BIOLOGY

BOOKS - BETTER CHOICE PUBLICATION

PRINCIPLES OF INHERITANCE AND VARIATION

Very Short Anwer Type Questions

1. Why is mendel known as father of genetics?

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2. Who were the rediscovrers of Mendelism?

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3. What are Multiple Alleles ? Give one example.

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4. What is Allelomophic pair?

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5. Which disorder is caused in man due to presence of one extra sex chromosome ?

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6. What would be the disorder caused due to presence of extra autosomal chromosome ?

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7. What will be the sex of an offspring developing from 44A + XX zygote?

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8. How many autosomes are found in a mature human sperm?

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9. What will be the sex of the offspring developing from 44A + XY zygote?

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10. Give the meaning of the term 'Allele'.

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11. Give the meaning of the term Homozygous individual.

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12. Name the animal, Morgan selected for his Cytogenic studies.

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13. How many pairs of contrasting characters were used by Mendel in Garden pea?

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14. What was the experimental material used by Mendel ?

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15. Define genotype.

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16. Write the genotype of man with blood'group 'A'.

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17. Define phenotype.

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18. Write the genotype of man with blood group 'B'.

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19. Define genome.

Watch Video Solution

20. Write the genotype of man with blood group 'O'.

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21. Name a process which is antagonistic to linkage.

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22. What are units of crossing over maps ?

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23. Name the chemical used for inducing polyploidy.

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24. What are chromosomal abnormalities of Klinefelter's syndrome?

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25. What are the chromosomal abnormalities of Down's syndrome?

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26. What are chromosomal abnormalities of Turner's syndrome ?

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27. Why is sickle celled anaemia called molecular disease ?

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28. Define gene pool.

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29. Define gene

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30. Who gave the term gene.

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31. Which disorder is called black urine disease

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32. Name the enzyme whose deficiency causes pheuylketoneurea.

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33. Name the plant showing incomplete dominance.

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34. Which phenomenon is shown by human skin colour?

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Short Answer Type Questions

1. Who is responsible for the sex of the new born child. Male or Female? Explain.

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2. Differentiate between dominance and recessive?

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3. Define phenotypic adaption.Give one example.

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4. Differentiate between homozygous and heterozygous individuals.

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5. Differentiate between monohybrid cross and dihybrid cross.

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6. Describe the situation in which independent assortment of genes result in 50% recombination.

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7. Why did mendel choose garden pea for his experiments?

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8. What is linkage ? Give two factors affecting linkage.

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9. A man with a type A blood has a wife with type B. They have a child with O. Give the genotype of the man and wife.

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10. Define co-dominant and complementary genes.

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11. What is a test cross ? How does it differs from back cross ?

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12. In man four types of blood groups a,b,ab and o are controlled by three alleles of a gene.What is the machanism of inheritance of the blood groups?

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13. Write the genotypes of men with blood group AB and O.

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14. What are homozygous organisms? Why are they called pure individuals?

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15. Explain two types of linkage.

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16. Define crossing over. What is the significance of crossing over ?

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17. Differentiate Phenotype and Genotype.

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18. Differentiate somatogenic variations and blastogenic variations.

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19. Differentiate between continuous variations and discontinuous variations.

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20. Which phenomenon strongly favours the linear arrangement of genes on the chromosome ? Also define that phenomenon.

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21. What are autosomes ? How many autosomes wouldbe found in a normal cell of a human female ?

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22. What is Co-dominance? Give example?

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23. There is a boy with blood group 'B', his mother has blood group O. Write possible genotypes and phenotypes of his father.

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24. A normal man marries a women who is carrier of colour blindness. Depict the phenotype of children born through a cross.

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25. There is a boy with blood group B whose mother has blood group A. Give the possible genotypes and phenotypes of his father.

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26. Write down the genotypes for the blood groups type AB andB.

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27. A plant with red flowers was crossed with another plant of same species with white flowers, the plants of F, generation bore pink flowers. Explain the pattern with the help of a cross.

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28. How does a haemophilic patient suffer?

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29. What is the mechanism of SN_2 reaction.

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30. Work out a across between two plants of Antirrhinum majus, one with red flowers and the other with white flowers. Show the F_1 and

F_2 generations with genotypes and phenotypes and their ratios. Explain the pattern of inheritance.

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31. Define multiple alleles. How they are evolved? Give one example.

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32. What is the number of gametes produced with genotype (a) AaBb, (b) AaBoCe:

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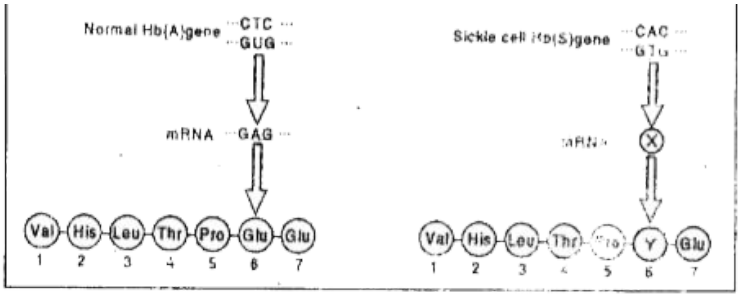
33. The two given figures show segments of normal and mutated peptide chains. Complete X and Y. What type of mutations is shown and disorder caused?



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34. What is meant by emasculation? When and why a plant breeder employ this technique?

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35. Define the terms-Genetics and Inheritance.

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36. What are the reasons for success of Mendel experiments on pea plants ?

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37. Write is the importance of mendelism?

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38. Which plant was selected by Mendel for his experiments and why?

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39. What is incomplete dominance? Explain it with the help of a cross.

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40. Why are hemophilia and red green color blindness observed usually in man? Can women also develop these disorders? Explain

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41. Describe the chromosomal theory of linkage.

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42. What is crossing over ?

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43. Explain the significance of crossing over and linkage.

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44. What will be the kind of children born to normal father and carrier mother for the haemophilia? Show it with Punnett square.

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45. What will be the kind of children born to color blind father and carrier mother for color blindness? Show it with Punnett square.

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46. What will be the kind of children born to haemophilic father and carrier mother for the trait of haemophilic? Show it with Punnett square.

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47. Write the significance of variations.

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48. Define Mendel's law of segregation. Draw only Punnett's square to explain this law.

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49. Define Mendel's law of dominance. Draw only Punnett's square to explain this law.

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50. A haemophilic man marries normal female.Withthe help of a Punnett square, show what will be the progeny.

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51. What is the cause of phenylketonuria? Write symptoms.

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52. Explain the sex-determination mechanism in humans. How is it different in birds?

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53. Why are Grasshopper.and Drosophila said to show male heterogamety? Explain.

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54. Explain female heterogamety with the help of an example.

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55. Describe Mendelian disorders and mention its two types giving suitable examples.

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56. If a true breeding homozygous pea plant with green pod and axial flower as dominant characters is crossed with a recessive homozygous pea plant with yellow seeds and terminal flowers, then what would be the:

genotypes of the two parents

phenotypes and genotype of the F_1 offspring phenotypic distribution ratio in F_2 population?

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57. If a true breeding homozygous pea plant with green pod and axial flower as dominant characters is crossed with a recessive homozygous pea plant with yellow seeds and terminal flowers, then what would be the:

genotypes of the two parents

phenotypes and genotype of the F_1 offspring phenotypic distribution ratio in F_2 population?

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58. If a true breeding homozygous pea plant with green pod and axial flower as dominant characters is crossed with a recessive homozygous pea plant with yellow seeds and terminal flowers, then what would be the:

genotypes of the two parents

phenotypes and genotype of the F_1 offspring phenotypic distribution ratio in F_2 population?

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59. Why is thalassaemia categorised as a Mendelian disorder ? Write the symptoms and explain the cause of the disease. How does it differ from sickle cell anaemia ?

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

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61. What is Down's syndrome? Give its symptoms and cause. Why is it that the chances of having a child with Down's syndrome increases if the age of the mother exceeds forty years?

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62. List the differences between Turner's syndrome and Klenifelter's syndrome.

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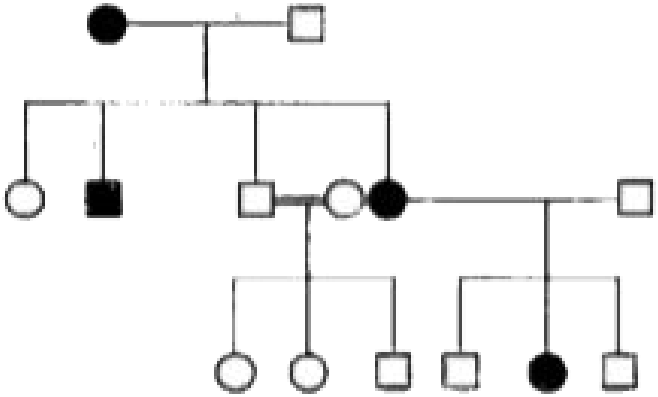
63. In the following pedigree chart, state if the trait is autosomal dominant, autosomal recessive sex linked. Give a reason for your

answer.



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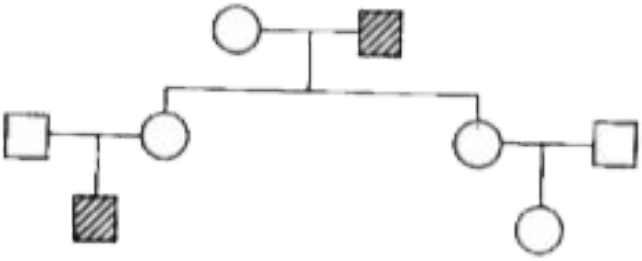
64.



This is the pedigree of a family movement of

the gene for haemophilia. Explain the pattern of inheritance of the disease in the family.

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65. Haemophilia is a sex-linked recessive disorder of humans. The pedigree chart given below shows the inheritance of haemophilia in one family. Study the pattern of inheritance and answer the questions given.

Give all the possible genotypes of the members 4,5 and 6 in the pedigree chart.

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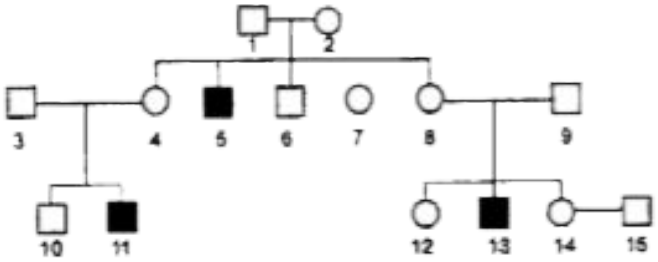
66. Haemophilia is a sex-linked recessive disorder of humans. The pedigree chart given below shows the inheritance of haemophilia in one family. Study the pattern of inheritance and answer the questions given.

A blood test shows that the individual 14 is a carrier of haemophilia. The member number 15 has recently married the member numbered 14. What is the probability that their first child

will be a haemophilic male?



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Long Answer Type Questions

1. State and explain Mendel's law of independent assortment with the help of a dihybrid cross.

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2. Describe quantitative inheritance taking skin colour of man as an example.

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3. What do you understand and by chromosonal disorder? Explain it with the help of three examples.

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4. Explain Mendel's law of segregation with the help of a monohybrid cross.

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5. Why did mendel choose garden pea for his experiments?

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6. How did Mendel make sure that the plants were true breeding?

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7. What are complementary genes? Give one example. Explain their interactions wit the help of cross.

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8. Define crossing over. Explain its types. Also discuss its mechanism.

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9. Define mutation.

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10. Describe in detail chromosomal mutations.

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11. Define pleiotropy.Explain pleiotropy with suitable example.

12. What are induced mutations ? Write about physical and chemical mutagens responsible for induced mutations.

13. Describe chemical and physical mutagens to bring about mutations.

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14. Define gene mutation

Watch Video Solution

15. Explain in detail about the types of gene mutations.

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16. Give two reasons why Mendel chose garden pea for his experiments? Give the biological name of this plant.

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17. List any four symptoms of Down's syndrome. What is the basis of this disorder?

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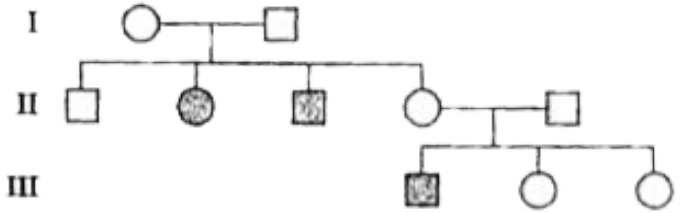
18. Study the given pedigree chart and answer the questions that follow.



Is the trait recessive or dominant ?

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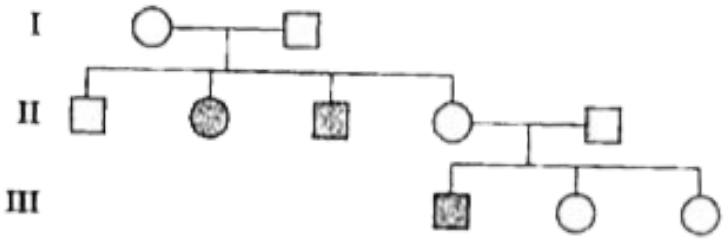
19. Study the given pedigree chart and answer the questions that follow.



Is the trait sex linked or autosomal ?

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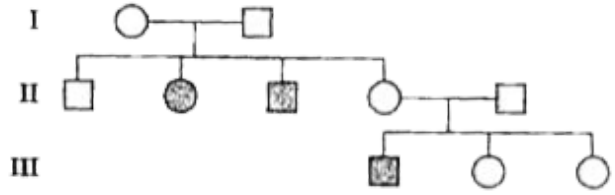
20. Study the given pedigree chart and answer the questions that follow.



Give the genotypes of the parents in generation I and of their third and fourth child in generation II.

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21. A dihybrid heterozygous round, yellow seeded garden pea was crossed with a double recessive plant.

What type of cross is this?

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22. A dihybrid heterozygous round, yellow seeded garden pea was crossed with a double

recessive plant.

Workout the genotype and phenotype of the progeny.

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23. A dihybrid heterozygous round, yellow seeded garden pea was crossed with a double recessive plant.

What principle of Mendel is illustrated through the result of this cross?

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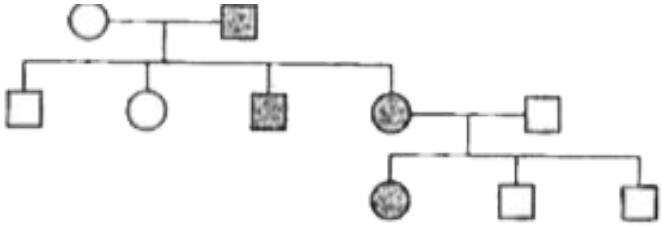
24. Study the given pedigree chart and answer the questions that follow.



Is the trait recessive or dominant ?

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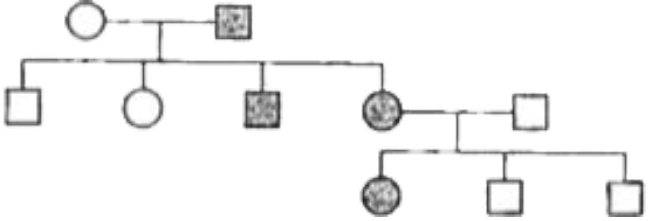
25. Study the given pedigree chart and answer the questions that follow.



Is the trait sex linked or autosomal ?

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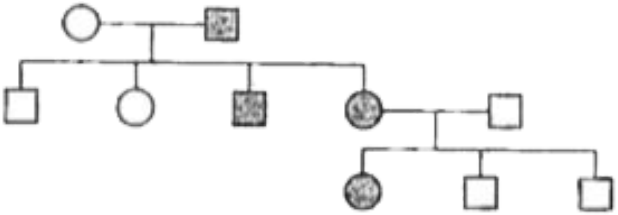
26. Study the given pedigree chart and answer the questions that follow.



Give the genotypes of the parents shown in generation I and their child shown in

generation II and the first grandchild shown in generation III.

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27. Explain the pattern of inheritance of haemophilia in humans. Why the possibility of a human female becoming a haemophilic is extremely rare ? Explain

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28. State the cause and symptoms of Down's syndrome. Name and explain the event responsible for causing this syndrome.

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29. Haemophilia and Thalassaemia are both examples of Mendelian disorder, but show difference in their inheritance pattern. Explain how.

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30. What do you mean by recessively inherited autosomal disorders?

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31. Explain sickle-cell anaemia.

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