BIOLOGY

BOOKS - PRADEEP BIOLOGY (HINGLISH)

PRINCIPLES OF INHERITANCE AND VARIATION

Curiosity Questions

1. Mendel's law of indepndent assortment has one limitation. Which and why?

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2. Why do complete pure lines almost never occur?

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3. Intermediate inheritance is not an instance of pre-Mendelian concept of blended inheritance. Why

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4. How do the blood groupsrevel true parentage in humans ?

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5. Why do slightly more males die than females in the mammals?

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6. Why are bald women rare?

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7. How can X and Y chromosomes differing in size and shape manage to synapse in meiosis?

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8. Why is the human female called a default sex?

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9. Why only males are haemophilics?

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Notable Question

1. What is phenocopy?

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Ncert Exercises With Answers

1. Mention the advantages of selecting pea plant for experiment by Mendel.

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2. Differentiate between the following:

(a) Dominance and Recessive

(b) Homozygous and Heterozygous

(c) Monohybrid and Dihybrid.

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3. A diplod organism is heteroxygous for 4 loci, how many typs of gametes can be produced ?

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4. Explain the Law of Dominance using a monohybrid cross.

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5. Define and design a test – cross?

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6. Using a Punnett square, work out the distribution of phenotypic features in the first filial generation after a cross between a homozygous female and a heterozygous male for a single locus.

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7. When a cross in made between tall plants with yellow seeds (TtYy) and tall plant with green seed (Ttyy), what proportions of phenotype in the

offspring could be expected to be

(a) Tall and green.

(b) Dwarf and green.

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8. Two heterozygous parents are crossed. If the two loci are linked what would be the distribution of phenotypic features in F_1 generation for a dihybrid cross?

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9. Briefly mention the contribution of T.H. Morgan in genetics.

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10. What is pedigree analysis? Suggest how such an analysis, can be useful.

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11. How is sex determined in human beings?

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12. A child has blood group O. If the father has blood group A and mother blood group B, work out the genotypes of the parents and the possible genotypes of the other offsprings.

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13. Explain the following terms with example

(a) Co-dominance

(b) Incomplete dominance

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14. What is point mutation? Give one example.

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15. Who had proposed the chromosomal theory of inheritance?

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16. Mention any two autosomal genetic disorders with their symptoms

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Ncert Exercises Additional Questions Very Short Answer Question

1. Who rediscovered Mendal's laws of heredity?

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2. On which plan did Mendal Work?

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3. How many contrasting traits Mendal noted in garden pea?

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4. Mentain any two of the seven contrasting traits noted by Mendel in gared pea.

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5. Which is dominant, a factor (gene) wrinkeled seeds ?

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6. What do the letters P,F_1 and F_2 reprsent in heredity?

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7. What are Mendel's hypothetical factors called in modern terminology?

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8. What is Mendal's monohybrid ration?

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9. Wirte down Mendal's dihybride ration for phenotypes.

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10. Cite one example of complementary genes.

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11. If the frequency of parental forms is higher than 25% in a dihybride test-cross. What does that indicate about the two genes involved ?

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

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13. What is the full name of the father of genetics?

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14. What is the tendency of the genes located in the same chromosome to stay together in heredity called?

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15. Name the two kinds of linkage.

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16. Why do grey body and red eyes occur in the same individula in Drosophila?

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17. Who showed that the genes lie in the chromosomes?

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18. What will be the sex of the offspring developing from 44 A+xx zygote?

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19. what is a locus

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20. Man produced 2 types of sperms. Is it true?

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21. How many chromatids are involved in crossing over at one chiasma?

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22. How many linkage groups are found in man ?

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23. Who started the scientific study of mutations?

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24. Name the two main types of mutations

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25. Mention the methods which cause morphological modifications of chromosomes

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26. In which two ways numerical changes occur in the chromosomes?

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27. Name three kinds of mutanges. What are mutangens?

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28. What is the location of the gene for haemophilia?

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29. Name the phenomenon that occurs when homologous chromosomes do not separate during meiosis.

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30. Which disorder is caused in man by the presence of one extra sex chromosome?

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31. How many chromosomes a peso with Turner's syndrome has?

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32. Which extra chromosome causes Klinefelter's syndrome?

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33. Name one autosomal dominant and one autosomal recessive Mendelian disorder in humans.

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34. A human being suffering from Down's syndrome shows trisomy of 21st t chromosome. Mention the cause of this chromosomal abnormality.

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35. Female heterogamy is found in

(A) Birds (b)Grasshopper (C) Both (a) and (b) (D) Drosophilia

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36. Male heterogamy is found is (a) Drosophilia (b)Humans (c) Grasshopper

All of these

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37. Define point mutation

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38. What is gene pool ?

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39. By which process there is a gain of segment of DNA which results in alteration in chromosome?

(a) Insertion (b) Duplication (c) Both (a) and (b) (d) Deletion

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40. Colour blindess is a recessive sex-linked trait in which the eye fails to distinguish

(a) Red and gree colours (b) Red and yellow colours (c) Green and blue colours (d) Red and blue colours

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41. A man blames his wife for giving birth to a female child. Who is responsible for the sex of the child, the man or his wife?

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42. What is mutanges?

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43. Write the genotype of offsprings produced between a homozygous blue eyed male (BB) and homozygous blck eyed female (bb)

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44. Name the gentic disorder caused due to the presence of extra chromosome No. 21

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45. Down's syndrome is due to (a) Linkage (b) Sex-linked inheritance (c) Crossing over (d)Non-disjunction of chromosome

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46. A geneticist interested in studying variations and patterns of inheritance in living beings prefers to choose organisms for experiments with shorter life cycle. Provide a reason.

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47. How many chromosomes do drones of honeybee possess ? Name the type of cell division involved in the production of sperms by them.

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48. A male honeybee has 16 chromosomes whereas, its female has 32 chromosomes. Give one reason.

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49. Name the type of cross that would help to find the genotype of a pea plant bearing violet flowers.

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50. Write the sex of a human having XXY chromosomes with 22 pairs of autosomes. Name the disorder this human sufers from.

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Ncert Exercises Additional Questions Short Answer Questions

1. Which terms have been used for the hereditary units and by whom ?

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2. How can a dihybride ratio be derived from monohybride ratio in simple dominstant -recessive crosess?

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3. Define condominant and complementary genes.

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4. How do the back cross and test crss differ?

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5. What is test cross ? How does it differ from a reciprocal cross ?

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6. Under which condition does, the law of independent assortment hold good any why?

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7. Cite a case of incomplete dominance. Which trait in such a case has no gene?

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8. Why Mendel selected pea plant for his experiments?

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9. Name the animal in which sex is determined by number of chromosomes. Who produced the first induced mutation

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10. How do the cross over and noncross over chromatids differ ? Give alternative terms for them alos.

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11. Define linkage.

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12. The human male never passes on the gene for haemophilia to this son. Why ?

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13. A mother with blood group O has a foetus with blood group B.Will there be any problems in the mother or foetus ? If so, specify the

problems

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14. Aman with blood groupAmarried a woman With B greup. They have a son withAB blood group and a daughter with blood group O. Work out the cross and show the possibility of such inheritance.

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15. The male fruit fly and female fowl are heterogametic while the female fruit fly and the male fowl are homogametic. Why are they called so ?

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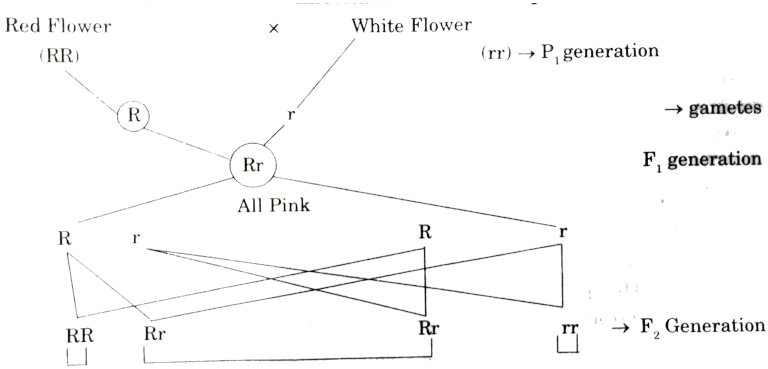
16. Apart of Antirrhinum majus with red flowers was crossed with another plant of the same species with white flowers. The plants of the F_1 generation bore pink flowers . Explain the pattern of inheritance with the

help of a cross.



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17. A women with blood group A married a men with B group . Show the possible blood groups of the progeny . List the alleles involved in this inheritance.

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18. Very briefly explian the following :

(i) Alleles (ii) Dominanet/recessive (iii) Homozygous (iv) Test cross (v) Back cross (vi) Pleiotropy (vii) Test cross (v) Back crosss Pleiotropy (vii) Multiple

alleles (viii) Incomplete (ix) Espistasisis/hypostaisis(x) Genotype (xi) Linkage (xii) Sex limited caracters (xiii) Sex-iunfluenced traits (xiv) Chromosome aberrations (xv) Gene mutation.

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19. Do you think Mendel's Laws of inheritance would have been different in the characters that he chose were located on the same chromosome.

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20. Write about Klinefelter's syndrome alongwiht its symptoms.

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21. Write about Turner's syndrome alongwiht its symptoms

Watch Video Solution

22. Write about Down's syndrome alongwith its symtoms.

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23. Define and design a test – cross?

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

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25. In a cross between two tall pea plants some of the offsprings produced were dwarf. Show with the help of Punnett square how this is possible.

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26. A cross between a red flower bearing plant and a white flower bearing plant of Antirrhinum produced all plants having pink flowers. Work out a cross to explain how this is possible.

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27. In a typical monohybrid cross the F_2-population ratio is written as $3:1$ for phenotype but expressed as $1:2:1$ for genotype. Explain with the help of an example.

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28. Work out a cross to find the genotype of a tall pea plant. Name the type of cross.

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29. How does the gene 'I' control ABO blood grous in humans? Write the effect the gene has on the structure of red blood cells.`

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

i) Female XX with Male XO

ii) Female ZW with male ZZ

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31. A cross was carried out between two pea plants showing the contrasting traits of height of the plant. The result of the cross showed $50\,\%$ of parenal characters.

i) Work out the cross with the help of a Punnett square.

ii) Name the type of the cross carried out.

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32. Differentiate between male and female heterogamety.

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33. Explain the mechanism of Sex-determination in birds.

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34. Differentiate between 'ZZ' and 'XY' type of sex-determination mechanism.

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35. A hemophilic father can never pass the gene for hemophilia to his son. Explain.

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36. State the mendelian principle which can be derived from a dihybrid cross and not from monohybrid cross

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37. What is Mendel's law of dominance?

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38. State Mendel's law of unit characters.

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39. Enunciate mendel's of segregation with the help of a monohybrid cross.

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40. What is does Mendel's law of independent assortment state?

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41. List the characters with their contrasting forms selected by Mendel for his experiments.

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42. What is codominance ? Explain it with suitable example. How does it differ from incomplete dominance?

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43. Point out the reasons for Mendel's success.

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44. Give the purpose and results of a test cross.

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45. CHROMOSOMAL THEORY OF INHERITANCE

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46. Write short notes on multiple alleles.

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47. Write short notes on sex linkage

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48. Distinguish between homozygous and heterozygous individuals. State the conclusion of Mendel from his mono hybrid cross experiment.

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49. What are the various causes of human genetic disorders?

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50. How is sex determined in human beings?

Watch Video Solution

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

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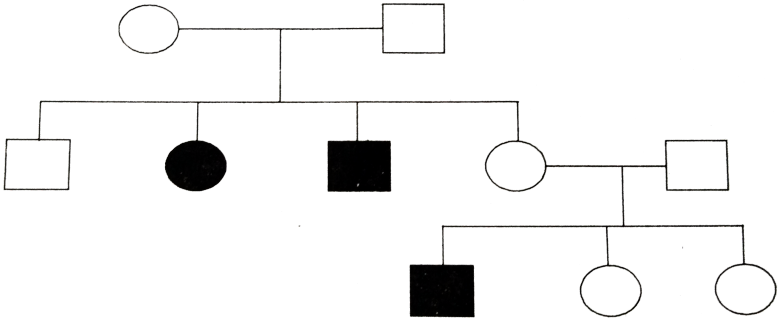
52. Study the given pedigree chart and answer the queation that follow.



(a) In the trait recessive or dominant ?

(b) Is the trait sex-linked or autosomal ?

(c) Give the genotypes of the parants in generation I and of their third and fourth child in generation.

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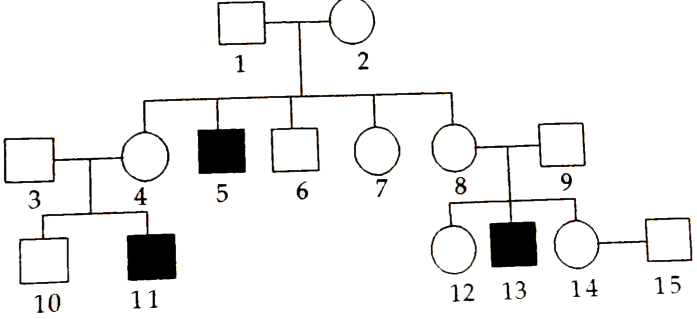
53. Haemophilia is a sex linked recessive disorder of humans. The pedigree chart given below shows the inheritance of Haemophilia in one family. Study the pattern of inheritance and answer the questions given.



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

(b) A blood test shows that the individual 14 is a carrier of gaemophilia. The member numbered 15 has recently married the member numbered 14. What is the probability that their first child will be a haemophilic male ? Show with the help of Punnett square.

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54. Inheritance pattern of ABO blood groups in humans shows dominance. codominance and multiple allelism. Explain each concept with help of blood group genotypes.

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55. During the studies on genes in Drosophila that were sex-linked T.H. Morgan found F2-populabon phenotypic ratios deviated from expected 9 : 3 : 3 : 1. Explain the conclusion he arrived at.

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56. Explain the sex determination mechanisms in human. How is it different from birds?

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57. Explain the mechanism of sex determination in insects like Drosophila and grasshopper.

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58. Fill in the blanks :

(i) The ..... shown by the individuals of a species and also by the ..... of

same parents are referred to as variation

(ii) Germinal variations affect the ..... Cells of the organism and are, consequently, inheritable. On the other hand, somatic variations affect the ..... cells of an organism and are not inheritable.

(iii) Theory of Pangenesis was forwarded by ..... He assumed that tiny representative particles called ..... are formed in each of body part and migrated via blood to the gametes and hence to the offspring to guide the formation of the respective part.

(iv) Mendel's results were rediscovered in 1900 independently by three namely .....,..... and .....

(v) Mendel worked on ..... and gave famous laws of inheritance.

(vi) The phenotypic ratio obtained by mendel in his famous monohybrid cross in F_2 generation was ..... while the genotypic ratio was.....

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59. Match the items given in column I with appropriate items (one or more) of Column II:

	Column I		Column II
(1)	ABO Blood groups in man	(a)	Polygenic inheritance
(ii)	Skin colour in man	(b)	Multiple phenotypic effects
(iii)	Pleiotropy	(c)	Monohybrid cross
(iv)	Law of segregation	(d)	Multiple allelism
		(f)	$9:3:3:1$
		(g)	Codominance

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60. Match the items given in column I with appropriate items (one or more) of Column II:

	Column I		Column II
(1)	Morgan anc Castle	(a)	Sex linkage
(ii)	Morgan	(b)	Transition/Transversions
(iii)	Calvin mutation	(c)	Chromosome theory of Linkage
(vi)	Gene mutation	(d)	Aneuploidy/polyploidy
(v)	Chromosomal aberration	(e)	Genic balance theory of sex determi
		(f)	Deltions/Insertions

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61. In a Mendelian monohybrid cross, the F_2-generation shows identical genotypic and phenotypic ratios. What does it tell us about the nature of

alleles involved? Justify your answer.

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62. Can a child have blood group 'O' if his parents have blood group 'A' and 'B' Explain.

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63. 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 forth years ?

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64. How was it concluded that genes are located on chromosomes?

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65. Discuss why Drosophila has been used extensively for genetical studies?

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66. Describe sickle cell anaemia.

Watch Video Solution

67. Describe haemophilia.

Watch Video Solution

68. Describe phenylketonuria.

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69. Give differencess between dominant and recessive genes in three points

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70. (a) Why is human ABO blood group gene considered a good example of multiple alleles?

(b) Work out a cross up to F_1 generation only, between a mother with blood group A (Homozygous) and the father with blood group B (Homozygous). Explain the pattern of inheritance exhibited.

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71. Why are human females rarely haemophilic? Explain. How do haemophilic patients suffer?

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72. A color-blind 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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73. Mendel published his work on inheritance of characters in 1865, but is remained unrecognized till 1900. Give three reasons for the delay in accepting his work.

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74. A cross between a normal couple resulted in a son who was hemophilic and a normal daugher. In course of time, when the daugther was married to a normal man, to their surprise, the grandson was also hemophilic.

a) Represent this cross in the form of pedigree chart. Give the genotypes of the daughter and her husband.

b) Write the conclusion you draw of the inheritance pattern of this disease.

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75. A teachers wants his/her students to find the genotypes of pea plants bearing purple coloured flowers in their school garden. Name and explain the cross that will make it possible.

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76. During a mohohybrid cross involving a tall pea plant with a dwarf pea plant, the offspring populations were tall and dwarf in equal ratio. Work out a cross to show how it is possible.

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77. Two independent monohybrid crosses were carried out involving a tall pea plant with a dwarf pea plant. In the first cross, the offspring population had equal number of tall and dwarf plants, whereas in the second cross it was different. Work out he crosses, and explain giving reason for the difference in the offspring populations.

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78. The F_2 progeny of a monohybrid cross showed phenotypic and genotypic ratio as 1:2:1 , unlike that of Mendel's monohybrid F_2 ratio. With the help of a suitable example, work out a cross and explain how it is possible.

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79. What is a test cross ? How can it decipher the heterozygosity of a plant ?

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80. During a medical investigation, an infant was found to possess an extra chromosomes 21. Describe the symptoms the child is likely to develop later in the life.

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81. Both Heamophilia and Thalassemia are blood related disorders in humans Write their causes and the the difference between the two . Name the category of genetic disorder they both come under .

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82. Exaplain the mechanism of sex determination in birds. How does it differ from that of human beings ?

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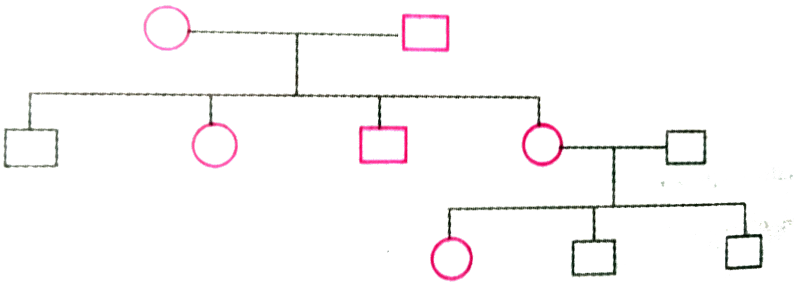
83. Study the given pedigree chart and answer the questions that follow:



(a) Is the trait recessive or dominant?

(b) Is the trait sex-linked or autosomal?

(c) Give the genotypes of the parents show in generation I and their third child shown in generation II and the first gradchild shown in generation III.

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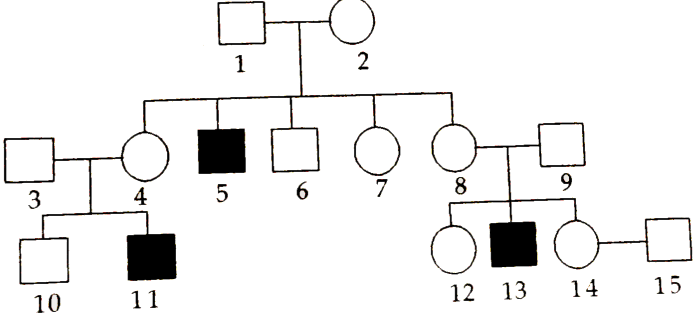
84. Haemophilia is a sex linked recessive disorder of humans. The pedigree chart given below shows the inheritance of Haemophilia in one family. Study the pattern of inheritance and answer the questions given.



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

(b) A blood test shows that the individual 14 is a carrier of gaemophilia. The member numbered 15 has recently married the member numbered 14. What is the probability that their first child will be a haemophilic male ? Show with the help of Punnett square.

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Ncert Exercises Additional Questions Long Answer Questions

1. CHROMOSOMAL THEORY OF INHERITANCE

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2. Write short notes on : (a) incomplete dominance (b) codominance.

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3. Write explanatory notes on : (a) Sickle-cell anaemia (b) Pedigree analysis

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4. Give an account on chromosomal mutations

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5. Describe the various kinds of gene mutations

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6. Write all you know about Klinefelter's syndrome.

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7. Describe Turner's syndrowe

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8. Exaplain the inheritance of haemophilia in man.

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9. Why are haemophilia and red-green colour blindness observed usually in mean? Can woman also develop these disorders ? Exaplain

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10. What is the cytological basis of Down's syndrome ? Explain why babies born to young women seldom show this abnormality.

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11. How would distinguish between klinefelter's syndrome and Turner's syndrome?

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12. A homozygous tall pea plant with green seeds is crossed with a dwarf pea plant with yellow seeds.

(i) What would be the phenotypeand genotype of f_1 ?

(ii) Work out the phenotypic ratio of F_2 generation with the help of a punnet square.

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13. A snapdragon plant homezygous for red flower when crossed with a white flowered plant of the same species produced pink flowers in F_1 generation.

(a) What is the phenotypic expression called ?

(b) Work out the cross to show the F_2 generation when F_1 was self-pollinated. Give the phenotypic and genotypic ratios of f_2 generation.

(c) How do you compare the f_2 phenotypic and genotypic ratios with those of Mendelian monohybrid f_2 ?

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14. Inheritance pattern of flower colour in garden pea plant and sanpdragon differs. Why is difference observed ? Exaplain showing the corsses upto F_2 generation.

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15. A particular garden pea plant produces only violet coloured flowers.

(a) It is homozygous dominant for the trait of heterozygous?

(b) How would you ensure its genotype ? Exaplain with the help of crosses.

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16. (a)You are given tall pea plants with yellow seeds whose genotypes are unknown. How would you find the genotype of theses plants? Exaplain with the help of cross.

Pattern of Inheritance	Monohybrid F_1 phenotype expression
1. Codominance	*a*
2. *b*	The progeny resembled only one of the parents
3. Incomplete dominance	*c*

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17. (a) How does a chromosomal disorder differ from a Medelian disorder?

(b) Name any two chomosomal abberation associated disroders.

(c) List the chomosal abbeatin associated disorders.

(c) Lis the characteristics of the disorders mentioned above.

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18. Explain the causes, inheritance pattern of any two Mendelian disorders.

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19. (a) State the law of independent assortment.

(b) Using Punnett Square demonstrate the law of independent assortment in a dihybrid cross involving two heterozygous parents.

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20. (a) Draw the pedigree of the given family whose ages are given below in the bracket

Normal father	(70)	Carrier mother	(65)	Normal son	(40)
Affected son	(37)	Carrier daughter	(33)	Normal daughter	(30)

(b) If this family can never have an affected girl then with the help of Punnet square method, whether this disease can be phenylketonuria, Yes or No ? (Let dominant allele-A, Recessive allele-a)

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21. In a plant tallenss is dominant over dwarfness and red flower is dominant over white. Starting with the parents work out a dihybrid cross. What is standard dihybrid ratio? Do you think the values would deviate if the two genes in question are interacting wiht each other?

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22. Define aneuploidy. How is it different form polyploidy? Describe the individuals having following chromosomal abnormalities.

(a) Trisomy of 21st Chromosome

(b) XXY

(c) XO

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23. Describe the mechanism of pattern of inheritanc of ABO blood groups in humans.

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24. (a)Why is haemophilia generally obsereved in human male?Explain the conditions under which a human female can be haemophiliac.

(b)A pregnant human female was advised to undergo M.T.P It was diagnosed by her doctor that the foetus she is carrying has developed from a zygote formed by an XX-egg fertilized by Y-carrying sperm.Why was she advised to undergo M.T.P?

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25. Describe codominace.

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26. What is dominace? Why are same alleles dominant and some recessive ?

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27. Descibe sex determination in grasshoper and birds.

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28. Red flowered (RR) plants are crossed with white flowered (rr) Plants. The hetrozygous F_1 resuilted in pink flowers. Exaplain the phenomenon with the help of a cross and write the phenotypic and genotypic ratios.

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29. Explain the following terms with example

(a) Co-dominance

(b) Incomplete dominance

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30. Explain Mendel's law of independent assortment using a dihybrid cross.

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31. Exaplain the inheritance of haemophilia in man.

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32. Exaplain the inheritance of colour blindness in man.

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33. How would distinguish between klinefelter's syndrome and Turner's syndrome?

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34. A child suffering from Thalassemia is born to a normal couple. But the mother is being blamed by the family for delivering a sick baby.

(a) What is Thalassemia ?

(b) How would you counsel the family not to blame the mother for delivering a child suffering from this disease ? Explain

(c) List the values your counselling can propagate in the families.

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35. Explain the mechanism of sex-determination in humans.

b) Differentiate between male heterogamety and female heterogamety with the help of an example of each.

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36. a) Differentiate between dominance and co-dominance.

b) Explain co-dominance taking an exmaple of human blood groups in the population.

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37. (a) Explain Mendel's law of independent assortment by taking a suitable example.

(b) How did Morgan show the deviation in inheritance pattern in Drosophila with respect to this law?

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38. Explain the genetic basis of blood grouping in human populations.

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39. Plan an experiment and prepare a flow chart of the steps that you would follow to ensure that the seeds are formed only from the desired sets of pollen grains.Name the type of experiment that you carried out .

(b) Write the importance of such experimets.

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40. Why are thalassemia and hemophilia categorized as Mendelian disorders ? Write the symptoms of these diseases .Explain their pattern of inheritance in humans.

(b) Write the genotypes of the normal parents producing a heamophilic son.

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41. Why are colourblindness and thalassemia categorised as Mendelian disoders ? Write the symptoms of these disease seen in people suffering

from them.

(b) About 8 % of human male population suffers from colourlindness whereas only about 0.4% of human female population suffers from this disease .Write an explanation to show how it is possible

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42. (a) How are Mendelian inheritance, polygenic inheritance arid pleiotropy different from each other ?

(b) Explain polygenic inheritance pattern with the help of a suitable example.

Watch Video Solution

43. Give a genetic explanation for the following cross. When a tall pea plant with rounds seeds was crossed with a dwarf pea with wrinkled seeds then all the individual of F_1-populations were tall with round seeds. However selfing among F_1-population led to a 9:3: 3:1 Phenotypic ratio.

Watch Video Solution

44. State and exaplain the low of independent and assortment' in a typical Mendelian dihybridc cross.

Watch Video Solution

45. (a) Explain Polygenic inheritance and Multiple allelism with the help of suitable examples.

(b) Phenylketonuria is a good example that explains Pleiotropy Justify.

Watch Video Solution

46. (a) A pea plant bearing axial flowers is crossed with a pea plant bearing terminal flowers. The cross is carried out to find the genotype of the pea plant bearing axial flowers. Work out the cross to show the conclusions you arrive at.

(b) State the Mendel's law of inheritance that is universally acceptable.

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47. Aneuploidy of chromosomes in human beings results in certain disorders. Draw out the possibilities of the karyotype in common disorders of this in human beings and its consequences in individuals.

Watch Video Solution

48. In a dihybrid cross, white eyed, yellow bodied female Drosophila was crossed with red eyed, brown bodied male Drosophila. The cross produced $1 \cdot 3$ percent recombinants and $98 \cdot 7$ progeny with parental type combinations in the F_2 generation. Analyze the above observation and compare with the Mendelian dihybrid cross.

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Analytical Questions With Answers

1. A normal couple gave birth to a child whow was diagnosed as suffering from thalasemia disease. The family blamed the mother for delivering a sick baby. How would you counsel the family not be blame the mother ? Eaplian.

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2. Even if a character shows multiple allelism, an individual will only have two alleles for that character. Why?

Watch Video Solution

3. In our society a woman is often blamed for not bearing male child. Do you thing it is right? Justify.

Watch Video Solution

4. Complete pure lines almost never occur's. Justify the statement giving two reasons.

Watch Video Solution

5. What is criss-cross pattern of inheritanc ? Exaplain this phenomenon with one example.

Watch Video Solution

6. In an article on gentic disorders in humans, there was a mention of superfemales and supermales. Elaborate thee terms.

Watch Video Solution

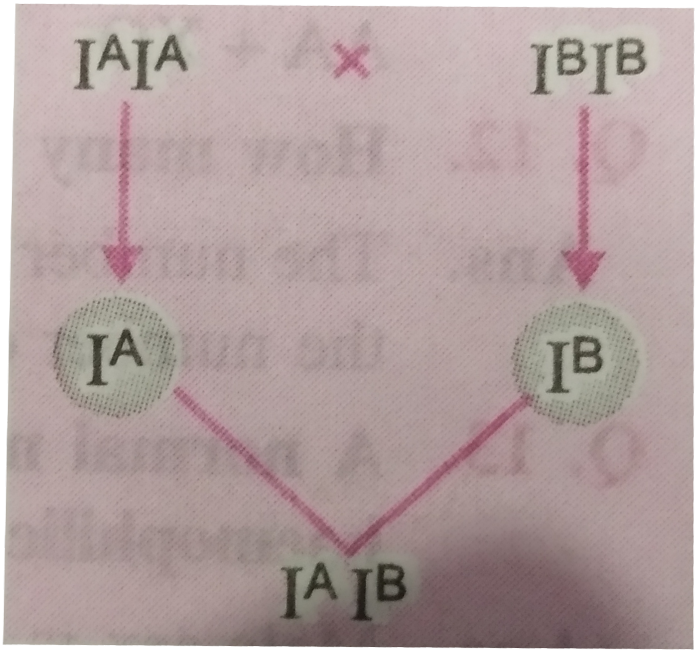
7. Identify the pheonomenon in the following example-

"Sickle cell anaemia is an autosomal receissive trait. It is caused by the

substituation of amoni acid glutamic acid (Glu) by vlaine (val at the sixt position of the beta globin of haemoglobin. This substituatio of amino acid occurs due to a phenomenon is which the sixth codon of beta globinc gene is. transformed from GAAG t GUG"

Watch Video Solution

8. A man having blood A is married with an having blood group B. Work out the genotype of a man and woman if their of the children is born with blood group O. What is the possible genotype of other offsprings.



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9. Flowers of garden pea are bisexual and self pollinated. Therefore, it is difficult to perform hybridization experiment by crossing a particular pistill with the specific pollen grains. How Mendal made it possible in his monohybrid, dihybrid and trihybrid crosses?

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10. Which phenomenon strongly favours the linear arrangement of genes on the chromosomes? Define the phenomenon and give the situation where this phenomenon cannot occur.

Watch Video Solution

11. Determine the genotype of offsprings in a cross between normal male and female cockroaches.

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12. How many linkage groups are present in an organism whose genomic chromosome number is n=8?

Watch Video Solution

13. A normal male marries a carrier female for haemophilia. What is the possibility of male child being haemophilic and what is the probability of female carrier?What is the probability of female child infected?

Watch Video Solution

14. The genes A,B,C and d are located on the same chromosome in such a way that the distance between A and B is 7 map units, between B an C is 2 map is unit, between C and D is. 4.5 units. What is the distance between A and D? What is the porbability of linkage between B and D and between A and D?

Watch Video Solution

15. Morgan (1910) made the following crosses in Drosophila. Write the results of these crosses in F_1 generation.

(a) The white eyed male was crossed with red eyed female.

(b) The females of F_1 generation were crossed with white eyed males.

(c) White eyed females were crossed with red eyed males.

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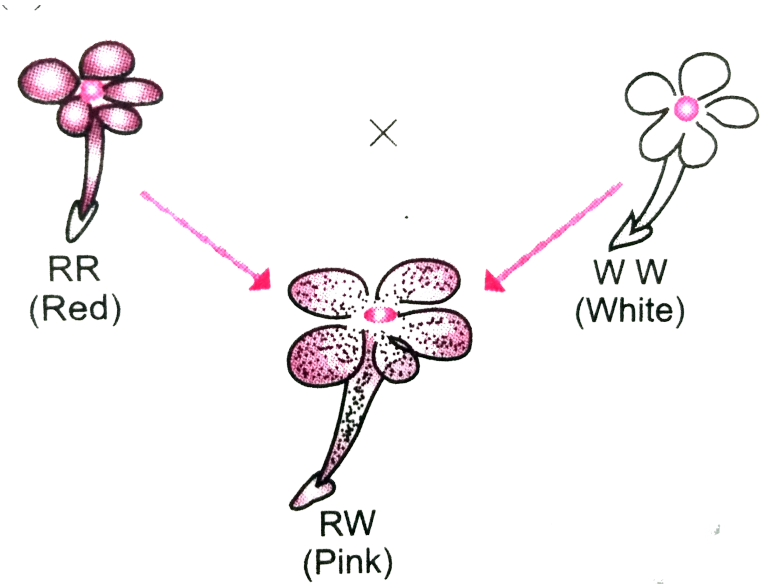


16.

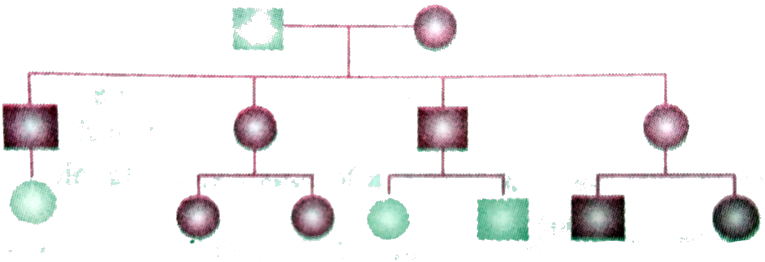
Observe the above figure and answer the following questions-

(a) Name the plant in which the above was made and by whom?

(b) What phenomenon does this cross shows.

Watch Video Solution

17. Identify the type of inheritance shown in the following pedigree diagram



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18. Why is autopolyploidy termed intraspecific polyploidy and allopolyploidy as interspecific polyploidy Comment.

Watch Video Solution

19. In Haemophilia or Bleeders' disease, females are alwas carrier can only males contract the disease. Why?

Watch Video Solution

20. Our country has made tremendous progess in the field of food grain production aften green reveolution. What is green revelotution ? How was it achieved ?

Watch Video Solution

Practice Questions Multiple Choice Questions

1. In pea plants, yellow seeds are dominant to green. If a heterozygous yellow seeds plant is crossed wit a green seeded plant, what ratio of yellow and green seeded plants would you expect in F_1 generation :-

A. $9:1$

B. $1:3$

C. $3:1$

D. $50:50$

Answer: D

Watch Video Solution

2. A human male produces sperms with the genotypes AB, Ab, aB, and ab pertaining to two diallelic characters in equal proportions. What is the corresponding genotype of this person?

A. AaBB

B. AABb

C. AABB

D. AbBb

Answer: D

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3. Mother homozygous B,and father is A.What will be the possible blood group in their progeny ?

A. AB& B

B. AB& A

C. A and B

D. O

Answer: A

Watch Video Solution

4. Turner syndrome is

A. XO

B. XXY

C. XXX

D. XYY

Answer: A

Watch Video Solution

5. In certain cell, recombination can occur during

A. Meiosis

B. Amitosis

C. Mitosis

D. Both (a) and (b)

Answer: A

Watch Video Solution

6. In a monohybrid cross involving incomplete dominance the phenotypic ratio equals the genotypic ratio in F_2 generation. The ratio is

A. $3:1$

B. $1:2:1$

C. $1:1:1:1$

D. $9:7$

Answer: B

Watch Video Solution

7. A tall pea plant with round seeds (TTRR) is crossed with a dwarf wrinkle seeded plant (ttrr). F_1 has tall plants with rounded seeds. What is the proportion of dwarf plants with wrinkled seeds in F_2 generation

A. $\frac{1}{4}$

B. $\frac{1}{16}$

C. 0

D. $\frac{1}{4}$

Answer: C

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8. X-linked recessive gene is

A. Always expressed in male

B. Always expressed in female

C. Lethal

D. Sub lethal

Answer: A

Watch Video Solution

9. Down's syndrome occurs as a result of

A. Trisomy

B. Tetrasomy

C. Autopolyploidy

D. Allopolyploidy

Answer: A

Watch Video Solution

10. Multiple alleles control inheritance of

A. Colour blindness

B. Sickle cell anaemia

C. Blood group

D. Phenylketoneuria

Answer: C

Watch Video Solution

11. Which of the following condition is releated to haemophilia

A. A recesive gene responsible present in the X chromosome

B. A dominant gene responsible present in the X chromosome

C. A responsible dominate gene responsible present in the Y chromosome

D. A respobsible dominant gene present in the autosomal chromosome

Answer: A

Watch Video Solution

12. The plant in which Hugo de Vries introduced the concept of multation

A. Oenothera lamarkiana

B. Pisum sativum

C. Allium cepa

D. Mirabilis jalapa

Answer: A

Watch Video Solution

13. Which of the following conditions in humans is correctly matched with its chromosomal abnormality/linkage

Or

An abnormal human male phenotype involving an extra X- chromosomes in a case of

A. Erythroblastosis foetalis-X-linked

B. Down's sybdrome-44 autosomes +XO

C. Klinefelter's syndrome-44 autosomes +XXY

D. Colour blindeness -Y linked

Answer: C

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14. The phenomenon of a single gene regulating several phenotypes is called ?

A. Multiple allelism

B. Epistasis

C. Incomplete dominance

D. Pleiotropism

Answer: D

Watch Video Solution

15. When a dihybrid cross is fit into a Punnett square with 16 boxes, the maximum number of different phenotypes available are:

A. 8

B. 4

C. 2

D. 16

Answer: B

Watch Video Solution

16. Sex chromosomes of a female bird are represented by

A. XO

B. XX

C. XY

D. ZW

Answer:

Watch Video Solution

17. In a pedigree analysis, $\square = 0$ respresents

A. unrelated mating

B. consanguinous mating

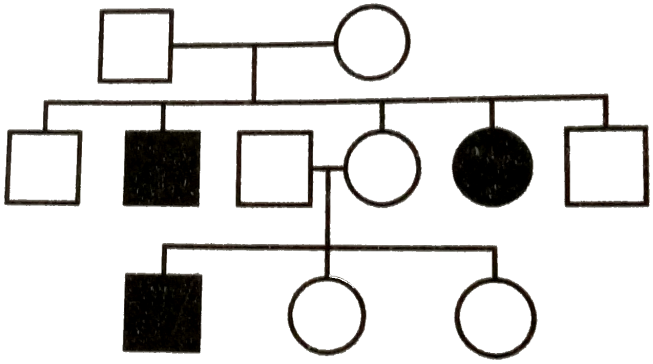
C. affected parents

D. sibilings

Answer: B

Watch Video Solution

18. Study the pedigree chart given below :



What does it know

A. Inheritance of a condition like phenylketonuria as an autosomal recessive trait.

B. The pedigree chart is wrong as this is not possible

C. Inheritance of a recessive sex-linked diseases line haemophilia

D. Inheritance of sex-linked inborn error of metabolism like phenylketonuria.

Answer: A

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19. Sickle cell anaemia is

A. Caused by substitution of valine by glutamic acid in the beta globin chain of haemglobin

B. Caused by a change in a single base pair of DNA.

C. An autosomal linked dominant trait.

D. An autosoma linked dominat trait.

Answer: B

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20. Slelect the incorrect statements from the follwing :

A. Galactosemia is an inborn error of metabolism.

B. Small population size results in random gentic drift in a population

C. Baldness is a sex-linked trait.

D. Linkage is an exception to the principle of indepdent assortment in heredity .

Answer: C

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21. Point (Gene mutation) mutation invlves

A. Change in single base pair

B. Duplication

C. Deletion

D. Insertion

Answer: A

Watch Video Solution

22. Sickle -cell anaemia is:

A. Autosomal dominant inheritance

B. X-linked recessive inheritance

C. Autosomal recessive inheritance

D. X-linked dominant inheritance

Answer: C

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23. Down's syndrome is due to

A. Linkage

B. Sex-linked inheritance

C. Crossing over

D. Non- disjunction of chromosome

Answer: D

Watch Video Solution

24. A character which is expressed in a hybrid is called:

A. Dominant

B. Recessive

C. Co-dominant

D. Epistatic

Answer: A

Watch Video Solution

25. Which of the following is correct ?

A. Haemophilic -Y chromosome

B. Down's syndrom-21 st chromosome

C. Sickle cell anaemia-X chromosome.

D. Parkinson's diseas-X and Y chrosome

Answer: B

Watch Video Solution

26. In seven pairs of contrasting characters in pea plant stydied by Mendel the number of flower based characters was:

A. 1

B. 2

C. 3

D. 4

Answer: B

Watch Video Solution

27. Phenylketonuria is an autosomal recessive disorder located on chrosome

A. 17

B. 16

C. 12

D. 11

Answer: C

Watch Video Solution

28. In Mendel's experiment how many different kinds of seeds are produced from a short plant with wrinkled seeds (ttrr)?

A. 9

B. 4

C. 2

D. 1

Answer: D

Watch Video Solution

29. The X/O syndrome is called

A. Turner's

B. Klinefelter's

C. Down's

D. Cushing's

Answer: A

Watch Video Solution

30. Mendel's law of independent assortment holds good for genes situated on the

A. non homolgous chrosomes

B. homologous cyhromosomes

C. extra nuclear genetic element

D. same chromosome

Answer: A

Watch Video Solution

31. Occasionally, a single gene may express more than one effect. The phenomenon is called

A. Multpile allelism

B. mosacism

C. pleiotropy

D. polygney

Answer: C

Watch Video Solution

32. In a certain taxon of insects some have 17 chromosomes and the others have 18 chromosomes. The 17 and 18 chromosome-bearing

organisms are

A. males and females, respectively

B. females and males, repectively

C. all males

D. all females

Answer: A

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33. The inheritance pattern of a gene over generations amoung human is studied by the pedigree analysis. Character studied in the pedigree analysis is equivalent to

A. quantitative trait

B. Mendelian trait

C. polygenic trait

D. maternal trait

Answer: B

Watch Video Solution

34. It is said thet Mendel proposed that the factor controlling any character is discrete and independen. His proposition was based on the

A. results of F_3 generation of a cross

B. observations that the offsprings of a cross made between the plants having two contrasting characters show only one chyaracter without any biending

C. self pollination of F_1 offsprings

D. cross pollination of parental generations

Answer: B

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35. Two genes 'A' and 'B' are linked. In a dihybrid cross involving these two genes, the F_1 hetrozygote is crossed with homozygous recessive parental type (aa bb). What would be the ratio of offspring in the next generation?

A. $1:1:1:1$

B. $9:3:3:1$

C. $3:1$

D. $1:1$

Answer: A

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36. In the F_2 generation a Mendelian dihybrid cross the number of phenotypes and genotypes are

A. phenotypes-4 , genotypes -16

B. phenotypes -9, genotypes -4

C. phenotypes -4, genotypes -8

D. phenotypes -4, genotypes -9

Answer: D

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37. Mother and father of a person with 'O' blood group have 'A' and 'B' blood group respectively. What would be the genotype of both mother and father ?

A. Mother is homozygous for 'A' blood group and father is heterozygous for 'B'

B. Mother is heterozygous for 'A' blood group and father is heterozygous for 'B'

C. Both mother and father are heteroxygous for 'A' and 'B' blood group, respectively

D. Both mother and father are homozygous for 'A' and 'B' blood group, respectively

Answer: C

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38. Which one of the following cannot be explained on the basis of Mendel's Law of dominance

A. factors occur in pairs

B. discret unit contrilling a particular character is called a factor.

C. out of one pair of factor one is dominant and the other recessive

D. Allelens do not show any blending both characters recover as such in F_2 generation

Answer: D

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39. The genotype of a plant showing the dominat phenotype can be determined by :

A. Back cross

B. Test cross

C. Dihybrid cross

D. Pedigree analysis

Answer: B

Watch Video Solution

40. ABO blood groups in human beings are controlled by the gene I. The gene I has three alleles $-I^A, I^B$ and i. Since there are three different alleles, six different genotypes are possible

How many phenotypes can occur ?

A. Two

B. Three

C. One

D. Four

Answer: D

Watch Video Solution

41. Select the correct statements from the ones given below with respect to dihybrid cross

A. Tightly linked geneson the same chromosome show very few recombinations

B. Tightly linked genes the same chromosome show higher recombinations

C. genes far apart on the same chromosome show very few recombinations

D. genes loosely on the same chromosome show similar recombination as the tightly linked one

Answer: A

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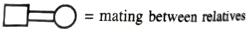
42. Which one of the following symbols and its representation, used in human pedigree analysis is correct

A. (a)  = male affect

B. (b)  = mating between relatives

C. (c)  = unaffected male

D. (d)  = unaffected female

Answer: B

Watch Video Solution

43. A cross between a dominant phenotype with the recessive parent in order ot check its genotype is called

A. Test cross

B. Back cross

C. Monohyrid cross

D. Dihybrid cross

Answer: A

Watch Video Solution

44. Study the given pedigree chart of a certain family and select the correct conclusion which can be drawn for the character

A. the female parent is heterozygous

B. the parents could not have had a norma daughter of this character

C. the trait under study can not be color blindness.

D. the male parent is homoxygous dominat.

Answer: A

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45. Due to the nondisjunctiuon of chromosomes during spermatogenesis, sperms carry both sex chromosomes (22A + XY) and some sperms do not carry any sex chromosome (22A + O). If these sperms fertilise normal eggs (22A + X), what types of genetic disorders appear among the offsprings ?

A. Downs' syndrome and Turner's syndorome

B. Downs syndrome and Cri-du -chat syndrome

C. Turners syndrome and Kleinfelters' syndrome

D. Downs' syndrome and Kleinfelter's syndrome

Answer: C

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46. The main aim of the human genome project is.....

A. is develop better technique for comparing two different human DNA sampels

B. to remove disease causing genes from human DNA

C. to introduce new gene into humans

D. to identify the sequence of all the genes presnet in human DNA

Answer: D

Watch Video Solution

47. Test cross is a cross between:

A. Hybrid X dominant parent

B. Hybride X Recessive parent

C. Hybrid X Hybrid parent

D. Two distantly related species

Answer: B

Watch Video Solution

48. Which of the following conditions is called monosomic?

A. $2n + 1$

B. $2n + 2$

C. $n + 1$

D. $2n - 1$

Answer: D

Watch Video Solution

49. Phenotypic ratio in plant Snapdragon in F_2 is:

A. $1:1$

B. $2:1$

C. $3:1$

D. $1:2:1$

Answer: D

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50. A pea plant parent having violet coloured flowers with unknown genotype was a plant having white coloured flowers in the progeny 50% of the flowers were violet and 50% were white. The genotype constitution of the parent having violet coloured flower was:

A. Homozygous

B. Merzygous

C. Heterozygous

D. Hemizygous

Answer: C

Watch Video Solution

51. The number of linkage group (s) present In Escherichia Coli is :

A. 1

B. 2

C. 3

D. 7

Answer: A

Watch Video Solution

52. Which one of the following conditions correctly describes the manner of determining the sex in the given example

A. homozygous sex chromosomes (ZZ) determine female sex in birds

B. XO type of sex chromosomes determine sex in grasshopper

C. XO condition in humans as found in Turner's syndrome, determines female sex

D. homoxygous sex chromosomes (XX) produce male in Drosophilia

Answer: B

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53. When two unrelated individuals or lines are crossed, the performance of F_1 hybrids is often superior to both its parents. The phenomenon is called

A. heterosis

B. transformation

C. splicing

D. metamorphosis

Answer: A

Watch Video Solution

54. Mutations can be induced with

A. infra red ratiations

B. IAA

C. ethylene

D. gamma radiations

Answer: D

Watch Video Solution

55. A person with unknown blood group under ABO system, has suffered much loss in an accident and needs immediate blood trasfusion. His one friend who has a valid certifacte of his own blood type. What would have been the type of blood group of the donor friend

A. Type B

B. Type AB

C. Type O

D. Type A

Answer: C

Watch Video Solution

56. Test cross in plants or in Drosophila involves crossing

A. between two genotype with recessive trait

B. between two F_1 hybrids

C. the F_1 hybrid with a double recessive genotype

D. between two genotypes with dominant trait

Answer: C

Watch Video Solution

57. Which one of the following conditions of the zygotic cell would lead to the birth of a normal human female child

A. two X chromosomes

B. only one Y chromosome

C. only one X chromosome

D. one X and one Y chromosome

Answer: A

Watch Video Solution

58. F_2 generation in a Mendelian cross showed that both genotypic ratios are same as $1:2:1:1$. It represent a cas of :

A. Co-dominance

B. Dihybrid cross

C. Monohybrid cross with complete dominance

D. Monohybrid cross with incomplete dominance.

Answer: D

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59. A normal visioned man whose father was colour blind, marries a woman whose father was also colour blind .They have their first child as a daughter .What are the chances that this child would be colour blind ?

A. 1

B. zero per cent

C. 0.25

D. 0.5

Answer: B

Watch Video Solution

60. Read statements $a - d$.

(a) In transcription, adenosine pairs with uracil

(b) Regulation of lac operon by repressor is positive regulation

(c) Human genome has approximate 50,000 genes

(d) Haemophilia is sex-linked recessive disease

How many of above statement are correct ?

A. Two

B. Three

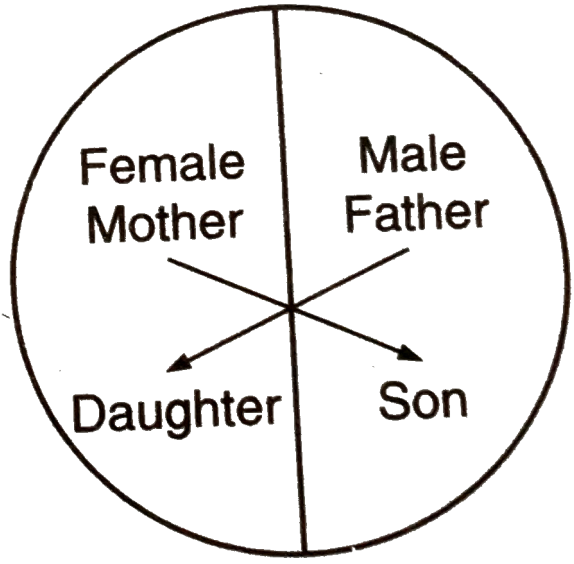
C. Four

D. One

Answer: A

Watch Video Solution

61. Represented below is the inheritance pattern of certain type of traits in humans. Which one of the followings conditions could be an example of the pattern ?



A. Phyenylketonuria

B. Sickel cell anaemia

C. Haemophilia

D. Thalassemia

Answer: C

Watch Video Solution

62. The idea of mutains was brought forth by

A. Hugo de Vries who worked on evening primrose

B. Gregor Mendel who worked on Pisum sativum

C. Hardy Weinberg who worked on allele frequencies in a population

D. Charles Darwin who observed a wide variety of organisms during sea voyage.

Answer: A

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63. Which one of the following is a wrong statement regarding mutations

A. Deletion and insertionof base pairs causes fram-shift mutaions

B. Cancer cell commonly show chromosomal aberrations

C. UV and gamma rays are mutagnes

D. Change in a single bas pair or DNA does not cause mutation

Answer: D

Watch Video Solution

64. Both alleles express in heterozygote when they are

A. lethals

B. co-dominants

C. semi-dominants

D. recessive allele

Answer: B

Watch Video Solution

65. Among the seven pairs of contrasting traits in pea plant as studied by Mendel, the number of traits related to flower, pod and seed respectively were

A. 2,2,2

B. 2,2,1

C. 1,2,2

D. 1,1,2

Answer: A

Watch Video Solution

66. Depending upon the distance between any two genes, which is inversely proportional to the strength of linkage, cross overs will vary from

A. $50 - 100\,\%$

B. $0 - 50\,\%$

C. $75 - 100\,\%$

D. $100 - 50\,\%$

Answer: B

Watch Video Solution

67. Some of the dominant triats studied by Mendel were

A. round seed shape, constricted pod shape and axial flower position

B. green pod colour, inflated pod shape and axial flower position.

C. yellow seed colour, violet flower colour and yellow pod colour

D. axial flower position, green pod colour and green seed colour.

Answer: B

Watch Video Solution

68. The colour based contrasting traits in seven contrasting pairs, studied by Mendel in pea plant were

A. 1

B. 2

C. 3

D. 4

Answer: C

Watch Video Solution

69. In a dihybrid cross where two parents differ in two pairs of contrasting traits like seed color yellow (YY) and seed color green (yy) with seed shape wrinkled (rr) the number of green colo0ured seeds (yy) among sixteen products of F_2 generation will be

A. 2

B. 4

C. 6

D. 8

Answer: B

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70. Which is correct for Turner's syndrome ?

A. It is a case of monosomy

B. It causes strelity in females.

C. Absenece of Bar body

D. All of the above

Answer:

Watch Video Solution

71. If two persons with 'AB' blood group marry and have suffieciently large number of children, these children could be classified as 'A' blood group: 'AB' blood group 'B' blood groyp in 1:2:1 ration. Modern technique of protein electrophoresis reveals presence o fboth 'A' and 'B' type proteins in 'AB' blood group individuals. This is an example of

A. incomplete dominacne

B. partial dominance

C. complete dominance

D. codominance

Answer:

Watch Video Solution

72. Which Mendelian idea is depricted by a cross in which the F_1 generations resembles both the parents?

A. Law of dominance

B. Inheritance of one gene

C. Co-dominant

D. Incomplete dominance

Answer: C

Watch Video Solution

73. If both the parents are carriers for thalassemia which is an autosomal recessive disorder what are fthe chances of pregnancy resulting in an affected child

A. 0.5

B. 0.25

C. 1

D. non chance

Answer: B

Watch Video Solution

74. which of the following statements is not true of two genes that show 50 % recombination frequency ?

A. The genes are tightly kinked.

B. The genes show independent assortment.

C. If the genes are present on the saame crossovers some, they undergo more than one crossovers in every meiosis.

D. The genes may be on different chromosomes

Answer: A

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75. The incorrect statement with regard to haemophilia is

A. it is a recessive disease

B. it is dominant disease

C. a single protein involved in the clotting of blood is affected

D. it is a sex-linked disease

Answer: B

Watch Video Solution

76. Fruit colour in squash is an example of

A. Recessive epsitasis

B. Dominant epistasis

C. Complementary genes

D. Inhibitory genes

Answer: B

Watch Video Solution

77. A man whose father was colour blind marries a woman who had colour blind mother and normal father what precentage of male childeren of this couple will be colour blind

A. 0.25

B. 0

C. 0.5

D. 0.75

Answer: C

Watch Video Solution

78. In a population of 1000 individuals 360 belong to AA, 160 to aa. Based on this data, the frequency of allele A in the population is :

A. 0.4

B. 0.5

C. 0.6

D. 0.7

Answer: C

Watch Video Solution

79. The chromosomal condition in Turner's syndrome is

or A human female with Turner's syndrome

A. has 45 chromosome with XO

B. has on additional X chromosome

C. exhbitis male chracters.

D. is able to produce childer children with normal husband.

Answer: A

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80. A colour blind man marries a woman with normal sight who has no history of colour blindness in her family.What is the probablity of their grandson being colour blind ?

A. $0 \cdot 25$

B. $0 \cdot 5$

C. 1

D. Nil

Answer: B

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81. the term 'linkage' was coined by :

A. W. Sutton

B. T.H. Morgan

C. T. Boveri

D. G. Mende

Answer: B

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82. A pleiotropic gene:

A. Controls multiple traits in an individual

B. Is expressed only in primitive plants

C. Is a gene evolved during Pliocene

D. Controls a triat only in combinantion with another gene

Answer: A

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83. In his classic experiment on Pea plants, Mendel did not use

A. Flower position

B. Seed colour

C. Pod length

D. Seed shape

Answer: C

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84. A gene showing codominance has:

A. Both alleles indepedently expressed in the heterozygote

B. One allele dominant on the other

C. Alleles tightly linked on the same chromosome

D. Alleles that are recessive to each other

Answer: A

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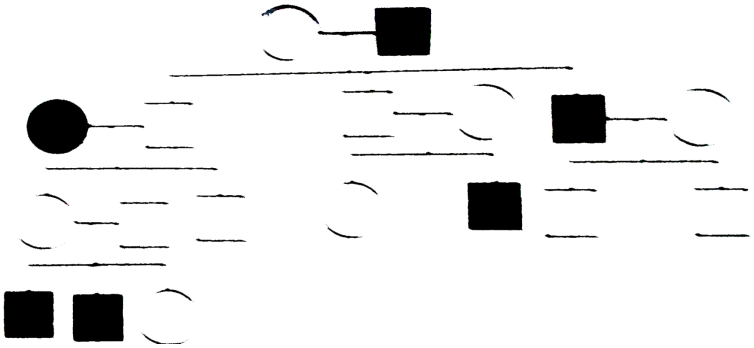
85. In the following human pedigree, the filled symbols represent the affected individuals. Identify the type of given pedigree



A. X-linked dominant

B. Autosomal dominant

C. X-linked recessive

D. Autosomal recessive

Answer: D

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86. A colour blind man marries with a daughter of colour blind father, generation will be

A. there will be no daughter colour blind

B. all sons will be colour blind

C. all daughters will be colour blind

D. half sons will be colour blind

Answer: D

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87. In a plant, red fruit (R) is dominant over yellow fruit (r) and tallness (T) is dominant over shortness (t). If a plant with RRTt genotype is crossed with a plant that a rrtt:

A. 25% will be tall with red fruit

B. 50% will be tall with red fruit

C. 75% will be tall with red fruit

D. All of the offspring will be tall with red fruits

Answer: D

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88. In a testcross involving F_1 dihybrid flies, more parental-type offspring were produced than the recombinant-type offspring. This indicates:

A. Chromosomes filed to separate during meiosis

B. The two genes are linked and present on the same chromosom

C. Both of the chracters are controlled by more than one gene

D. The two genes are located on two different chromosomes

Answer: B

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89. Match the terms in column I with their description in column II and choose the correct option:

	Column I		Column II
A	Dominance	(i)	Many genes govern a single character
B	Codominance	(ii)	In a heterogygous organism only one allel
C	Peiotropy	(iii)	In a heterozygous organism both alleles e
D	Polygenic inheritance	(iv)	A single gene influences many characters

A. (a) (b) (c) (d)
(ii) (iii) (iv) (i)

B. (a) (b) (c) (d)
(iv) (i) (ii) (iii)

C. (a) (b) (c) (d)
(iv) (iii) (i) (ii)

D. (a) (b) (c) (d)
(ii) (i) (iv) (iii)

Answer: A

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90. A cell at telophase stage is observed by a student in a plant brought from a field. He tells his teacher that this cell is not like other cells at telophase stage. There is no formation of cell plate and thus the cell containing more number of chromosomes as compared to other dividing cells. This would result in

A. Polyploidy

B. Somachlonal variation

C. Polyteny

D. Aneuploidy

Answer: A

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91. Which of the following most appropriately describes haemophilia ?

A. X-linked recessive gene disorder

B. Chromosomal disorder

C. Dominant disorder

D. Recessive gene disorder

Answer: A

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92. A tall true breeding garden pea plant is crossed with a dwarf true breeding garden pea plant. When the F_1 plant were selfed the resulting genotypeswere in the ratio of

A. $1:2:1$ :: Tall heterozygous : Tall homozygous : Dwarf

B. $3:1::$ Tall :Drarf

C. $3:1::$ Dwafr: Tall

D. $1:2:1::$ Tall homozygous : Tall heteroxygous : Dwarf

Answer: D

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93. Pick out the correct statements

(A) Haemophilia is a sex-linked recessive disease

(B) Down's syndrome is due to aneuploidy

(C) Phenylketonuria is an autosmal recessive gene disorder

(D) Sickle cell anaemia is a x-linked recessive gene disorder

A. (2) and (4) are correct

B. (1),(3) and (4) are correct

C. (1),(2) and (3) are correct

D. (1) and (4) are correct

Answer: C

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94. A true breeding plant is:

A. one that is able to breed on its own

B. produced due to cross-pollination among unrelated plants

C. near homozygous and produced offspring of its own kind

D. always homozygous recessive in its genetic constitution

Answer: C

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95. If a colour blind man marries a woman who is homozygous for normal colour vision,the probability of their son being colour blind is :

A. 0

B. 0.5

C. 0.75

D. 1

Answer: A

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96. A molecule that can act as a genetic material must fulfill the traits given below, except

A. it should be able to express itself in the from of Mendelian characters

B. it should be able to generate its replica

C. is should unstable structurally and chemically

D. it should provided the scope for new changes that are required for evolution

Answer: C

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97. the mechanism that causes a gene to move from one linkage group to another is called :

A. inversion

B. Duplication

C. translocation

D. crosing-over

Answer: C

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98. Thalassemia and sickle cell anemia are caused due to a problem in globin molecule synthesis. Select the correct statement

A. Both are due to a quantitative defect in globin chain synthesis

B. Thalassemia is due ot less synthesis of globin molecules

C. Sickle cell anaemia is due to a quantitative problem of globin molecules

D. Both are due to a qualitative defect in globin chain synthesis

Answer: B

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99. The genotypes of husband and wife are $I^A I^B$ and $I^A i$. Among the blood groups of their children how many different genotypes and phenotypes are possible

A. 3 genotypes , 4 phenotypes

B. 4 genotypes , 3 phenotypes

C. 4 genotypes , 4 phenotypes

D. 3 genotypes , 3 phenotypes

Answer: B

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100. A disease caused by an autosomal primary non-disjunction is

A. Klinefelter's syndrome

B. Turner's syndrome

C. sickle cell anemia

D. Down's syndrome

Answer: D

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101. Among the following characters, which one was not considered by Mendel in his experiment on pea

A. Trichomes-Glandular or non-glandular

B. Seed-Green or yellow

C. Pod-Inflated or constricted

D. Stem-Tall or dwarf

Answer: A

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102. Which one from those given below is the period for Mendel's hybridisation experiments

A. 1840-1850

B. 1857-1869

C. 1870-1877

D. 1856-1863

Answer: D

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103. Selecte the correct statement.

A. Franklin Stahl coined the term "linkage"

B. Punneet square was developed by a British scientist

C. Spliceosomes take part in translation

D. transduction was discovered by S. Altman

Answer: B

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104. Which of the following pairs is wrongly matched?

A. Strach synthesis in pea : Multiple alleles

B. ABO blood grouping : Co-dominance

C. XO type sex determinattion : Grasshopper

D. T.H. Morgan : Linkage

Answer: A

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105. Which of the following characteristics represent 'Inheritance of blood groups' in humans?

a. Dominance

b. Co-dominance

c. Multiple allele

d. Incomplete dominance

e. Polygenic inheritance

A. (ii),(iii) and (v)

B. (i),(ii) and (iii)

C. (ii), (iv) and (v)

D. (i) , (iii) and (v)

Answer: B

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106. A woman has an X-linked condition on one of her X chromosomes. This chromosomes can be inherited by

A. only daughters

B. only sons

C. only grandchildren

D. both sons an daughters

Answer: D

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Assertion Reason Type Questions

1. Assertion : Drosophila melangaster is widely used in genetic reserch.

Reason : Droshophila melanogaster is a readily availbble insect.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: C

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2. Assertion : A gamete contains a single allele for each trait.

Reason : During gametogenesis, the two alleles of each trait segregate, on passing into each gamete at random.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: A

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3. Assertion : In four -O' clock or snapdragon plant, a cross between a homozygous white-flowered individual and a homozygos red-flowered one produces pink-flowered plants.

Reason : In thes plants, the flower colour is determined by three alleles.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: C

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4. Assertion : In a person with AB blood group, the erthrocyes carry both A and B antigenes on their surface.

Reason : The allels I^A and I^B, that produe AB blood group, are codominant and both are expressed.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: A

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5. Assertion : It is not possible for human parents heterozygous for skin colour to have children darker or lighter than themselves.

Reason : Human skin colour is controlled by a single pair of alleles.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: D

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6. Assertion : The person heterozygous for sickle- cell trait produces both normal $\left(Hb^A\right)$ and abnormal haemoglobin $\left(Hb^S\right)$.

Reason : Huamn normal allele and the sickle allele are codominant.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: A

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7. Assertion : Muatations are necessary for the survial to the species.

Reason : Lack of mutation gives a temporary advantage to a species in an uncyhanged environment.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: A

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8. Assertion : Frequency of crossing overs is higher then the observed frequency of recombinatin of traits in the offsprings.

Reason : More than one cross over many occur simultaneously between the same chromatids.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: A

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9. Assertion : Addition or deletion of a base from a gene produce entirely a new polypeptide.

Reason : Substitution mutation replaace a single amino acid in a polypeptid.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: B

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10. Assertion : Man has 23 linkage groups and fruit fly only 4.

Reason Man has 46 chromosomes and fruit fly only 8.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: A

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11. Assertion : In honeybee, female is diploid and male is haploid.

Reason : Gametes are formed by meiosis in female and by mitosis in male.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: B

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12. Assertion : The defect callled erythroblastosis foetalis results if Rh-negative mother carreis a second Rh- position foetus.

Reason : Replacement of the infanct's blood immediately after birth often cures the defect.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: B

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13. Assertion : Haemophilia shows cirss-cross inheritacne.

Reason : The gene that causes haemophilia is recessive and lies in the sex (X) chromosome.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: A

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14. Assertion : A woman is capable of sueing a man of refusing to own a child, who has blood group O. The man has blood group B and woman has A.

Reason : She is right as genetically, he can be the father of the child.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: A

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15. Assertion : Eukaryotic cells have more DNA than prokaryotic cells.

Reason : Eukaryotes are more complex than prokaryotes genetically.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false

D. If both A and R are false

Answer: A

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