly exhibiting both male and female trait is

A. heterozygous

B. gynandromorph

C. hemizygous

D. gynandev

**Answer: B**



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**3. 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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**4. 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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5. 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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**6.** Which type of sex-determination is found in Bonellia?

A. Temperature dependent

B. Chemotactic

C. Holandric

D. Pseudoautosomal

**Answer: B**



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7. 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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**8. Hypertrichosis of pinna is ..... Trait.**



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**9. Who proposed the genic balance theory?**





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



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**11.** What is Free martin?



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## Topic 1 Practice Questions 2 Mark Questions

1. What is Barr body?



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2. Haplo-diploidy mechanism of sex-determination



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### 3. Genic Balance Theory.



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### 4. Write the sex of the freemartin.



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### 5. Single gene effect



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## 6. Sex reversal



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



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8. Explain chromosomal theory of sex determination.



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**9. What is criss-cross inheritance?**



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**10. Write the symptoms of Down's syndrome.**



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**11.** Write short note on inheritance of colour blindness in man.



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**12.** Write a short notes on: Colour blindness



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**13.** What is sex-linked inheritance?



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**14.** The human male never passes on the gene for haemophilia to his son. Why?



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**15.** What are the various causes of human genetic disorders?



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1. Differentiate between autosome and sex chromosome.



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2. X-chromosome and Y-chromosome.



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3. Supermale and Superfemale.







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4. Sex differentiation and Sex reversal.



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5. Gynandromorph and Freemartin



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6. Write short note on Turner's syndrome.





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



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8. Write short note on Down's syndrome



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**9.** Write short notes on the following.

Thalassemia



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**10.** Differentiate between: Down's syndrome and Turner's syndrome



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**11.** Turner's syndrome and Klinefelter's syndrome.



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## Topic 1 Practice Questions 7 Mark Questions

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



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



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3. Genic Balance Theory.



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





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



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6. Explain chromosomal disorders in man.



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

A. peacock

B. snails

C. cockroach

D. platypus

**Answer: A**



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2. Non-homologous segment of Y-chromosome carries

- A. dominant
- B. holandric genes
- C. recessive genes
- D. None of these

**Answer: B**



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



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



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5. Which factor determines the sex in Bonellia ?



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6. Differentiate between male and female heterogamy.



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7. Explain why it is scientifically incorrect to blame the mother for bearing female child.



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8. What type of sex determination seen in human being?



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



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



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## Topic 2 Practice Questions 1 Mark Questions

1. What is the diploid chromosome number in a person suffering from down syndrome ?

A. 45

B. 46

C. 47

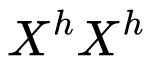
D. 48

**Answer: C**



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2. The genotype of a carrier haemophilia is



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



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4. Which one is a sex-linked disorder?

A. Leukemia

B. Cancer

C. Night blindness

D. Colour blindness

**Answer: D**



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

A. 1

B. 0.75

C. 0.5

D. 0

**Answer: D**



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

A. 1

B. 0.75

C. 0.5

D. 0



**Answer: D**



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7. 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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**8. 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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9. Sex-linked characters are

A. dominant

B. recessive

C. lethal

D. not inherited

**Answer: B**



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**10.** 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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11. 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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12. A Down syndrome will be

A.  $45 + XX$

B.  $44 + XY$

C.  $44 + XXY$

D.  $22 + XY$

**Answer: A**



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13. A colourblind person cannot distinguish

A. all colours

B. green

C. red

D. red and green

**Answer: D**



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**14.** Number of Barr bodies present in Turner's syndrome is

A. 0

B. 1

C. 2

D. Both (b) and (c )

**Answer: A**



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**15.** The karyotype of Klinefelter syndrome is

$45+XXY=48$





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**16.** Name two sex-linked diseases of human being.



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**17.** How Down's syndrome is caused?



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**18.** In which chromosome is the gene for haemophilia located?



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



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**20.** Which sex is usually a carrier?



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



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22. What is the other name of Bleeders disease?



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23. Which type of defect is found in thalassemia?



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24. What is Klinefelter syndrome ?



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25. Which genetic disease is regarded as Royel disease ?



## Topic Test 2

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

A. 1

B. 0.5

C. 0.75

D. 0

**Answer: D**



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2. An additional copy of X-chromosome causes..... .



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3. Name the scientist who discovered Down's syndrome.



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



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5. What do you understand by Y-linked genes?



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6. What is thalassemia? Explain its types.



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



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8. What are Mendelian disorders?



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**9.** What are the causes and symptoms of Turner's syndrome.



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**10.** Explain chromosomal disorders in man.



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**11.** Difference between X-linked genes and Y-linked genes



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## Chapter Test 1 Mark Question

1. What is Chromosome number of a female with Turner's syndrome ? Who proposed the nutrition theory of sex determination ?



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2. What would be the sex of the child developed from 44A + XX?



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3. Name any one autosomal recessive disease.



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

then

- A. all the female offspring will be normal
- B. all the female offspring 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: A**



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5. 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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6. The gene for colour blindness is situated on.....chromosome.



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



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



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9. Turner's syndrome is ..... disorder.



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**Chapter Test 2 Mark Question**

1. Give symptoms of the following disorders  
Klinefelter's syndrome.



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2. What the sex chromosome constitution in male individual of human, bird, grasshopper and butterfly.



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3. What do you understand by sex-determination? Describe sex-determination in insects like grasshoppers and butterflies.



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



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



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1. Differentiate between male and female heterogamy.



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## Chapter Test 7 Mark Question

1. Differentiate between XX chromosomes and XY chromosomes



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



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