CHAPTER-III

GENETICS

A. MULTIPLE CHOICE QUESTIONS

5. In normal woman whose father was colour blind is married to a normal man. The sons would be
   (a) All colour-blind
   (b) 75% colour-blind
   (c) 50% colour-blind
   (d) All normal
6. A haemophilic man marries a normal homozygous woman. What are the chances that their son will be haemophilic?
   (a) 100%
   (b) 75%
   (c) 50 %
   (d) None
7. Colour blind man has a normal brother and colourblind sister. What should be the phenotypes of the parents?
   (a) Father normal, mother colour blind
   (b) Father colour blind, mother carrier
   (c) Both colour blind
   (d) Both normal
8. A family of five daughters only is expecting sixth issue. The chance of its being a son is
   (a) 0%
   (b) 25%
   (c) 50%
   (d) 100%
9. Haemophilia is more common in males because it is a
   (a) Recessive character carried by Y chromosome
   (b) Dominant character carried by Y chromosome
   (c) Dominant trait carried by X chromosome
   (d) Recessive trait carried by X chromosome
1. An abnormal human male phenotype involving an extra X chromosome is a case of
   (a) Down syndrome
   (b) Intersex
   (c) Edward syndrome
   (d) Klinefelter syndrome
2. Which of the following is the example of sex-linked disease?
   (a) AIDS
   (b) Colour blindness
   (c) Syphilis
   (d) Gonorrhoea
3. A diseased man marries a normal woman. They get three daughters and five sons. All the daughters were diseased and sons were normal. The gene of this disease is
   (a) Sex linked dominant
   (b) Sex linked recessive
   (c) Sex limited character
   (d) Autosomal dominant
4. A colour blind person cannot distinguish the colour
   (a) Green-blue
   (b) Red-blue

(c) Green-red

(d) None

16. In Down's syndrome (Mongolism) each cell has how many chromosomes

(a) 21st pair having one less

(b) 23rd pair with one less

(c) 45

(d) 47

17. The genotype of man having sexual character of female is

(a) XXX

(b) X0

(c) XYY

(d) XXY

18. Turner's syndrome has the following chromosome arrangement

(a) XX

(b) XYY

(c) XY

(d) X0

19. Absence of which factor causes haemophilia?

(a) Factor Rh

(b) Factor I

(c) Factor II

(d) Factor VIII

20. Pattern baldness, moustaches and beard in human males are examples of

(a) Sex linked traits

(b) Sex limited traits

(c) Sex differentiating traits

(d) Sex determining traits

21. Sex chromosomes of a female bird are

(a) X0 (b) ZZ

(c) ZW (d) XX

10. Down's syndrome is associated with trisomy of chromosome number

(a) 20

(b) 21

(c) 22

(d) 23

11. The syndrome in humans in which individual's somatic cells contain the three sex chromosomes XXY is called

(a) Klinefelter's syndrome

(b) Turner's syndrome

(c) Down's syndrome

(d) Super female

12. In honey bee the males are produced by

(a) Mitosis and then fertilization

(b) Meiosis and then fertilization

(c) Mitosis but no fertilization

(d) Meiosis but no fertilization

13. The X0 system of sex determination is found in

(a) Insects

(b) Birds

(c) Reptiles

(d) Mammals

14. In ZZ/ZW system which of the following is true?

(a) All organisms have ZZ chromosomes

(b) The chromosomes are Z like

(c) Females have ZW constitution

(d) Male is heterozygous

15. Which of the following type of inheritance is shown by colour blindness?

(a) Chromosomal inheritance
(b) Criss-cross inheritance
(c) Zig-zag inheritance
(d) Up-down inheritance

28. By which of the following defects, Thalassemia is caused?
(a) Defects in RBCs
(b) Defects in WBCs
(c) Defects in platelets
(d) Defects in lymphocytes

29. What is the percentage of children being a carrier of haemophilia if their mother is a carrier and their father is a normal man?
(a) 25%
(b) 50%
(c) 75%
(d) 100%

30. If a boy has sexual characters of that of a girl, its genotype would be
(a) XYY
(b) XX
(c) XXY
(d) XXX

31. Genes for color blindness in man are located in
(a) X-chromosome only
(b) Y-chromosome only
(c) Both X and Y chromosomes
(d) Autosome 10

32. Sex-linked characters are
(a) Dominant
(b) Recessive
(c) Lethal
(d) None of these

22. If a colorblind woman marries a normal man, their children will be
(a) Normal daughters and sons
(b) Normal sons and carrier daughters
(c) Colorblind sons and carrier daughters
(d) Color blind sons and daughters

23. All the sons of a couple are colorblind because
(a) Mother homozygous colorblind
(b) Mother carrier and father is normal
(c) Mother normal and father colorblind
(d) Mother carrier and father colorblind

24. Marriage between which pair may cause death of child?
(a) Rh^- man Rh^+ woman
(b) Rh^+ man Rh^+ woman
(c) Rh^- man Rh^- woman
(d) Rh^+ man Rh^- woman

25. A person with Turner's Syndrome has how many X chromosome?
(a) 1 (b) 2
(c) 3 (d) 4

26. Which type of sex determination is found in man
(a) ZW female ZZ male
(b) XX male X0 female
(c) XX female X0 male
(d) XX female XY male

27. Down's Syndrome is due to
(a) Crossing Over
(b) Linkage

(c) Non-disjunction of chromosome

(d) Sex-linked inheritance

E. FILL IN THE BLANKS

1. Genes located on Y chromosome are called genes _____.
2. The genetic constitution of Klinefelter's syndrome is _____.
3. The male honey bee is produced by _____ type of cell division.
4. The XO mole is found in _____.
5. Red Green colorblindness is _____ chromosome linked trait.
6. Severe anemia at birth is a feature of _____.
7. Down's syndrome is characterized by trisomy of chromosome _____.
8. _____ is known as Royal disease.
9. Haemophilia in man was first studied by _____.
10. The genotype of carrier Haemophilia is _____.
11. The fertile female honey bee is called _____.
12. Freemartin is found among _____.

F. CORRECT THE UNDERLINED WORD

4. The female bird is homogametic.
5. Worker honey bees are fertile females.
6. In Turner's syndrome two X chromosomes are missing.
7. Mongolism shows trisomy of chromosome 20.
8. A carrier woman and normal man produce 100%haemophilic sons.
1. Red Green colorblindness is a defect in rod cells of retina.
2. Huxley proposed Genic balance theory of sex determination.
3. ZW and ZZ type of sex determination is seen in humans.

B. ANSWER IN ONE WORD

1. Which type of trait is generally found in sex-linked inheritance?
2. Which extra chromosome causes Klinefelter's syndrome?
3. What is the chromosome number of Turner's syndrome?
4. Which chromosome carries the gene for Haemophilia?
5. Which sex is usually a carrier?
6. Gynecomastia condition is seen in which syndrome?

C. DIFFERENTIATE BETWEEN

1. Thalassemia major and Thalassemia minor
2. Haemophilia A and Haemophilia B
3. Autosome and Allosome
4. Down's syndrome and Turner's syndrome
5. Carrier female and Normal females

D. SHORT NOTES

1. Inheritance of Colorblindness
2. Inheritance of Haemophilia
3. Thalassemia
4. Down's syndrome
5. Turner's syndrome
6. Klinefelter's syndrome
7. Sex-determination in birds
8. Sex-determination in honey bee