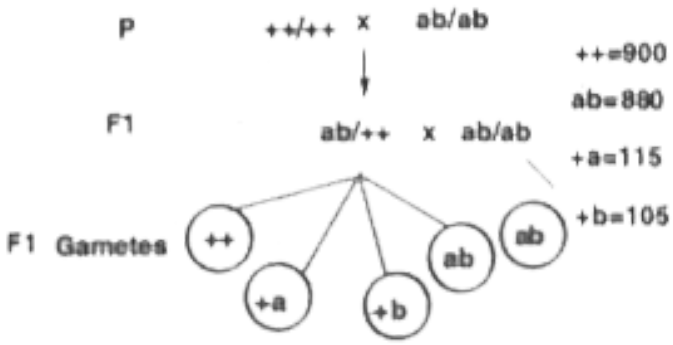
BIOLOGY

BOTANY AND ZOOLOGY FOR NEET AND AIIMS

PRINCIPLES OF INHERITANCE AND VARIATION

Model Problem

1. Individuals homozygous for ab genes were crossed with wild type (++). The F_1 hybrid thus produced was test crossed. It produces progeny in following proportion.



Now, calculate the distance between a and b genes.

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2. The following results are obtained in several dihybrid test crosses in an organism considering three genes loci Aa,Bb and Cc.

a. In test cross with AaBb the number of recombinants and parental combinations are 50 and 950 respectively.

b. In TC with AaCc the number of Rc and PC are 75 and 425 respectively.

c. In TC with BbCc the number of RC and PC are 160 and 640 respectively.

basing on the above result identify the gene

loci of the three genes /prepare a genetic map of the three genes.

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Exercise I

1. The process of transmision of parental characters to the offspring is

A. Variations

B. Heredity

C. Mendelism

D. Hybridization

Answer: B

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2. Characteral resemblances among same progeny and also with their parents is possible. The reason is

A. Lack of segregation

B. Gene cloning

C. Inheritance

D. Gene revolution

Answer: C

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3. The difference in characters among same progey is due to

A. variations

B. gene manipulation

C. cloning of genes

D. lack of alleles

Answer: A

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4. The main casuse for the discovery of laws of heredity by Mendel.

A. He analysed every trait independently

B. He was lucky that he did not come across linkage

C. His plants were true breeding

D. All of the above

Answer: D

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5. Mendel called the fundamental physical unit of heredity as

A. Gene

B. Unit factor

C. Cistron

D. Operon

Answer: B

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6. The year 1900 was important for generation because of

A. Discovery of gene

B. Discovery of linkage

C. Chromosomal basis of heredity

D. Rediscovery of Mendel's work

Answer: D

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7. Mendel published the results of his experiments in

A. 1866

B. 15687

C. 1921

D. 1773

Answer: A

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8. Mendel's work was rediscovered by

A. Charles Darwin

B. T.H. Morgan

C. K.Correns, Tsechermak and H.de Vries

D. W.Bateson and R.C. Punnett.

Answer: C

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9. The first fruitful results in the study of inheritance of biological traits were obtained by

A. Shull

B. T.H. Morgan

C. G.J. Mendel

D. Punnet & Bateson

Answer: C

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10. The following well known Indian breeders developed through selection process

A. Ongole bulls

B. Sahiwal cows

C. Sahiwal bulls

D. 1 & 2

Answer: D

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11. During sexual reproduction, characters are transmitted through

A. Any vegetative cell

B. Gametes

C. Propagules

D. Clones

Answer: B

12. Number of pairs of characters used by Mendal during his experiments were

A. Ten

B. Six

C. Seven

D. Two

Answer: C

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13. Which of the following characters of Pea was not studied by Mendel?

A. Length of stem

B. Colour of plant

C. Shape of pod

D. Colour of pod

Answer: B

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14. The herediatary variations are due to

A. Asexual reproduction

B. Sexual reproduction

C. Vegetative reproduction

D. All of these

Answer: B

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15. Which term represents a pair of contrasting characters?

A. Homozygous

B. Heterozygous

C. Complementary genes

D. Allelomorphs

Answer: D

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16. Alleles are:

A. Homologous chromosomes

B. Linked genes

C. Doinant genes

D. Alternate forms of a gene

Answer: D

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17. The location of a particular gene of a given chromosome is ?

A. Gene pool

B. Genotype

C. Genetic kelp

D. Gene locus

Answer: D

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18. When the maternal and paternal chromosomes of a homologous pair carry identical alleles at the same locus, the organism is

A. Homozygote

B. Holozygote

C. Heterogygote

D. Hemizgote

Answer: A

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19. When the maternal and paternal chromosomes carry different alleles at the same locus, the genotype is called

A. Heterozygote

B. Heterozygous

C. Heterokont

D. Heterokaryotic

Answer: B

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20. In Pisum sativum experimental error is minimum because

A. They are self pollinated

B. The hybrids produced are fertile

C. Large number of off spring is obtainded

D. They are pure lines

Answer: C

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21. Match the following and select the correct option

List - I	List - II
A) Color of pod	I) Yellow
B) Color of flower	II) Green
C) Color of cotyledon	III) White
D) Color of seed coat	IV) Grey
	V) Violet

The correct match is

A. $\begin{matrix} A & B & C & D \\ I & V & II & IV \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ II & II & I & IV \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ II & V & I & I \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ II & V & I & III \end{matrix}$

Answer: C

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22. All allelomorphic pair implies

A. a pair of contrasting characters

B. a pair of non contrasting characters

C. any two characters

D. sex linked characeters

Answer: A

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23. Laws of inheritance are the base to the scientific explanation of

A. Heredity

B. Variations

C. Eugenics

D. 1 and 2

Answer: D

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24. A cross was made between tall and dwarf plant. In F_1 plants were selfed, thetall and dwarf plants appeared in 3:1 ratio in F_2 generation. This phenomenon is known as

A. Dominance

B. Segregation

C. Hybridization

D. Crossing over

Answer: B

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25. The trait that is expressed in homozygous and heterozygous conditions

A. Codominant trait

B. Dominant trait

C. Recessive trait

D. Incomplete dominant trait

Answer: B

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26. Dwarf pea was treated with gibberellic acid. It became as tall pea plants. If these pea plants are crossed with pure tall plants. What will be the phenotype ratio in F_2 generation?

A. All dwarf plants

B. 50 % tall and 50% dwarf plants

C. 75% tall and 25% dwarf plants

D. 100% tall plants

Answer: C

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27. Which of the following crosses would result in 1:2:1 F_2 ratio?

A. Yyxxyy

B. YyxxYy

C. Yyxxyy

D. Yyxxyy

Answer: D

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28. If the frequency of a recessive phenotype in a stable population is 25%, the frequency of the dominant allelle in that popualation is:

A. 0.5

B. 0.75

C. 0.25

D. 0.1

Answer: A

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29. A red flowered plant when crossed with white flowered plant, it gave red flowered plants in F_1 generation. The gene for red colour is considered as:

A. Recessive

B. Assorted

C. Sex-linked

D. Dominant

Answer: D

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30. What is the probability of the genotype (a) in F_2 progeny of the selfed F_1 plant?

A. 44200

B. 44198

C. 44259

D. 44230

Answer: A

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31. In a typical monohybrid coss % of F_2 resembling the F_1 phenotypically

A. 100

B. 75

C. 50

D. 25

Answer: B

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32. In a typical monohybrid coss % of F_2 resembling the F_1 phenotypically

A. 100

B. 75

C. 50

D. 25

Answer: C

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33. In a typical monohybrid coss % of F_2 resembling the F_1 phenotypically

A. 100

B. 75

C. 50

D. 25

Answer: D

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34. In a typical monohybrid coss % of F_2 resembling the F_1 phenotypically

A. 100

B. 75

C. 50

D. 25

Answer: B

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35. Percentage of pure individuals in F_2 of a monohybrid cross

A. 100

B. 75

C. 50

D. 25

Answer: C

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36. The ratio of homozygous and hetrozygous organisms in the F_2 of monohybrid corss

A. $1:1$

B. $3:1$

C. $1:3$

D. $1:2$

Answer: A

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37. The ratio between the number of kinds of homozygous genotypes and the number of kinds of heterozygous genotypes in the F_2 of monohybrid cross

A. $1:1$

B. $1:2$

C. $1:2:1$

D. $2:1$

Answer: D

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38. The ratio of homozygous violet color flower pea plants and hetrozygous violet coour flower pea plants obtained in the F_2 generation of a typical Mendelian monohybrid cross is

A. $3:1$

B. $1:1$

C. $1:2$

D. $2:1$

Answer: C

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39. When a green pod containing pea plant is crossed with a yellow pod containing pea plant in the progeny yellow pod containing

plants are also produced, so green pod containing plant is

A. only heterozygous

B. only homozygous

C. may be homozygous or heterozygous

D. may be homozygous

Answer: A

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40. What shall be the genotypic ratio in F_2 generation of monohybrid cross?

A. $3:1$

B. $1:2:1$

C. $1:1:1$

D. None of the above

Answer: B

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41. How many different kinds of gemetes are produced by the F_1 offspring from a cross between pure strain of plants with yellow peas and a pure strain of plants with green peas?

A. 1

B. 2

C. 3

D. 8

Answer: B

42. A true breeding tall pea plant crossed with the true breeding drawf plant gave F_1 selfing resulted in 787 tall and 277 dwarf plants in F_2 generation. The F_1 plants are

A. Homozygous

B. Heterozygous

C. Azygous

D. Polyzygous

Answer: B

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43. Law of dominance and recessivenes was the result of

A. Back -cross

B. Incomplete dominance

C. Dihybrid cross

D. Monohybrid cross

Answer: D

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44. The geometrical devic that helps in visualizing all the possible combinationsof male and female gametes is known as

A. Batgeson square

B. Morgan square

C. Punnett square

D. Mendel square

Answer: C

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45. The characters that are expressed in the first generation are called

A. Dominant characters

B. Recessive characters

C. Both recessive and blend characters

D. None of the above

Answer: A

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46. Mendel's principle of seggregation was based on the separation fo alleles in the garden pea during:

A. Embryonic development

B. Seed formation

C. Gamete formation

D. Pollination

Answer: C

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47. Progency are phenotypically and genotypically similar in

A. F_2 generation

B. F_3 generation

C. F_4 generation

D. F_1 generation

Answer: D

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48. In the monohybrid cross the F_1 hybrid produces two kinds gameters each with only one character. It is explained as

A. Inherited factor

B. Purity of gametes

C. Alleles

D. Heterozygous

Answer: B

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49. How many types of combinations of gametes are possible in a monohybrid F_1 parents

A. Two

B. Four

C. Six

D. Eight

Answer: A

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50. Mendel's law of segregation is based upon the F_2 ratio of:

A. $1:2$

B. $3:1$

C. $9:3:3:1$

D. $1:1$

Answer: B

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51. The postulate of Mendel that cannot be explained with monohybrid cross

A. Unit factors in pairs

B. Dominance /recessive

C. Segregation of unit factors

D. Independent assortment of unit factors

Answer: D

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52. The genotype of a dominant phenotype

A. Only homozygous

B. Only heterozygous

C. Either homozygous or heterozygous

D. Neither homozygous nor heterzygous

Answer: C

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53. Match following columns and identify the correct match.

Column - I	Column-II
A) Monohybrid cross	p) T and t
B) Test cross	q) TT
C) Alleles	r) TT X Tt
D) Homozygous tall	s) tt
	t) TT X Tt

A. A=r,B=p,C=t,D=q

B. A=r,B=t,C=p,D=q

C. A=r,B=t,C=s,D=q

D. A=t,B=r,C=q,D=s

Answer: B

54. A gamete normally contants

A. many alleles of a gene

B. all alleles of a gene

C. two alleles of a gene

D. one allele of a gene

Answer: D

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55. Cooured seed coat (S) is dominant over white seed coat (s). When a white seed coat (ss) plant is crossed with coloured seed coat (Ss) plant the seed coat colour of newly developed plant will be

A. White

B. Coloured

C. Coloured and white in the ratio of 1:1

D. Mosaic

Answer: C

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56. When a gerey color seed producing pea plant is crossed to white color seed producing pea plant, in the progeny 164 grey seed producing and 156 white seed producing plants are obtained. This cross is

A. Receprocal cross

B. Test cross

C. Incomplete dominance

D. Codominance

Answer: B

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57. A cross between F_1 plant with a plant which is phenotypically and genotypicallysimilar to any parent is called

A. Test cross

B. Back cross

C. Hybrid cross

D. Imbred cross

Answer: B

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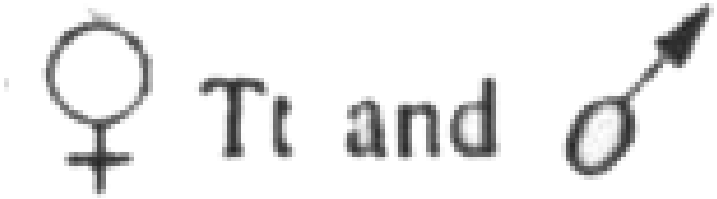
58. Total types of gametes produced in monohybrid back cross



plants

A. One

B. Two

C. three

D. None

Answer: C

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59. The genotypic ratio an phenotyti ratio of back cross and test cross of a mendelian monohybrid respectively

A. 3:1 and 1:1

B. 1:1 and 1:1

C. 1:3 and 3:1

D. 1:2 and 1:1

Answer: B

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60. Identify the cross in which the genotypic ratio of F_2 is 1:2:1

A. Monohybrid cross

B. Codominance

C. Incomplete dominance

D. All these

Answer: D

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61. The phonotypic ratio of incomplete dominance in F_2 is

A. $3:1$

B. $1:2:1$

C. $1:3$

D. $1:1$

Answer: B

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62. The phenotypic ratio of co dominance in F_2 is

A. $3:1$

B. $1:2:1$

C. $1:1$

D. $1:3$

Answer: B

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63. MN blood type is an example for

A. Incomplete dominance

B. Codominance

C. Partial dominance

D. Complete dominance

Answer: B

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64. More than two allelic forms existing for certain genes is termed as

A. Pleiotropy

B. Polygenic traits

C. Epistasis

D. Multiple alleles

Answer: D

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65. The following pair of human blood group alleles are codominant.

A. $I^O I^O$

B. $I^A I^O$

C. $I^B I^O$

D. $I^A I^B$

Answer: D

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66. In multiple allele system, a gamete has alleles

A. One

B. Two

C. Three

D. Many

Answer: A

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67. The genotype of blood group 'A' is

A. $I^A I^A / I^A I^O$

B. $I^B I^B / I^B I^O$

C. $I^A I^B$

D. $I^O I^O$

Answer: A

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68. The genotype of blood group 'B' is `

A. I^AI^A/I^AI^O

B. I^BI^B/I^BI^O

C. I^AI^B

D. I^OI^O

Answer: B

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69. The genotype of blood group 'AB' is `

A. I^AI^A/I^AI^O

B. I^BI^B/I^BI^O

C. I^AI^B

D. I^OI^O

Answer: C

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70. The genotype of blood group O is

A. I^AI^A/I^AI^O

B. I^BI^B/I^BI^O

C. $I^A I^B$

D. $I^O I^O$

Answer: D

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71. The number of types of blood group phenotypes that can be produced by the human blood groups alleles A,B, and O is

A. One

B. Two

C. Three

D. Four

Answer: D

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72. The number of types of genotypes that can be produced by the multiple alleles A, B, O that determine human blood groups is

A. Three

B. Four

C. Five

D. Six

Answer: D

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73. Blood trasfusion is not possible between

A. O (donar)-A(recipient)

B. O(donar)-B(recipient)

C. O(donar)-AB(recipient)

D. O(recipient)-AB(donar)

Answer: D

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74. The following blood group is called universal donar

A. A

B. B

C. AB

D. O

Answer: D

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75. The following blod group is called universal recipient

A. A

B. B

C. AB

D. O

Answer: C

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76. Each of the progeny have 25% chance of their blood group being O/A/B/AB when their parents are

A. $A \times AB$

B. $O \times AB$

C. $A \times B$

D. $AB \times AB$

Answer: C

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77. A,AB and B blood groups are formed in $1:2:1$ ratio by

A. $I^AI^B \times I^AI^B$

B. $I^AI^B \times I^AI^B$

C. $I^BI^O \times I^AI^B$

D. All these

Answer: B

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78. A couple has only A and O blood group children in 3:1 ratio if father's blood group is A, mother's blood group is

A. O

B. A

C. A or O

D. B

Answer: B

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79. Genotype of A-group fatehr of O-group child would be

A. $I^A I^A$

B. $I^A i$

C. $I^A I^B$

D. ii

Answer: B

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80. An O-group child cannot have parents of blood groups.

A. B and B

B. A and B

C. O and O

D. AB and O

Answer: D

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81. A gene incluencing many traits is

A. Additive

B. Pleiotropic

C. Epistatic

D. Supplementary

Answer: B

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82. Source of mendelian recombinations is

A. Linkage

B. Independent assortment

C. Mutations

D. Dominant traits

Answer: B

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83. Sickle cell anaemia is an example of

A. Epistasis

B. Codominance

C. Pleiotropy

D. Incomplete dominance

Answer: C

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84. In a cross of four O'clock plants in the progeny half pink flower plant and halt white flower plants are produced, the genotype of plants crossed is

A. $R^1R^1 \times R^2R^2$

B. $R^1R^2 \times R^1R^2$

C. $R^1R^2 \times R^2R^2$

D. $R^1R^1 \times R^1R^1$

Answer: C

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85. In pisum sativum pleiotropic factor influences

A. The color of flower and the color of pod

B. The color of pod and the color of cotyledon

C. The color of seed coat the color of flower

D. The color of cotyledon and the color of seed coat

Answer: C

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86. If a plant is heterozygous tall and produced tall as well as dwarf in F_2 generation it represents the law of

A. Dominance

B. Purity of gametes

C. Independent assortment

D. Free recombination

Answer: C

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87. Which of the following depicts phenotypic ratio of dihybrid cross?

A. $3:1$

B. $9:3:3:1$

C. $3:4$

D. $9:4:4:2$

Answer: B

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88. Independent assorment of Mendel was under in framing

A. Monohybrid cross

B. Incomplet dominance

C. Dihybrid cross

D. Back cross

Answer: C

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89. In Medelism, linkage was not observed due to

A. Synapsis

B. Independent assortment

C. Mutation

D. Crossing over

Answer: B

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90. The percentage of ab gametes produced by AaBb parent will be

A. 25

B. 50

C. 75

D. 12.5

Answer: A

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91. In a dihybrid cross the ratio of pure double dominants and pure double recessive individuals in F_2 generation

A. $9:7$

B. $1:9$

C. $4:16$

D. $1:1$

Answer: D

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92. Number of kinds of genotypes in F_2 generation of mendel's dihybrid cross

A. 4

B. 9

C. 2

D. 1

Answer: B

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93. Number of kinds of phenotypes in F_2 generation of mendel's dihybrid cross

A. 4

B. 9

C. 2

D. 1

Answer: D

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94. Number of kinds of phenotypes in F_2 generation of mendel's dihybrid cross

A. 5

B. 6

C. 8

D. 4

Answer: C

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95. When true breeding pea plant with yellow cotyledons are round seeds is crossed to a plant with green cotyledons and wrinkled seeds the genotype of progeny will be

A. YYRR

B. Yyrr

C. YyRr

D. yyRR

Answer: B

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96. The number of kinds of gametes produced by a dihybrid is

A. 2

B. 4

C. 6

D. 8

Answer: C

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97. In a typical dihybrid cross the H_2 phenotypic ratio is

A. $3:1$

B. $1:2:1$

C. $9:3:3:1$

D. $1:2:2:4:1:2:1:2:1$

Answer: A

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98. In a Mendelian dihybrid cross kinds of recombinants formed in F_2 generation

A. 2

B. 4

C. 6

D. 10

Answer: D

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99. In a typical dihybrid cross the number of recombinants formed in the F_2 generation is

A. $2/16$

B. $10/16$

C. $9/16$

D. $6/16$

Answer: C

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100. The phenotype will only one genotype in the F_2 of a dihybrid cross

A. Double dominant phenotype

B. Single dominant phenotype

C. Double recessive phenotype

D. Single recessive phenotype

Answer: B

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101. The second law of mendel is

A. The purity of gametes

B. The segregation of unit factors

C. Independent assortment of alleles

D. The random fusion of gametes

Answer: D

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102. Four different types of gametes are produced in equal proportions from the dihybrid individual due to

A. Linked genes

B. Incompletely linked genes

C. Completely linked genes

D. Non linked genes

Answer: C

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103. In a cross between a pure tall pea plant with green pod and a pure short plant with yellow pod, how many short plants out of 16 are expected in F_2 generation?

A. One

B. Four

C. Nine

D. Three

Answer: B

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104. If F_2 progeny of dibybrid cross, the expected gonotypic proportions of individuals homozygous for both dominant character is

A. $3/16$

B. $9/16$

C. $12/16$

D. $1/16$

Answer: D

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105. When true breeding yellow wrinkled seeded pea plant is crossed to true breeding green round seeded pea plant the progeny will be

A. All yelow round

B. All yellow wrinkled

C. All green round

D. All green wrinkled

Answer: A

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106. When true breeding pea plant with yellow wrinkled seeds is crossed to true breeding pea plant with green round seeds the genotype of progeny will be

A. yyrr

B. yyRR

C. YyRr

D. yyRR

Answer: C

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107. In a typical dihybrid cross the fraction of F_2 similar to parents phenotypically is

A. $2/16$

B. $9/16$

C. $10/16$

D. $6/16$

Answer: C

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108. In a typical dihybrid cross the fraction of F_2 similar to the parental phonotype that is suppressed in F_1 is

A. $1/16$

B. $9/16$

C. $6/16$

D. $10/16$

Answer: A

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109. The percentage of a recombinants in the F_2 of a typical dihybrid cross is

A. 50

B. 25

C. 37.5

D. 62.5

Answer: C

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110. The percentage of double recessive phenotype in the F_2 of a typical dihybrid cross

A. 25

B. 50

C. 56.25

D. 6.25

Answer: D

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111. The percentage of double dominant phenotype in the F_2 of Meddelian dihybrid cross

A. 6.25

B. 62.5

C. 37.5

D. 56.25

Answer: D

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112. The fraction of single homozygous individuals in the F_2 of a typical dihybrid cross is

A. $8/16$

B. $10/16$

C. $4/16$

D. $12/16$

Answer: A

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113. The fraction of single heterozygous individuals in the F_2 generation of a typical dihyrbid cross

A. $8/16$

B. $10/16$

C. $9/16$

D. $6/16$

Answer: A

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114. The fraction of double homozygous recombinants in the F_2 of a Mendelian dihybrid cross is

A. $6/16$

B. $2/16$

C. $4/16$

D. $3/16$

Answer: B

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115. The fraction of single homozygous individuals in the F_2 of a typical dihybrid cross is

A. $6/16$

B. $2/16$

C. $4/16$

D. $3/16$

Answer: C

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116. The fraction of single homozygous individuals in the F_2 of a typical dihybrid cross is

A. $9/16$

B. $4/16$

C. $2/16$

D. $1/16$

Answer: D

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117. The fraction of single heterozygous double dominant individuals in the F_2 of a Mendelian dihybrid cross

A. $4/16$

B. $1/16$

C. $8/16$

D. $9/16$

Answer: A

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118. The ratio of various genotypes of a double dominant phenotype of F_2 dihybrid cross

A. $1:2:1$

B. $1:2$

C. $1:2:1:2$

D. $1:2:2:4$

Answer: D

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119. The ratio of various genotypes of a recombinant phenotype of F_2 dihybrid cross

A. $1:2:1$

B. $1:2$

C. $1:2:1:2$

D. $1:2:2:4$

Answer: C

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120. The number of monohybrids fromed in the F_2 of a dihybrid cross

A. 0

B. $4/16$

C. $1/16$

D. $8/16$

Answer: D

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121. The ratio of the number of kinds of double homozygous to double heterozygous to single

homozygous genotypes of F_2 generation of a Mendelian dihybrid cross is

A. $1:4:4$

B. $4:4:1$

C. $4:1:4$

D. $4:2:3$

Answer: C

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122. When a green full pod producing pea plant ils crossed to an yellow constricted pod producing pea plant in the progen gren fullpod and green constricted pod producing pea plants only are formed in 1:1 ratio. The genotype of tested individual is

A. GGFF

B. GfFf

C. GGFf

D. GgFf

Answer: C

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123. Bateson and Punnet discovred the phenome-mnon which is exception of Mendel's

A. Unit factors in pairs

B. Dominance and recessive

C. Segregation of unit factors

D. Independent assortment.

Answer: D

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124. When in a typical dihybrid cross in F_2 generationone monohybrid genotype is present in 12 individual the total number of F_2 offspring is

A. 48

B. 24

C. 192

D. 96

Answer: D

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125. In a Mendelian dihybrid cross if the individuals with all the four kinds of alleles are 30 in F_2 generation, filnd out thetotal number of F_2 individuals

A. 120

B. 300

C. 240

D. 1600

Answer: A

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126. In a Medelian dihybrid cross the number of phenotypic recombinants is 36 in F_2 generation. The number of organisms with the

genotpe that itself accounts for 1/4th of F_2 generation

A. 48

B. 24

C. 18

D. 12

Answer: B

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127. If four different types of gametes are produced in equal proportion from the dihybrid individual the inheritance is

A. Independent assortment

B. Linkage

C. Incomplete linkage

D. Complete linkage

Answer: A

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128. What is true of law of independent assortment?

A. Applicable to all the dominant alleles

B. Applicabkle to all genes on the same chromosome

C. Not applicable to genes present on the same chromosome

D. Applicable to all the recessive alleles

Answer: C

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129. The ratio of a dihybrid test cross is

A. $9:3:3:1$

B. $1:1$

C. $1:1:1:1$

D. $1:2:1:2$

Answer: C

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130. A cross between a plant heterozygous for two factors and a plant recessive for both the factors, gives a phenotypic ratio of

A. $9:1:1:7$

B. $9:3:3:1$

C. $1:1:1:1$

D. $1:7:7:1$

Answer: C

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131. If yellow round, yellow wrinkled, green round and green wrinkled seeded progeny are obtained in equal proportions, the cross might be

A. Monohybrid back cross

B. Dihybrid back cross

C. Monohybrid test cross

D. Dihybrid test cross

Answer: D

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132. What is the phenotypic ratio of the progey obtained in a cross between a female plant with GgIk and a male plant with ggii?

A. $9:3:3:1$

B. $1:1:1:1$

C. $1:2:2:1$

D. $3:9:3:1$

Answer: B

Watch Video Solution

133. What is the fraction of individuals with double homozygous condition in a mendelian dihybrid across?

A. $1/2$

B. $3/4$

C. $1/4$

D. $2/4$

Answer: C

Watch Video Solution

134. Ilf vestigial winged female Drosophila, heterozygous heterozygous forlong wing, the possibel phenotypic ratio is

A. $9:3:3:1$

B. $1:2:2:4$

C. $1:1:1:1$

D. $1:2:1:2$

Answer: C

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135. The number of a particular outcome of an event is divided by total number possible outcomes of that event, refers to

A. Punnett square

B. Chi square

C. Probability

D. Law of inheritance

Answer: C

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136. This person united the knowledge of chromosomal segregation with Mendelian principles and called it the chromosomal theory of inheritace

A. Sutton

B. Morgan

C. Corrents

D. Boveri

Answer: A

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137. Chromosome theory of inheritance was pro posed by

A. Sutton(1902)

B. Boveri (1902)

C. Both Sutton (1902) and Boveri (1902)

D. Waldeyer

Answer: C

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138. The scientist noted that The behaviour of chromosomes was paralleld to the behaviour of genes

A. de Vries, Correns and Tschemak

B. Sutton and Boveri

C. Punnet and Bateson

D. Morga and Bridges

Answer: B

Watch Video Solution

139. The scientist used chromosomal movement to explain Mendel's laws

A. Punet and bateson

B. Morgan and Bridges

C. Sutton and Boveri

D. Correns and de Vries

Answer: C

Watch Video Solution

140. The terms linkage and recombination were coined by

A. Sutton and Bover

B. Morgan

C. Punnet and Bateson

D. Correns

Answer: B

Watch Video Solution

141. Which of the following is suitable for experiment on linkage?

A. $aaBB \times aaBB$

B. $AABB \times aabb$

C. $AaBb \times AaBb$

D. $AABb \times AaBB$

Answer: B

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142. Parallelism between factors and chromosome led to the formation of

A. Cell theroy

B. Chromosonal theory of inheritance

C. Pangenesis theory

D. Pre formation theory

Answer: B

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143. Dihybrid test cross ratio with 82% parental type and 18% recombinants type shows that genes have

A. Incomplete linkage

B. Complete linkage

C. Independent assortment

D. Double crossing over

Answer: A

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144. A dihybrid test cross ratio for two completely linked genes will be

A. $1:1:1:1$

B. $1:1$

C. $1:7:7:1$

D. $7:1:1:7$

Answer: B

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145. Select the odd one out with respect to the chromosomal theory of inheritance

A. It was proposed by Suton and Boveri

B. The behavior of chromosomes is parallel to the behaviour or genes

C. Chromosomes and genes occur in pairs in diploid and haploid cells, respectively

D. The paired condition of both chromosomes as well as Mendelian factors, is resorted during fertilization

Answer: C

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146. To describe the generation of non parental gene combinations Morgan coined the term

A. Crossing over

B. Recombination

C. Linkage

D. Sex linkage

Answer: B

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147. Crossing over in diploid organisms is responsible for

A. Deominanee of genes

B. Linkage between genes

C. Recombination of linkage genes

D. Segregation of alleles.

Answer: C

Watch Video Solution

148. The genes for the eye colour and size of the wing in Drosophila are located on the same chromosome. They can be separated by

A. Non -disjunction

B. crossing over

C. Hybridization

D. Not be separated at any stage

Answer: B

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149. Linkage in Drospohila was reported by

A. Mendel

B. Correns

C. Morgan

D. None of these

Answer: C

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150. Frequency of recombination between gene pairs on the same chromosome as as measure of the distance between genes was used first time to map their position on the chromosome by

A. Bridges

B. Morgan

C. Sturteuant

D. All these

Answer: C

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151. The frequency of crossing over would be higher if

A. Two genes are located closely

B. Two genes are far apart on a chromosome

C. Two genes are not located in the same chromosome

D. None of the above

Answer: B

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152. A phenomenon which results in alteration of DNA sequences and consequently results in changes in the genotype and the phenotype of an organism sis

A. Independent assortment

B. Random gametic fusio

C. Mutation

D. Crossing over

Answer: B

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153. One centimorgan is equal to recombination frequency of

A. 1

B. 0.1

C. 10

D. 0.01

Answer: D

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154. Which statement is incorrect about linkage?

A. It helps in maintaining the valuable traits of new varieties.

B. It helps in forming new recombinants

C. Knowledge of linkage helps the breeder to combine all desirable traits in a single variety

D. It helps in locating genes on chromosome.

Answer: B

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155. In sickle cell anaemia, an amino acid substitution is

A. valine by glutamine in α- chain

B. Valine by glutamine in β- chain

C. Glutamine by valine in α- chain

D. Glutamate by valine in β- chain

Answer: D

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156. The linked characters would always inherit together till they are

A. Delinked due to segregation

B. masked by dominance

C. Mutated

D. Separated due to crossing over

Answer: D

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157. Variation in DNA is due to

A. Mutation

B. Recombination

C. Both 1 and 2

D. Neither 1 nor 2

Answer: C

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158. Mutation is due to

A. Loss of a segment of DNA

B. Gain of a segment of DNA

C. Change in a single base pair of DNA

D. All these

Answer: D

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1. Chromosomal disorders are caused due to

A. Absensce of one or more chromosomes

B. Excess of one or more chromosomes

C. Abnormal arrangement of chromosomes

D. Any of these

Answer: D

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2. Failure of segregation of chromatids during cell division cycle results in

A. Gain of chromosome (s)

B. Loss of chromosome (s)

C. Aberration of chromosome (s)

D. Both 1 and 2

Answer: D

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3. Gain or loss of chromosome (s) is called

A. Euploidy

B. Polyploidy

C. Aneuploidy

D. Haploidy

Answer: C

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4. Match the following and select the correct option

List - I	List - II
A) Mendel	I) Sweet pea
B) Bateson and Punnet	II) Grasshopper
C) T.H. Morgan	III) Garden pea
D) Stevens and Wilson	IV) *Protenor*
	V) *Drosophila*

The correct match is

A. $\begin{matrix} A & B & C & D \\ I & III & V & IV \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ III & I & V & II \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ III & I & V & IV \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ III & I & IV & II \end{matrix}$

Answer: C

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5. In one series of insects males have 17 chromosomes while female have 18 chromosomes. The type of sex determination in that species is

A. ZO type

B. ZW type

C. XY type

D. XO type

Answer: D

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6. Which of the following is true for sickle cell anaemia regarding the change in shape of RBC?

A. Occurs in polycythemia

B. Occurs always

C. Occurs in low oxygen tension

D. Occuus in high oxygen tension

Answer: C

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7. An aneuploidy disorder of human is

A. Turner's syndrome

B. Thalassemia

C. Down's syndrome

D. Colour blindness

Answer: A

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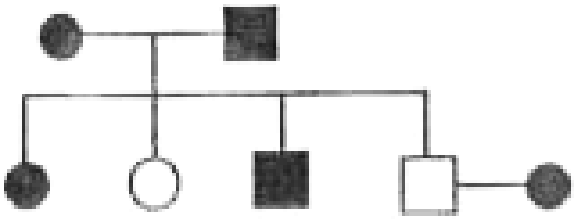
8. Find out the genotype of mother and farther in the given pedigree chart.



A. Mother Father
AA AA

B. $\begin{matrix} \text{Mother} & \text{Father} \\ Aa & Aa \end{matrix}$

C. $\begin{matrix} \text{Mother} & \text{Father} \\ AA & Aa \end{matrix}$

D. $\begin{matrix} \text{Mother} & \text{Father} \\ aa & aa \end{matrix}$

Answer: B

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9. In XO type of sex determination

A. Males have paired autosomes and allosomes

B. Males have paired autosomes but unpaired allosome

C. Females have paired autosomes but unpaired allosome

D. Females are without allosomes

Answer: B

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10. a. Trisomy of 21st chromosome

b. Palm crease

c. Partialy open mouth

d. Retarded psychomotor development

Above information is related with

A. Klinefelter's syndrome

B. Turner's syndrome

C. Edward's syndrome

D. Down's syndrome

Answer: D

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11. Which of the following genotype is present in Queen victoria as per her family pedigree chart?

A. X^hY

B. X^hX^h

C. X^HX^h

D. X^hX^O

Answer: B

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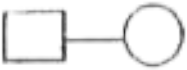
12. Match the column I with column II and frind the correct option

Column I	Column II
A) 	1) Mating
B) 	2) Sex unspecified
C) 	3) Consanguinous mating
D) 	4) Affected individual

A. $\begin{matrix} A & B & C & D \\ 2 & 1 & 4 & 3 \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ 4 & 3 & 2 & 1 \end{matrix}$

C.
A	B	C	D
4	1	2	3

D.
A	B	C	D
2	4	3	1

Answer: C

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13. The X-body was first identified by

A. Mendel-1856

B. Khoraa-1922

C. Griffith 1928

D. Henking 1891

Answer: D

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14. In case of phenylketonuria mental retardation occurs due to

A. Eliminationfo tyrosine from blod

B. Accumulation of tyrosine in blood

C. Accumulation of phenylpyruvic acid in blood

D. Elimination of phenylalanine from blood

Answer: C

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15. Turner's syndrone is characterised by

A. Absence of ovaries

B. Absence of autosomal set

C. Absence of allosome

D. Presence of trisony

Answer: C

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16. Which of the following is correct for HbS peptide molecule?

A. Val-His-Leu-Pro-Thr-Val-Glu

B. Val-His-Leu-Thr-Pro-Val-Glu

C. Val-His-Thr-Leu-Pro-Glu-Val

D. Val-His-Leu-Thr-Pro-Glu-Glu

Answer: B

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17. Which of the following disorder can occur with the same frequency in both sexes of humans?

A. Turner's syndrome

B. Haemophilia

C. Klinefleter's syndrome

D. Phenylkentonuria

Answer: D

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18. Given below are some organisms.

I. Fowl II. Humans III. Grasshopper

Following alphabets related to the above animals.

Male homogametic-A

Female heterogametic-B

Male heterogametic -C

Female homogametic -D

Which of the following option correctly describes the above animals in terms of sex determination?

A.

$$(I \quad II \quad III), (A, B \quad C, D \quad C, D)$$

B.

$$(I \quad II \quad III), (C, D \quad A, B \quad C, D)$$

C.

$$(I \quad II \quad III), (A, D \quad C, D \quad A, D)$$

D.

$$(I \quad II \quad III), (B, C \quad C, D \quad A, B)$$

Answer: A

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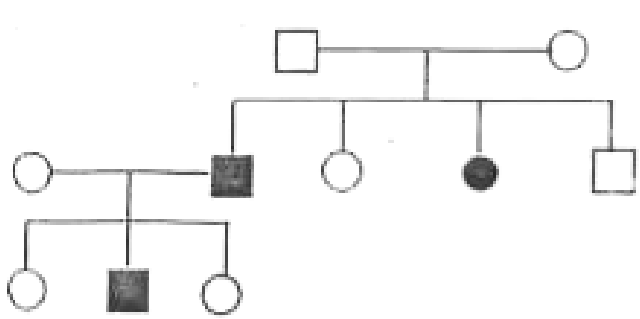
19. Predict the following chart.



A. Sex linked recessive character

B. Autosomal recessive character

C. May be X-linked or autosomal

D. Holandric inheritance

Answer: B

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20. How many of the following diseases can be studied with the help of pedigree chart? Turner's syndrome, Phenylketonuria, Down's syndrome, Sickel-cell anaemia, Klinefleter's syndrome, Haemophilia, Cystic fibrosis, Myotonic dystrophy.

A. All

B. Six

C. Five

D. Four

Answer: C

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21. A colourblind child have both normal parents, the child is

A. Male

B. Female

C. May be male or female

D. Cannot be predicted

Answer: A

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22. Choose the incorrect statement related to Barr body

A. Found attached to nuclear envelope in buccla mucosa cells

B. Barr body is the heterochromatinised X-chromosome

C. Occurs as drumstick body in the neutrophils

D. Of the two chromosomes in a female, only maternal chromosome becomes the Barr body

Answer: D

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23. Which of the following is not applicable to Drosphila

A. Genes for maleness are located on autosomes

B. Genes for femaleness are located on X-chromosome

C. SRY gene codes for testies determining factor

D. Y-chromosome is essential for male fertility

Answer: C

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24. In honey bees, drones contribute to the development of

A. Only fetile females

B. Both males and females

C. Only haploid bees

D. only diploid females

Answer: D

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25. Genes limited to only one sex are

A. Genes of sex limited traits

B. X-linked genes

C. Sex incluenced genes

D. Holandric genes

Answer: D

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26. Read the statements about honey bees

I. Daughters of a Queen bee share 3/4th of their genes

II. Gametogenesis occurs by mitosis in a Queen bee

A. Both I,II are correct

B. Only I is correct

C. Both I and II are incorrect

D. Only II is correct.

Answer: B

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27. In Drosophila, sex is determined by the ratio of X-chromosomes, to the number of

A. Autosomes in a cell

B. Chromosomes of a haploid set

C. Haploid sets of autosomes

D. Autosomes of a haploid set

Answer: C

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28. Honey bees development by arrhenotoky are

A. Fertile haploid bees

B. Sterile haploid bees

C. Fertile diploid bees

D. Sterile diploid bees

Answer: A

29. A normal visioned girl has a normal visioned brother and a colour blind sister. Their parents are

A. Colour blind father, carrier mother

B. Normal visioned father, Colour blind mother

C. Carrier mother, normal visioned father

D. Colour blind father, colour blind mother

Answer: A

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30. X/A ratio fo a drosophila with largge size, morophological abnormalities and rudimentary bisexual gonads is

A. less than 0.5

B. Between 0.5 and 1.0

C. More than 1.0

D. Zero

Answer: B

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31. AXX sperms are formed due to

A. Primary non-disjunction of allosomes

B. Secondary non-disjunctionof allosomes

C. Secondary non-disjunction of Autosomes

D. Secondary disjunction of allosomes

Answer: B

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32. Which of the following is not applicable to sickle cell anaemia?

A. Exhibits co dominance inheterozygous condition

B. Example for single gene mutation in cistron of haemoglobin

C. Exemplifies pleiotropy as it affects different functions ofbody

D. Sickle cell anaemia is caused by antosomal dominant mutation in gene of hemoglobin

Answer: D

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33. Sex of the offspring depends on the fertilizing ovum in

A. Fruit fly, Butter fly

B. Grass hoppers, cockroaches

C. Fumea, birds

D. Squash bug, Drosophila

Answer: C

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34. Idenfity the incorrect statement about XY-linked genes

A. They are located on homologous segments of X and Y chromosomes

B. Ther are also called as completely sex linked genes

C. They occur in both males and females

D. They occur either in homozygous or heterozygous condition,.

Answer: B

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35. The codon of m-RNA which determins aminoacid at the 6th position in polypeptide chain of normal haemoglobin is

A. GAG

B. GUG

C. CAC

D. GTG

Answer: A

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36. Identify the incorrect statement about alpha thalassemia

A. Excessive beta chains form unstale letramers

B. It is an antosome linked recessive gene disorder

C. Production of alpha chain of haemoglobin is conrolled by two closely linked genes on chromosome 16

D. Alpha thalassemia is a qualitative problem in the synthesis of globin molecules.

Answer: D

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37. Which of the following is not a character of Turner'sydrome?

A. Webbed neck

B. Sterlity

C. Gynaecomastia

D. Gonadial dysgeesis

Answer: C

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38. Select the incorrect statement about Down's sysdrome.

A. It is caused by nondisjunectionof autosomes during oogenesis

B. Late pregnancy in woman might be the cause of Dwon's syndrome

C. Affected individuals exhibit 21st trisomy condition

D. A woman with Down's syndrome always give birth to childrne with Donw's syndrome

Answer: D

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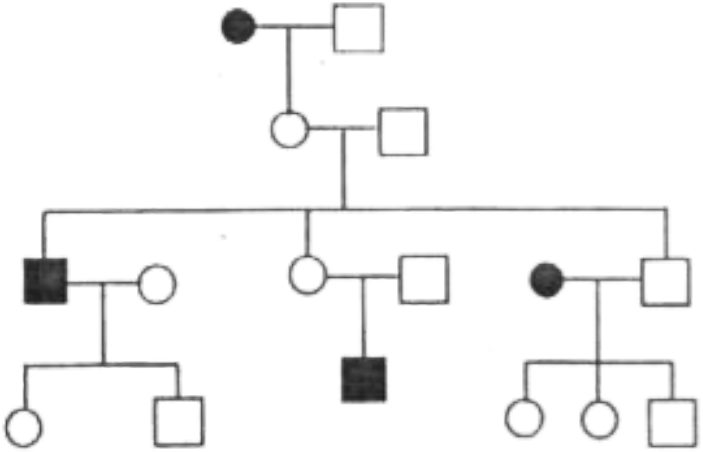
39. Identify the trait inherited in the given pedigree from the following options



A. Augosomal dominant

B. Autosomal recessive character

C. X-linked recessive

D. X-linked dominant

Answer: B

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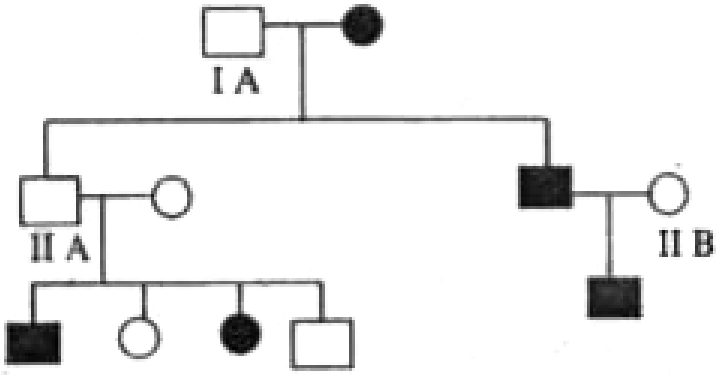
40.



Study the above pedigree of an autosomal recessive disorder and identify genotypes of IA,IIA and IIB from the given options

A. Aa,Aa,Aa

B. AA,Aa,AA

C. AA,Aa,Aa

D. AA,AA,Aa

Answer: A

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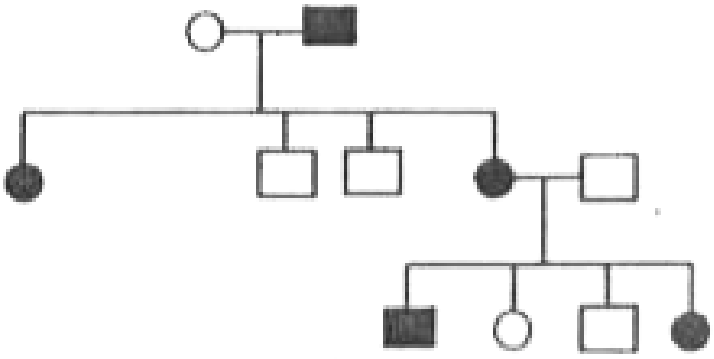

41.

In humans the above pedigree indicates the inheritance of

A. Incountinentia pigmenti

B. Green color blindess

C. Haemophilia

D. Webbing of toes

Answer: A

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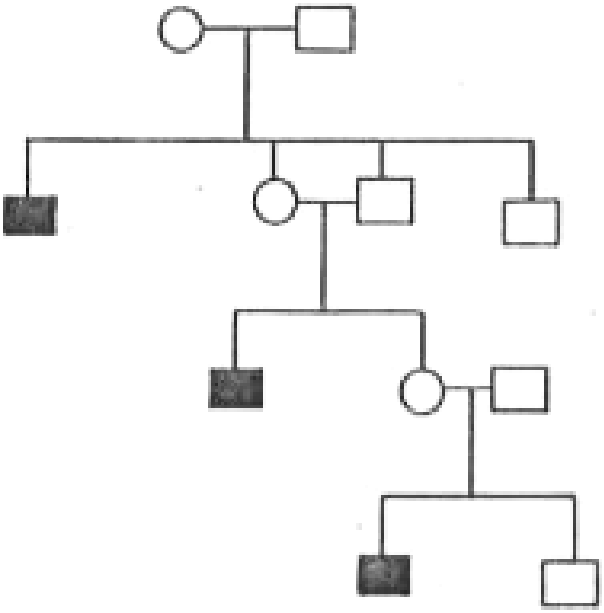

42.

The given pedigree shows inheritance of

A. Myotonic dystorphy

B. Porcupine men

C. Duchenne muscular dystrophy

D. Hypertrichosis

Answer: C

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43. Incorrect match from the following about the disease causing genes and their location on chromosomes is

A. Cystic fibrosis Chromosome

B. Cooley's anaemia Chromosome 11

C. Haemophilia-C X- chromosome 11

D. Sickle cell anaemia Chromosome 11

Answer: C

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44. Which of the following disorders are caused by the conditin monosomy?

A. Down's syndrome

B. Patau's syndrome

C. Turner'syndrome

D. Edward's syndrome

Answer: C

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Exercise Ii

1. Sum total of genes with all these alleles at any time in a unit of evolution is called.

A. Genotype

B. Genome

C. Gene pool

D. Gene library

Answer: C

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2. Direct application of genetic knowledge for the improvement of human races

A. Disgenics

B. Eugenics

C. Duphenics

D. Eutheics

Answer: B

Watch Video Solution

3. Father of modern Genetics

A. T.H. Morgan

B. C.Bridges

C. Karl Correns

D. Reginold C.Punnet

Answer: A

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4. Father of human genetics is

A. Cuvier

B. Bateson

C. Mendel

D. Garrod

Answer: D

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5. In garden pea plant, S. Blixt led to locate Mendel's seven characters on chromosomes numbers

A. 1,4,5,7

B. 1,4,5,6

C. 4,5,6,7

D. 2,3,4,7

Answer: A

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6. Who coined the term allele?

A. Saunders

B. Bateson

C. Johansen

D. Mendel

Answer: B

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7. Who amongst the following raised the status of Mendel's generalizations to law?

A. Correns

B. De Vries

C. Tschermak

D. Goss

Answer: A

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8. The term gene for Mendelian factor was coined by

A. Suton and Boveri

B. Morga

C. Bateson

D. Johannsen

Answer: D

Watch Video Solution

9. Which one of the following characters studied by Mendel in garden pea was found to be dominant?

A. Green Seed colour

B. Terminal flower postion

C. Green pod colour

D. Wrinkle seed

Answer: C

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10. A sinistral shelled female snail has Dd genotype cross with dextral shelled male having dd genotype. What type of shell will be present in the progeny?

A. All dextral

B. All sinistral

C. 50% dextral, 50% sinistral

D. None

Answer: A

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11. When red flowered plants are crossed with white flowered plants the F_2 generation gives a ration of 3:1. What do you conclude?

A. That there are lethal genes

B. That three is independent assortment

C. That white colour is dominant

D. That red colour is dominant.

Answer: D

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12. If only one copy of a gene is present that condition is

A. Hemizygous

B. Holozygous

C. Homozygous

D. Heterozygous

Answer: A

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13. Reciprocal cross is

A. Intraspecific hybridization

B. Back cross

C. Pollen grains from one variety deposited on the stigma of the constrating variety and vice versa, in hybridization experiments

D. Test cross

Answer: C

Watch Video Solution

14. A cross between two tall plants resulted in offspring having few dward plants. What would be genotypes of both the parents?

A. TT and Tt

B. Tt and Tt

C. TT and TT

D. Tt and tt

Answer: B

Watch Video Solution

15. Select the odd one out with respect to non allelic gene interactions

A. Epistasis

B. Duplicate genes

C. Incomplete dominance

D. Complementary genes

Answer: C

Watch Video Solution

16. Persons having genotype $I^{\circ}I^{B}$ would show the blood group as AB. This is because of

A. Pleiotropy

B. Co-dominance

C. Segregatin

D. Incomplete dominance

Answer: B

Watch Video Solution

17. A 15 : 1 F_2 ratio of a cross between a wheat variety with red kerels (homozygous for two dominant genes) and another with white kernels shows

A. Polygenic inheritance

B. that the two genes are complementary

C. single factor inheritance

D. that it is a test cross

Answer: A

 Watch Video Solution

18. A,B and O blood groups were discovered by

A. Landsteiner

B. Weiner

C. Levine

D. Bernstein

Answer: A

Watch Video Solution

19. The blood group in which A and B antigens are absent

A. O

B. A

C. B

D. AB

Answer: A

Watch Video Solution

20. Agglutination of erythrocytes of donor will occur if

A. O is given to AB

B. O is given to A

C. O is given to B

D. B is given O

Answer: D

Watch Video Solution

21. The blood groups A, B, AB and O are classified on the basis of the type of antigen present on

A. RBC

B. WBC

C. Plasma

D. Thrombocytes

Answer: A

Watch Video Solution

22. The blood groups will have their respective anti bodies in the

A. RBC

B. WBC

C. Plasma

D. Thrombocytes

Answer: C

Watch Video Solution

23. If a clump is formed with anti A and anti B antisera the blood group is

A. AB

B. A or B

C. O

D. A,B and AB

Answer: A

Watch Video Solution

24. The blood group which forms clump with only anti B antiserum

A. AB

B. B

C. AB and B

D. O

Answer: B

Watch Video Solution

25. A person without A and B antigens can give blood to

A. Only O

B. Only A and B

C. Only AB

D. A,B,AB and O

Answer: D

 Watch Video Solution

26. When a woman heterozygous for A blod group heterozygous non albino marries a man who is heterozygous non albino and heterozygous for B blood group. The probable kinds of phenotypes in their progeny

A. 4

B. 9

C. 8

D. 6

Answer: D

 Watch Video Solution

27. In a dihybrid cross, if youget 9:3:3:1 ratio, it denotes that

A. The alleles of two genes are interacting with each other

B. It is a multiple allelism

C. It is a case of multiple allelims

D. The alleles of the two gees are segregatiing independently.

Answer: A

 Watch Video Solution

28. Some individuals with blood group A may inherit the genes for blond hair, while other individuals with blood group A may inherit the

genes for brown hair. This can be best explained by the principate of

A. Dominance

B. Multiple alleles

C. Independent Assortment

D. Incomplete dominance

Answer: C

Watch Video Solution

29. A gene which hides the action of another gene is termed as

A. Co-dominant gene

B. Epistatic gee

C. Hypostatic gene

D. Lethal gene

Answer: B

Watch Video Solution

30. The genes are present only in males

A. Sexlinked gnes

B. XY linked genes

C. Holandric genes

D. Incompletely sex linked genes

Answer: C

Watch Video Solution

31. The genes located only on the non homologous region of Y chromosome are called

A. XY-linked genes

B. Sex linked genes

C. Holandric genes

D. All these

Answer: C

Watch Video Solution

32. Complete linkage is found in

A. Male drosophila

B. Female silkworm

C. Both 1 and 2

D. Aspergillus flavus

Answer: C

 Watch Video Solution

33. The gene theory was presented by

A. Wilson

B. Morgan

C. Mendel

D. Bateson

Answer: B

 Watch Video Solution

34. The unit of linkage map is

A. Map unit

B. Centimeter

C. Centimorgan

D. 1 and 3

Answer: D

Watch Video Solution

35. Neurospora (fungus) is considered suitable for genetic studies because it

A. has a long life cycle and can be easily cultired

B. can be cultured in defined media and has very short lifecycle

C. has diploid vegetative phase

D. none above

Answer: B

Watch Video Solution

36. All genes located on the same chromosome.

A. From diffeent groups depending upon their relative distacne

B. Form one linkage group

C. will not form any linkage groups

D. Form interactive groups that affect the phenotype

Answer: B

Watch Video Solution

37. Linkage in plants was first shown in

A. Zea mays

B. Lathyrus odoratus

C. Oenothera lamarckiana

D. Pisum sativum

Answer: B

Watch Video Solution

38. Morgan discovered sex linked inheritance first in

A. Humaebeings

B. Sweet pea

C. Drosphila melanogaster

D. Guinea pigs

Answer: C

Watch Video Solution

39. Criss cross inheritance is shown by

A. Y-linked gene

B. X,Y- linked gene

C. X-linked recessive gene

D. Autosomal gene

Answer: C

Watch Video Solution

40. Y-linked genes are also called

A. Pseudoautosomal genes

B. Holandric genes

C. Incompletely sex linked genes

D. Sex linked genes

Answer: B

 Watch Video Solution

41. Human males are hemizygous for

A. Y-linked gene

B. X-linked genes

C. X,Y-linked genes

D. X-linked and -linked genes

Answer: D

 Watch Video Solution

42. Males alwas inherit these traits from the female parents

A. Y-linked

B. X-linked

C. X and Y - linked

D. XY-linked

Answer: B

Watch Video Solution

43. Lack of Independent Assortment of two genes A and B in fruit fly Drosophila is due to

A. Repulsion

B. Recombination

C. Linkage

D. Crossing over

Answer: C

Watch Video Solution

44. An individual homozgous for genes cd is crossed with wild type and F_1 is crossed back with the double recessive. The appearance of the offspring is a follows:

$++$	$-$	903
cd	$-$	897
$+d$	$-$	98
$c+$	$-$	102

The distance between genes c and d is

A. 20 map units

B. 9.8 map units

C. 10.2 map units

D. 10 map units

Answer: D

Watch Video Solution

45. A test cross of F_1 flies ++/ab produced the followings,

++/ab(R) 9 ab/ab(R)9

+b/ab(R) 41 a+/ab(R)41

This cross represents

A. Trans configuration

B. Cis configuration

C. Complete linkage

D. No crossing over

Answer: A

Watch Video Solution

46. Assume that genes a and b are linked and show 40 % reombination. If ++/++ individual is crossed with ab/ab, then tpes and proportions of gametes in F_1 will be

A. $+ + 20\ \% : ab20 : + 20\ \% : a + 40\ \%$

B. $+ + 50\ \% : ab50\ \%$

C.

$$+ + 25\ \% : ab25\ \% : + b25\ \% : a + 25\ \%$$

D.

$$+ + 30\ \% : ab30\ \% : + b20\ \% : a + 20\ \%$$

Answer: D

Watch Video Solution

47. In a linear chromosome, map distance between four loci are as floows : a-b-10, b-c-4,a-d-3,a-d-3,a-c-6. The expected cross over frequency betgween c and d is

A. 0.03

B. 0.09

C. Either 3% or 9%

D. 4% to 12%

Answer: C

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Watch Video Solution

48. What will be the phenotypic ratio in a situation of complementary gene interaction?

A. $9:7$

B. $15:1$

C. $13:3$

D. $9:3:4$

Answer: A

Watch Video Solution

49. If gene freuency between genes a and c 2%, b and c 13%, b and d 4%, a and b 15%, c and d 19%. What will be the sequence of these genes in a chromosome?

A. a,b,c,d

B. a,c,b,d

C. d,b,a,c

D. a,d,b,c

Answer: B

Watch Video Solution

50. The crossing over between homologous chromosomes never exceeds beyond

A. 0.5

B. 0.75

C. 1

D. 0.85

Answer: A

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51. Cis-trans expression of genes is an example of

A. mutation

B. interagenic crossing over

C. interagenic crossing over

D. cytoplamsic inheritance

Answer: C

 Watch Video Solution

52. In genetic crosses showing recessive eipstaiss such as mice coat colour, F_2 phenotypic ratio is

A. $9:3:4$

B. $9:6:1$

C. $12:3:4$

D. $13:3$

Answer: A

 Watch Video Solution

53. Independent genes that copy other genes so as to produce a similar effect are called

A. lethal genes

B. Duplicate genes

C. Complementary genes

D. None of the above

Answer: B

 Watch Video Solution

54. Chromosome map is useful for

A. finding exact location of gene on chromosome

B. knowing combination of various genes in a linkage group of chromosomes

C. predicting results of dihybrid and trihybrid crosses

D. all above

Answer: D

Watch Video Solution

55. The percentage rof recombination involving th seed shape and seed colour ina plant is 10%. What is the distance (mp) between the genes on a chromosome controlling these characters?

A. 5

B. 10

C. 20

D. 15

Answer: B

 Watch Video Solution

56. Genetic map is one that

A. establishes sites of the genes on a chromosome

B. establishes the various stages in gene evolution

C. shows the stags during the cell division

D. shows the distribution of various species in a region

Answer: A

Watch Video Solution

57. Distance between the ganes and prcentage of recombination shows.

A. A direct relationship

B. An inverse relationship

C. A parallel relationship

D. No relationship.

Answer: A

Watch Video Solution

58. The type of gene mutation that involves the replacement of purine with pyrimidine or vice versa(or). The substitution of one type of base with another type of base is

A. Transduction

B. Translocatin

C. Translocatin

D. Transcription

Answer: B

Watch Video Solution

59. Mutations induced by 5-bromo uracil are

A. Transversional mutations

B. Transitional mutations

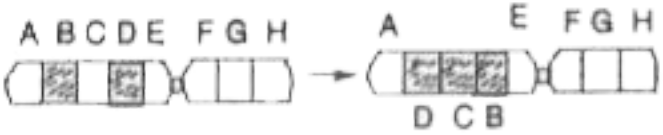
C. Frame shift mutations

D. Backward mutations

Answer: B

Watch Video Solution

60. Given below is the representation of a kind of chromosomal mutation:



Identify the kind of mutation.

A. Deletion

B. Duplication

C. Inversion

D. Reciprocal translocation

Answer: C

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61. Inversion without involving the centromere is called

A. Paracentric

B. Monosomy

C. Pedricentric

D. Tautomerization

Answer: A

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62. Asneuploidy which results in the loss of a complete homologous pair of chromosomes is

A. Trisomy

B. Tetrasomy

C. Nullisomy

D. Euploidy

Answer: C

 Watch Video Solution

63. Crtoplasmic male sterlity in maize is due to defective

A. Mitochondria

B. Lysosome

C. Golgi body

D. Leucoplast

Answer: A

Watch Video Solution

64. Duplication of same gemome leads to

A. Allopolyplids

B. Autoallopolyploids

C. Both 1 and 2

D. Autopolyploids

Answer: D

 Watch Video Solution

65. Which of the following will cause a more effective mutation?

A. One codon

B. One base deletion

C. Base substitution

D. Base deamination

Answer: B

 Watch Video Solution

66. Recessive mutations are expressed normally in

A. Homozygous condition

B. heterozygous condition

C. has to express always since it is a mutation

D. neither in homozygous nor in a heterozygous condition

Answer: A

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67. If the above noral gene sequence changes to ABCABCDEFGH, then has occurred.

A. deletion

B. point mutation

C. inversion

D. duplication

Answer: D

Watch Video Solution

68. In gene mutations when a purine is substitde by another purine it is called as

A. transformation

B. translocation

C. transduction

D. transition

Answer: D

Watch Video Solution

69. If a part of gene is totally missing, it is called

A. insertion

B. inversion

C. substitution

D. deletion

Answer: D

 Watch Video Solution

70. Conditions of a karyotype $2n \pm 1$ and $2n \pm 2$ are called

A. Aneuploidy

B. Polyploidy

C. Allopolyploidy

D. Monosomy

Answer: A

Watch Video Solution

Exercise Ii Sex Determination Genetic Disorders

1. In sickle cell anaemia, glutmic acid is replaced by valine. Which one of the following triplets codes for valine

A. GGG

B. AAG

C. GAA

D. GUG

Answer: D

Watch Video Solution

2. In humanbeings trisomey in 23rd pair results in

A. Klinefelter male

B. Down's male

C. Turner female

D. Down's female

Answer: A

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3. The phenotypic improvement of humans after birth is known as

A. Euphenics

B. Euthenics

C. Eugenics

D. Genetic engineering

Answer: A

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4. Phenylketonuria (PKU) is inherited disease that is characterised by

A. Elimination of gentisic acid in urine

B. Increased occurrrence of phenylalamine in blood nad tissues

C. Elimination of sugar in urine

D. Decrease in phenylalanine in blood and tissues.

Answer: B

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5. Sickle cell anaemia is an example of

A. Sex linked inheritance

B. Autosomal heritable disease

C. Infectious disease

D. Deficiency disease

Answer: B

Watch Video Solution

6.  In pedigree analysis this symbol indicates

A. Affected male

B. Carrier

C. Aborted male

D. Male died after birth

Answer: D

Watch Video Solution

7. An abnormality not due to recessive gene is

A. Phenylketonuria

B. Alkaptonuria

C. Polydactyly

D. Tay-Sach's syndrome

Answer: C

 Watch Video Solution

8. Polydactyly in man is due to

A. Autosomal recessive allele

B. Autosomal dominant allele

C. Sex linked recessive allele

D. Sex linked dominant allele

Answer: B

 Watch Video Solution

9. Alkaptomuries excrete excess of

A. Urine

B. Albumen

C. Malonylacetic acid

D. Homogentisic acid

Answer: D

Watch Video Solution

10. Royal disease

A. Color blindness

B. Haemophilia

C. Mongolism

D. DMD

Answer: B

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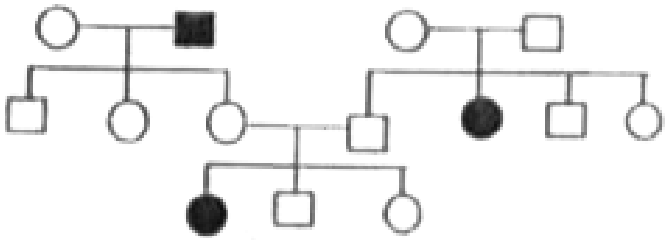


11.

The trait traced in this pedigree is

A. Autosomnal dominant

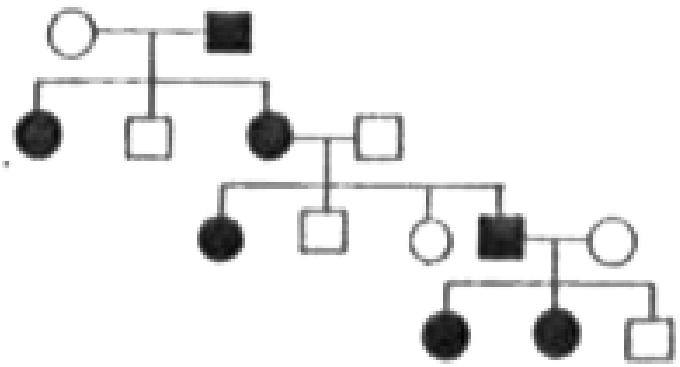
B. Autosomal recessive character

C. X-linked recessive

D. X-linked dominant

Answer: B

Watch Video Solution



12.

Trace the trait in this pedigree

A. X-linked dominant

B. X-linked recessive

C. Protanopia

D. DMD

Answer: A

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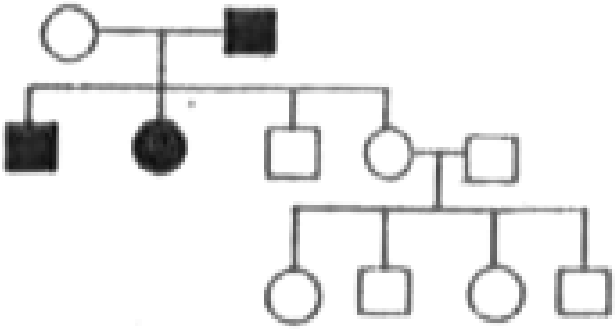

13.

The trait traced in this pedigree is

A. X-linked recessive

B. X-linked dominant

C. Autosoal recessive

D. DMD

Answer: C

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14. Melanurea (black urine) is caused by abnormal catabolism of

A. Alanine

B. Tyrosine

C. Proline

D. Tryptophan

Answer: B

Watch Video Solution

15. Albinism is due to nonsynthesis of melain on account of absence of

A. melanase

B. Luciferase

C. Tyrosinase

D. Lysine

Answer: C

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16. Huntington's chorea is

A. Common in Korea

B. Nervous degentration causing involuntary shaking of les, arms head

C. Disease of kidney

D. Related to diabetes

Answer: B

Watch Video Solution

17. In Huntigton's chorea, limb movements are

A. Ritythmic

B. Arhythmic

C. Slow and hardly noticeable

D. Absent

Answer: B

Watch Video Solution

18. Huntigton's disease is

A. Autosomal dominant disease

B. Autosomal recessive disorder

C. Sex -linkexd recessive disorder

D. Sex linked dominant disease

Answer: A

Watch Video Solution

19. A supermale XYY is characterised by

A. under production of sex hormones

B. Overproduction of sex hormones

C. Reduced intellingece but aggressive nature

D. Both 2 and 3

Answer: D

Watch Video Solution

20. Daltonism in human being

A. Red green colorblindness

B. Green colorblindness

C. Blue colorbllindness

D. Complete colorblindness

Answer: A

Watch Video Solution

21. In Ewards syndrome the Karyotype is

A. 13(47,+13)

B. 47,+18

C. 46,5P-

D. 46,t(9:22)

Answer: B

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22. Pick out the correct statement from the following in relation to autosomal syndromes

A. Cri -du-chat syndrome is considered as complete monosomy

B. Edwards syndrome occurs only in males

C. Affected individuals in Patau syndrome are characterised by micropthalmia

D. Chronic myelogenous leukemia is due to trisomy

Answer: C

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23. Which of the following was first in born error of metabolism detected by Garrod

A. Alzheimer's disease

B. Albinism

C. Try-Sach's disease

D. Alkaptonuria

Answer: D

 Watch Video Solution

24. Huntington's disease is due to a dominant autosomal gene located on

A. Chromosome 4

B. Chromosome 6

C. Chromosome 9

D. Chromosome 12

Answer: A

 Watch Video Solution

25. Lack of pigmentation in skin, hair and iris are thecharacteristics features of

A. Alkaptonuria

B. Albinism

C. Tray-Sach's disease

D. Alzheimer's disease

Answer: B

Watch Video Solution

26. TaypSach's Disease is due to the deficiency of

A. Alkapton oxidase

B. Tyrosinase

C. β- D-N acetyl hexosaminidase enzyme

D. Dihydroxy phenylanine hydroxylase

Answer: C

Watch Video Solution

27. The person with Turner's Syndrome has

A. 45 Autosomes and X Sex chromosomes

B. 44 Autosomes and XYY Sex Chromosomes

C. 45 Autosome and XYY Sex Chromosomes

D. 44 Automomes and X sex chromosomes

Answer: D

Watch Video Solution

28. barr body is present in

A. Sperm

B. ovum

C. Somatic cell of female

D. Somatic cell of female

Answer: C

Watch Video Solution

29. Which of the following abnormalities results from an unnatural presence of a Barr body that it would normally not have?

A. Turners syndrome

B. Downs syndrome

C. Klinefelter syndrome

D. All of the above

Answer: C

Watch Video Solution

30. A gene that masks another genes expression is called

A. Dominant characters

B. Recessive characters

C. Epistatic

D. Assorted

Answer: C

Watch Video Solution

31. The Cri-du-Chat Syndrome is Caused by Changed in Chromosome Structure involving

A. Deletion

B. Duplication

C. Inversion

D. Translocation

Answer: A

Watch Video Solution

32. In which mode of inheritance do you expect more maternal influence among the of spring

A. Autosomal

B. Cytoplasmic

C. Y-linked

D. X-linked

Answer: B

Watch Video Solution

33. Both sickle cell anaemia and huntingtons chorea are

A. Bacteria related diseases

B. Congential disorders

C. Pollutant induced disorders

D. Virus related diseases

Answer: B

 Watch Video Solution

34. Which one pair of the parents out of the following is most likely to get a child who would suffer from hamolytic disease of the new born.

A. Rh^+ morther & Rh^- father

B. Rh^- mother & Rh^- father

C. Rh^+ mother & Rh^+ father

D. Rh^- mother & Rh^+ father

Answer: D

Watch Video Solution

35. X-linked dominant trait is

A. Duchenne muscular dystrophy

B. Hypertrichosis

C. Follicular hyperkeratosis

D. Mangolian idiocy

Answer: C

Watch Video Solution

36. Y-chromosome was first identified by

A. Henking

B. Barr and Bertram

C. Stevens and wilson

D. Mc clung

Answer: C

Watch Video Solution

37. A woman who is homozygous for Incontinentia pigmenti is married to a normal man. In their children, IP apprars in

A. only sons

B. 50% of chilren

C. Only daughters

D. All the children

Answer: D

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38. Match the following

Column- I	Column-II
A) Horns in sheep	I) Sex limited
B) Plumage pattern	II) X-linked
C) Bobbed bristles in fruit fly	III) Y-linked
D) Eye color in Drosophila	IV) XY-linked
	V) Sex influenced

A. A-I,B-V,C-VI-D-II

B. A-V,B-I,C-IV-D-II

C. A-III,B-I,C-IV-D-II

D. A-V,B-I,C-III,D-II

Answer: B

Watch Video Solution

39. Haemophila -B is due to the deficiency of

A. Anti haemophilic globulin

B. plasms thromboplastin component

C. Plasma thromboplastin antecedant

D. Tissue thromboplastin

Answer: B

Watch Video Solution

40. A non bald man with hpertrichosis is married to a bald woman. What is the probability of the sons to have both baldness and hpeertrichosis

A. 1

B. 0.5

C. 0.25

D. Zero

Answer: A

Watch Video Solution

41. Blue blindness

A. X-linked recessive trait

B. Autosomal dominant trait

C. X-linked dominant trait

D. Autosomal recessive trait

Answer: D

Watch Video Solution

42. In Drosophila, red eye and white eye traits appear inboth male and female flies, when a cross is make between

A. White eyed female and red eyed male

B. White eyed male and homozyhgous red eyed female

C. White eyed male and heterozygous red eyed female

D. Red eyed male and heterozygous red eyed female

Answer: C

 Watch Video Solution

43. Identify the autosomal recessive disorder from the following

A. Deutanopia

B. Tritanopia

C. Phrynoderma

D. Protanopia

Answer: B

Watch Video Solution

44. In born error of metabiolism discovered in humans by Sir Archibald Garrod is

A. Alkaptonuria

B. phenylketonuria

C. ketonuria

D. sickle cell anaemia

Answer: A

 Watch Video Solution

45. Huntington's disease is caused by

A. recessive gene on y chromosome

B. recessive gene on x chromosome

C. dominant gee on autosome

D. sex influenced gene on autosome

Answer: C

Watch Video Solution

46. The enzyme that is not produced in human albinos is

A. Phenyl alanine hydroxylase

B. Tyrosinase

C. Tyrosine kinase

D. Protein Kinases

Answer: B

Watch Video Solution

Watch Video Solution

47. The characteristic feature of a child with cri-du-chat syndrome is

A. microphthalmia

B. defective larynx

C. cleft palate

D. enlarged head

Answer: B

Watch Video Solution

48. Statement I: Edwards syndrome in more common is female offspring.

Statement II: Majority of children with the syndrome die during foetal stage

A. Both SI and SII are correct

B. Both SI and SII are false

C. SI is correct SII is incorrectq

D. SI in incorrect SII is correct

Answer: A

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49. Identify the incorrect statement about the disorder chronic myelogenous leukemia.

A. It occurs by reciprocal translocationof chromosomal fragments.

B. The abnormally long chromosome 9 formed by translocation is called Philadelphia chromosome

C. Uncontrolled cell divisions occus in bone marrow leading to the cancer.

D. Philadelphia chromosome is responsible for the production of abnormal tyrosine kinase enzyme

Answer: B

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Exercise Ii Ncert Examplar Problems

1. All genes located on the same chromosome.

A. Form different groups depending upon their relative distance

B. Form one linkage group

C. will not form any linkage groups

D. Form interactive groups that affect the phenotype

Answer: B

 Watch Video Solution

2. Conditions of a karyotype $2n \pm 1$ and $2n \pm 2$ are called

A. Aneuploidy

B. Polyploidy

C. Allopolyploidy

D. Monosomy

Answer: A

 Watch Video Solution

3. Distance between the ganes and prcentage of recombination shows.

A. A direct relationship

B. An inverse relationship

C. A parallel relationshi p

D. No relationship.

Answer: A

Watch Video Solution

4. If a genetic disease is transferred from a phenotypically normal but carrier female to only some of the male progey the disease is

A. Autosomal dominant

B. Autosomal recessive

C. Sex linked dominant

D. Sex linked recessive

Answer: D

Watch Video Solution

5. In sickle cell anaemia, glutmic acid is replaced by valine. Which one of the following triplets codes for valine

A. GGG

B. AAG

C. GAA

D. GUG

Answer: D

Watch Video Solution

6. Person having geotype $I^A I^B$ would show the blood group as AB. This is because of

A. Pleiotropy

B. Co-dominance

C. Segregation of unit factors

D. Incomplete dominance

Answer: B

Watch Video Solution

7. ZZ/ZW type of sex determination is seen in.

A. Platypus

B. Snails

C. Cockroach

D. Peacock

Answer: D

Watch Video Solution

8. A cross between two tall plants resulted in offspring having few dward plants. What would be genotypes of both the parents?

A. TT and Tt

B. Tt and Tt

C. TT and TT

D. Tt and tt

Answer: B

Watch Video Solution

9. In a dihybrid cross, if youget 9:3:3:1 ratio, it denotes that

A. The alleles of two genes are interacting with each other

B. It is a multigenic inheritance

C. It is a case of multiple allelims

D. The alleles of two genes are segregating independently

Answer: D

Watch Video Solution

10. Which of the following will not result in variations among siblings?

A. Independent assortment of genes

B. Crossing over

C. Linkage

D. Mutation

Answer: C

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

A. Non-homologous chromosomes

B. Homologous chromosomes

C. Extra nuclear genetic element

D. Same chromosome

Answer: B

 Watch Video Solution

12. Occassionally, a single gene may express more than one effect. The phenomenon is called

A. Multiple allelism

B. Mosaicism

C. Pleiotropy

D. Polygeny

Answer: C

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13. In a certain taxon of insects,some have 17 chromosomes and the other have 18 chromosomes. The 17 and 18 chromosome bearig organisms are

A. Males, and females, respectively

B. Females and males, respectively

C. All males

D. All females

Answer: A

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14. The inheritance patterns of a gene over generations among humans is studied by the pedigree analysis. Character studied in the pedigree analysis is equivalent to

A. Quantitative trait

B. Medelian trait

C. Polygenic trait

D. Meternal trait

Answer: B

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15. It is said that Mendel proposed that the factor controlling any character is descrete and independent. His proposition was based on the

A. Results of F_3 generation of a cross

B. Observation that the offspring of a cross made between the plants having two

constrsting characters shows only one character without any blending.

C. Self pollination of F_1 offsprings

D. Cross pollination of F_1 generations with recessive parental.

Answer: B

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16. Two genes A and B are linked in a dihybrid cross involving these two genes, the F_1 heterozygote 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: D

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17. In the F_2 generation fo a mendelian dihybrid cross, the number of phenotype and genotypes are

A. Phenotpes-4,genotypes-16

B. Phenotypes-9,genotypes-4

C. Phenotypes-4,genotypes-8

D. Phenotypes-4,genotypes-9

Answer: D

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18. 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 homozygou for A blood group and father is heterozygous of B

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

C. Both mother and fatehr are heterozygous for A and Blood group, respectively

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

Answer: C

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Exercise Iii Previous Aipmt Neet Questions

1. Which of the following most appropriately describes haemophilia?

A. Dominant gene disorder

B. Recessive gene disorder

C. X-linked recessive gene disorder

D. Chromosomal disorder

Answer: C

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2. Pick out the correct statements

a. Haemophilia is a sex linked recesive disease

b. Down's syndrome is due to ancuploidy

Phenylketonuria is an autosomal recessive gene disorder

d.Sickle cell anaemia is a X-linked recessive gene disorder

A. a,b and c are correct

B. b and d are correct

C. b and d are correct

D. a,c and d are correct

Answer: A

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3. Alleles are:

A. Heterozygotes

B. Different phenotype

C. True breeding homozygotes

D. Different molecular forms of a gene

Answer: D

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4. Which is the most common mechanism of genetic variation in the population of a sexually reproducing organism?

A. Recombination

B. Transduction

C. Chromosomal aberrations

D. Genetic drift

Answer: A

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5. How many pairs of contrasting characters in pea plants were studied by Mendel in his experiments?

A. Seven

B. Five

C. Six

D. Eight

Answer: A

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6. The term linkage was coined by :

A. W.Sutton

B. T.H.Morgan

C. T.Boveri

D. G.Mendel

Answer: B

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7. A pleiotropic gene

A. Controls multiple traitsin an individual

B. Is expressed only n primitive plants

C. Is a gene evolved during Policene

D. Controls a trait only in combination with another gene

Answer: A

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8. In his classic experiments 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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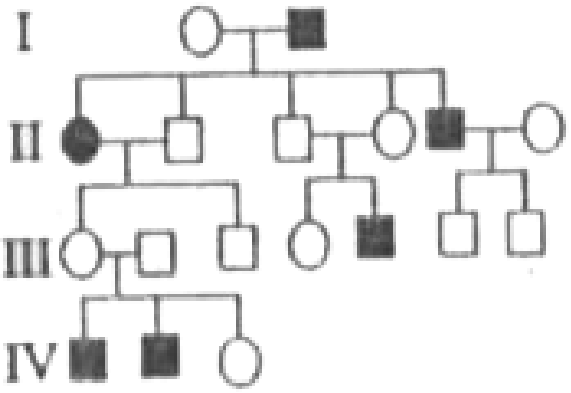
9. In the following human pedigree the filled symbols, represent the affected individuals. Identify the type of given pedigree.



A. X-linked dominant

B. Autosomal dominant

C. X-linked rescessive

D. Autosomal recessive trait

Answer: D

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

A. 0.25

B. 0.5

C. 1

D. nil

Answer: A

11. An abnormal human baby with XXX sex chromosomes was born due to

A. formation of abnormal ova in the mother

B. fusion of two ova and one sperm

C. fusion of two sperms and one ovum

D. formationof abnormal sperms in the father

Answer: A

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12. In a population of 1000 individuals 360 belong to genotype AA, 480 to Aa and the remaining 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

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Watch Video Solution

13. A man whose father was colour blind marries a woman who had a colour blind mother and normal father. What percentage of male children of this couple will be colour blind?

A. 0.25

B. 0

C. 0.5

D. 0.75

Answer: C

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14. Fruit colour in squash is an example of

A. Recessive epistasis

B. Dominant epistasis

C. Complementary genes

D. Inhibitory genes

Answer: B

Watch Video Solution

15. A human female with Turner's syndrome

A. Is able to produce children with normal husband

B. Has 45 chromosomes with XO

C. Has one additional X chromosome

D. Exhibits male characters

Answer: B

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16. An analysis of chromosomal DNA using the Southern hybridization technique does not use:

A. PCR

B. Electrophoresis

C. Blotting

D. Autoradiography

Answer: A

Watch Video Solution

17. If both parents are carriers for thalassemia, which is an autosoma recessive disorder, what are the chances of pregancy resulting in an affected child?

A. no chance

B. 0.5

C. 0.25

D. 1

Answer: C

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18. Which of the following statements is not true of two genes thath show 50% recombination frequency?

A. The genes may be on different chromomsomes

B. The genes are tightly linked

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

D. The frequency of crossing over is inversely proportional to the distance between two genes

Answer: B

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19. Which Medelian idea ils depicted by a cross in which the F_1 generation resembles both the parents.

A. Incomplete dominance

B. Law of dominance

C. Inheritance of one gene

D. Codominance

Answer: D

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20. The incorrect statement with regard to haemophilia is

A. It is a sex linked disease

B. It is a recessive disease

C. It is a dominant disease

D. A signle protein involved in the clotting of blood is affected

Answer: A

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21. A certain road accident patient with unknown blood group needs immediate blood transfusion. His one doctor friend at once offers his blood. What was the blood group of the donor?

A. Blood group O

B. blood group A

C. Blood group B

D. Blood group AB

Answer: A

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22. If two persons with AB blood group marry and have sufficiently large number of children, these children could be classified as A blood group AB blood group B blood group in 1:2:1 ratio Modern technique of protein electrophoresis reveals presence of both A individuals this an example of

A. Codominance

B. Incomplete dominance

C. Partial dominance

D. complete domiance

Answer: A

 Watch Video Solution

23. A normal visioned man whose father was coloured blind, marries a woman whose father was also colour blind. They have first child as a

daughter. What are the chances that this child would be colour blind.

A. 0.25

B. 0.5

C. 1

D. zero percent

Answer: D

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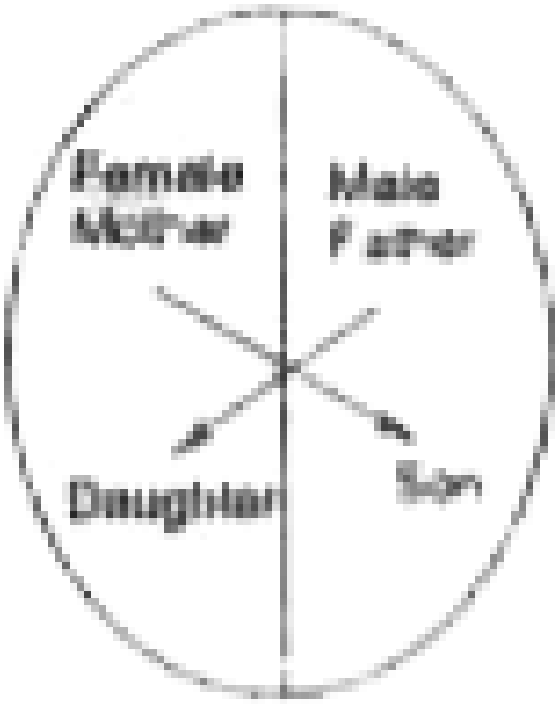
24. Represented below is the inheritance pattern of a certain typeof traits in human. Which one of the following conditions could be an example of this pattern?



A. Haemophilia

B. Thalasemia

C. phenylketonuria

D. Sickle cell anaemia

Answer: A

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

A. XO type of sex chromosomes determine male sex in grasshopper.

B. XO condition in humans as found in Turner syndrome, determine female sex.

C. Homozygous ssex chromosomes (xx) produce male in drosphila

D. Homozygous sex chromosomes (zz) determine female sex in birds.

Answer: A

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26. What would be the number of chromosomes of the aleurone cells of a plant with 42 chromosomes in its root tip cells?

A. 63

B. 84

C. 21

D. 42

Answer: A

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27. Which one of the following has its own DNA?

A. Mitochondria

B. Dictyosome

C. Lysosome

D. Peroxisome

Answer: A

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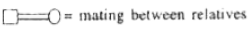
28. Which one of the folloiwng symbols and its representation used in human pedigree analysis is correct?

A.  = mating between relatives

B. ○ = unaffected male

C. □ = unaffected female

D. ◆ = male affected

Answer: A

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29. Sickle cell anaemia is an example of

A. an autosomal linked dominant trait

B. caused by substitution of valine by glutamic acid in the β globin chain of haemoglobin

C. caused by a change in base pair of DNA

D. characterized by elongated sickel like RBCs with nucleus

Answer: C

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30. Select the incorrect statement form the following.

A. linkage is an exception to the principle of independent assortment in heredity

B. galactosemia is an inbor error of metabolism

C. small populationsize results in random genetic drift in a population

D. baldness is a sex limited trait

Answer: D

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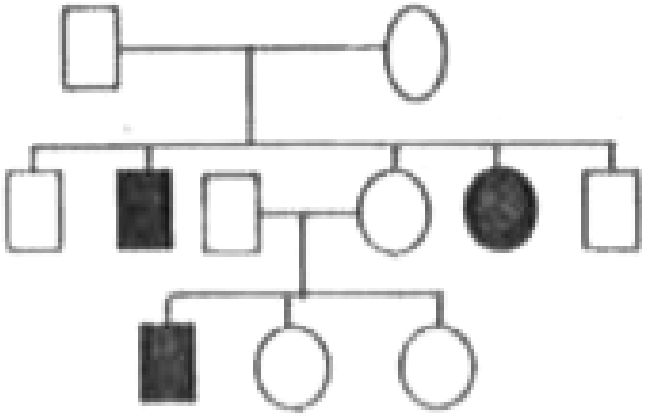
31. Study the pedigree charge given below



What does it show?

A. Inheritance of asex linked inborn error of metabolism like phenylketonuria

B. inheritance ofa condition like phenyl-ketonuria as an autosomal recessive

trait

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

D. Inheritance of a recessive sex linked disease like haemophilia

Answer: B

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32. Point mutation involves

A. insertion

B. change in single base pair

C. duplication

D. deletion

Answer: B

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33. Which one of the following condition in humans is correctly matched with its chromosomal abnormally /linkage?

A. Klinefelter's syndrome -44 autosomes+XXY

B. Coourbliridness-Y-linked

C. Erythroblstosis foetalis --X-linked

D. Down syndrome --44autosomes+XO

Answer: A

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34. In pea plants, yellow seeds ar dominant to green. If a heterozygous yellow seeded plant is crossed with a green seeded plant, what raito of yellow and green seeded plants would you expected in F_1 generation?

A. $50:50$

B. $9:1$

C. $1:3$

D. $3:1$

Answer: A

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35. What is true about the isolated small tribal populations?

A. There isa decline in population as boys marry girls only from their own tribe

B. Herediatary diseases like colour blindness do not spread in the isolated population

C. Wrestlers who develop strong bodh muscles intheir life time pass this character on to their progeny

D. There is no change in population size as they have a large gene pool

Answer: B

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36. A common test to find the genotype of a hybrid is by

A. Crossing of one F_2 progeny with male parent

B. crosing of one F_2 progeny with female parent

C. Studying the sexual behaviour of F_1 progenies

D. crossing of one F_1 progeny with male parent

Answer: D

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37. Two genes R and Y are located very close on the chromosomal linkage map of maize plant. When RRY and rryy genotypes are hybridized, then F_2 segregation will show

A. higher number of there combinant typcs

B. segregation in the expected 9:3:3:1 ratio

C. segregation in 3:1 ratio

D. higher number of te paretal types

Answer: D

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38. 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 perons?

A. aaBB $\times$ aaBB

B. AABB $\times$ aabb

C. AaBb $\times$ AaBb

D. AABB

Answer: A

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39. What is true about the isolated small tribal populations?

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