



BIOLOGY

BOOKS - NEET PREVIOUS YEAR (YEARWISE + CHAPTERWISE)

PRINCIPLES OF INHERITANCE AND VARIATION

Mcq

1. Which one from those given below is the period of Mendel's hybridisation experiments?

A. 1856 - 1863

B. 1840 - 1850

C. 1857 - 1869

D. 1870 - 1877

Answer: A



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2. Among the following characters, which one was not considered by Mendel in his experiments on pea?

- A. Stem - Tall or Dwarf
- B. Trichomes - Glandular or Non-glandular
- C. Seed - Green or Yellow
- D. Pod - inflated or Constricted

Answer: B



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3. The genotypes of a husband and wife are $I^A I^B$ and $I^A i$. Among the blood types of their children, how many different genotypes and

phenotypes are possible?

- A. 3 genotypes , 3 phenotypes
- B. 3 genotypes , 4 phenotypes
- C. 4 genotypes , 3 phenotypes
- D. 4 genotypes , 4 phenotypes

Answer: C



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4. Thalassemia and sickle-cell anaemia are caused due to a problem in globin molecule synthesis. Select the correct statement.

- A. Both are due to a qualitative defect in globin chain synthesis
- B. Both are due to a quantitative defect in globin chain synthesis
- C. Thalassemia is due to less synthesis of globin molecules

D. Sickle-cells anaemia is due to a quantitative problem of globin molecules

Answer: C



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

A. down's syndrome

B. klinefelter's syndrome

C. turner's syndrome

D. sickle-cell anaemia

Answer: A



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6. Which of the following most appropriately describes haemophilia?

- A. X-linked recessive gene disorder
- B. Chromosomal disorder
- C. Dominant gene disorder
- D. Recessive gene disorder

Answer: A



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

- A. polyploidy

B. somaclonal variation

C. polyteny

D. aneuploidy

Answer: A



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

Column I

Column II

A. Dominance

1. Many genes govern a single character

B. Codominance

2. In a heterozygous organism only one allele

C. Pleiotropy

3. In a heterozygous organism both alleles ex

D. Polygenic inheritance

4. A single gene influences many characters

A. A B C D
2 3 4 1

B. A B C D
4 1 2 3

C. A B C D
4 3 1 2

D. A B C D
2 1 4 3

Answer: A



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9. In a test cross involving F_1 dihybrid flies, more parental-type offspring were produced than the recombinant type offspring. This indicates

- A. chromosomes failed to separate during meiosis
- B. the two genes are linked and present on the same chromosome
- C. both of the characters are controlled by more than one gene
- D. the two genes are located on two different chromosomes

Answer: B



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10. Pick out the correct statements.

- I. Haemophilia is a sex-linked recessive disease.

II. Down's syndrome is due to aneuploidy.

III. Phenylketonuria is an autosomal recessive gene disorder.

IV. Sickle-cell anaemia is an X - linked recessive gene disorder.

A. II and IV are correct

B. I, III and IV are correct

C. I, II and III are correct

D. I and IV are correct

Answer: C



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

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

B. 3 : 1 :: Tall : Dwarf

C. 3 : 1 :: Dwarf : Tall

D. 1 : 2 : 1 :: Tall homozygous : Tall heterozygous : Dwarf

Answer: D



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

A. 0

B. 0.5

C. 0.75

D. 1

Answer: A



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13. A true breeding plant is

- A. one that is able to breed on its own
- B. produced due to cross-pollination among unrelated plants
- C. near homozygous and produces offspring of its own kind
- D. always homozygous recessive in its genetic constitution

Answer: C



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14. The mechanism that causes a gene to move from one linkage group to another is called

- A. inversion
- B. duplication
- C. translocation
- D. crossing over

Answer: C



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15. A gene showing codominance has

- A. one allele dominant on the other
- B. alleles tightly linked on the same chromosome
- C. alleles that are recessive to each other
- D. Both alleles independently expressed in the heterozygote

Answer: D



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16. The term "linkage" was coined by

- A. TH Morgan

B. T Boveri

C. G Mendel

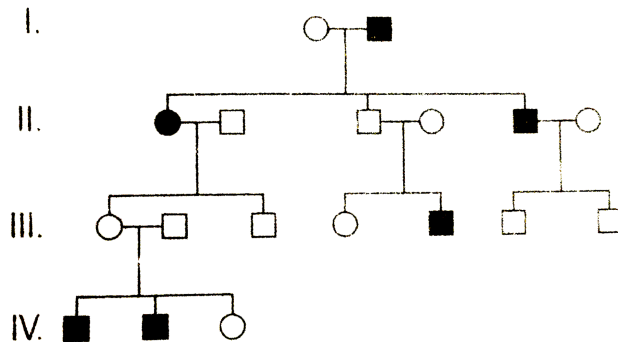
D. W Sutton

Answer: A



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



A. Autosomal dominant

B. X-linked recessive

C. Autosomal recessive

D. X-linked dominant

Answer: C



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

A. 0.5

B. 1

C. Nil

D. 0.25

Answer: D



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19. In his classic experiments on pea plants, Mendel did not use

- A. seed colour
- B. pod length
- C. seed shape
- D. flower position

Answer: B



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20. A pleiotropic gene

- A. is expressed only in primitive plants
- B. is a gene evolved during Pliocene
- C. controls a trait only in combination with another gene
- D. controls multiple traits in an individual

Answer: D



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21. 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: A



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22. A human female with Turner's syndrome

- A. has 45 chromosomes with XO
- B. has one additional X-chromosome
- C. exhibits male characters
- D. is able to produce children with normal husband

Answer: A



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23. Fruit colour in squash is an example of

- A. recessive epistasis
- B. dominant epistasis
- C. complementary genes
- D. inhibitory genes

Answer: B



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

- A. The genes may be on different chromosomes
- B. The genes are tightly linked
- C. The genes show independent assortment
- D. If the genes are present on the same chromosome, they undergo more than one crossovers in every meiosis

Answer: B



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25. 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' and 'B' type proteins in 'AB' blood group individuals. This is an example of

- A. codominance
- B. incomplete dominance
- C. partial dominance
- D. complete dominance

Answer: A



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26. If both parents are carriers for thalassaemia, which is an autosomal recessive disorder, what are the chances of pregnancy resulting in an affected child?

- A. No chance
- B. 0.5
- C. 0.25

D. 1

Answer: C



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27. Which Mendelian idea is 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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28. 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 single protein involved in the clotting of blood is affected

Answer: C



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

- A. 1
- B. 0
- C. 0.25

D. 0.5

Answer: B



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30. F_2 -generation in a Mendelian cross showed that both genotypic and phenotypic ratios are same as 1 : 2 : 1. It represents a case of

A. codominance

B. dihybrid cross

C. monohybrid cross with complete dominance

D. monohybrid cross with incomplete dominance

Answer: D



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31. 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, determines female sex
- C. Homozygous sex chromosomes (XX) produce male in *Drosophila*
- D. Homozygous sex chromosomes (ZZ) determine female sex in birds.

Answer: A



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32. Select the correct statement from the ones given below with respect to dihybrid cross.

- A. Tightly linked genes on the same chromosome show higher recombinations

B. Genes far apart on the same chromosome show very few recombinations

C. Genes loosely linked on the same chromosome show similar recombinations as the tightly linked ones

D. Tightly linked genes on the same chromosome show very few recombinations

Answer: D



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33. ABO blood groups in humans are controlled by the gene I . It has three alleles - I^A , I^B and i . Since there are three different alleles, six different genotypes are possible. How many phenotypes can occur?

A. Three

B. One

C. Four

D. Two

Answer: C



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



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35. Which one of the following cannot be explained on the basis of Mendel's Law of Dominance?

A. The discrete unit controlling a particular character is called a factor

B. Out of one pair of factors one is dominant, and the other recessive

C. Alleles do not show any blending and both the characters recover as such in F_2 -generation

D. Factors occur in pairs

Answer: C



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36. The genotype of a plant showing the dominant phenotype can be determined by

A. test cross

B. dihybrid cross

C. pedigree analysis

D. back cross

Answer: A



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37. Select the incorrect statement from the following

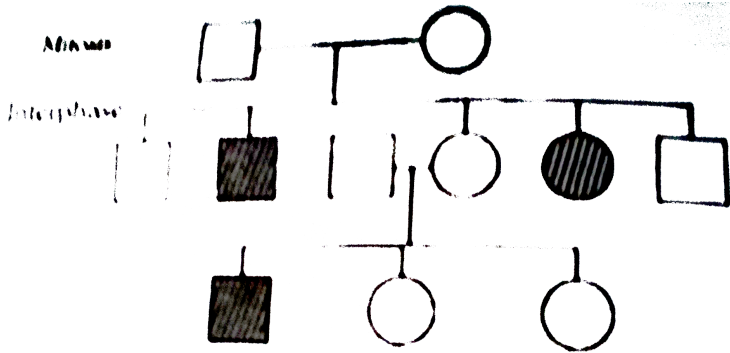
- A. linkage is an exception to the principle of independent assortment in heredity
- B. galactosemia is an inborn error of metabolisms
- C. small population size results in random genetic drift in a population
- D. baldness is a sex limited trait

Answer: D



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38. Study the pedigree chart given below



What does it show

- A. Inheritance of a sex-linked inborn error of metabolism like phenylketonuria
- B. Inheritance of a condition like phenylketonuria 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: D



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39. Point mutation involves

- A. insertion
- B. change in single base pair
- C. duplication
- D. deletion

Answer: B



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

- A. Klinefelter's syndrome-44 autosomes + XXY
- B. Colour blindness - Y-linked
- C. Erythroblastosis foetalis - X-linked
- D. Down syndrome- 44 autosomes + XO

Answer: A



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

A. 50 : 50

B. 9 : 1

C. 1 : 3

D. 3 : 1

Answer: A



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

- A. crossing of one F_2 progeny with male parent
- B. crossing 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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43. Two genes R and Y are located very close on the chromosomal linkage map of maize plant. When RRYT and rryy genotypes are hybridized the F_2 segregation will show

- A. higher number of the recombinant types
- B. segregation in the expected 9 : 3 : 3 : 1 ratio
- C. segregation in 3 : 1 ratio
- D. higher number of the parental types

Answer: D



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

A. AaBb

B. AaBB

C. AABb

D. AABB

Answer: A



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45. Test cross involves

- A. crossing between two genotypes with recessive trait
- B. crossing between two F_1 hybrids
- C. crossing the F_1 hybrid with a double recessive genotype
- D. crossing between two genotypes with dominant trait

Answer: C



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46. In which mode of inheritance do you expect more maternal influence among the offspring?

- A. Autosomal
- B. Cytoplasmic
- C. Y-linked
- D. X-linked

Answer: B



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47. How many different kinds of gametes will be produced by a plant having the genotype AABbCC?

A. Three

B. Four

C. Nine

D. Two

Answer: D



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48. In Mendel's experiments with garden pea, round seed shape (RR) was dominant over wrinkled seeds (rr), yellow cotyledon (YY) was dominant over green cotyledon (yy). What are the expected phenotypes in the F_2 -generation of the cross $RRYY \times rryy$?

- A. Only round seeds with green cotyledons
- B. Only wrinkled seeds with yellow cotyledons
- C. Only wrinkled seeds with yellow cotyledons
- D. Round seeds with yellow cotyledons and wrinkled seeds with yellow cotyledons

Answer: D



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49. Phenotype of an organism is the result of

- A. mutations and linkages
- B. cytoplasmic effects and nutrition
- C. environmental changes and sexual dimorphism
- D. genotype and environmental interactions

Answer: D



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50. In order to find out the different types of gametes produced by a pea plant having the genotype AaBb, it should be crossed to a plant with the genotype

- A. aaBB
- B. AaBb
- C. AABB
- D. aabb

Answer: D



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51. Haemophilia is more commonly seen in human males than in human females because

- A. this disease is due to an X-linked dominant mutation
- B. a greater proportion of girls die in infancy
- C. this disease is due to an X-linked recessive mutation
- D. this disease is due to a Y-linked recessive mutation

Answer: C



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52. A women with normal vision, but whose father was colour blind, marries a colour blind man. Suppose that the fourth child of this couple was a boy. This boy

- A. must have normal colour vision
- B. will be partially colour blind since he is heterozygous for the colour blind mutant allele
- C. must be colour blind
- D. may be colour blind or may be of normal vision

Answer: D



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53. A man and a woman, who do not show any apparent signs of a certain inherited disease, have seven children (2 daughters and 5 sons). Three of the sons suffer from the given disease but none of the daughters are affected. Which of the following mode of inheritance do you suggest for this disease ?

- A. Autosomal dominant
- B. Sex-linked dominant
- C. Sex-limited recessive
- D. Sex-linked recessive

Answer: D



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54. A normal woman whose father was colour blind is married to a normal man. The sons would be

- A. 75% colour blind
- B. 50% colour blind
- C. all normal
- D. all colour blind

Answer: B



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

- A. 25% will be tall with red fruit
- B. 50% will be tall with red fruit

C. 75% will be tall with red fruit

D. all of the offspring will tall with red fruit

Answer: A



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56. A male human is heterozygous for autosomal genes A and B and is also hemizygous for haemophilic gene h. What proportion of his sperms will be abh?

A. $\frac{1}{8}$

B. $\frac{1}{32}$

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

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

Answer: A



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57. The recessive genes located on X-chromosome in humans are always

- A. lethal
- B. sublethal
- C. expressed in males
- D. expressed in females

Answer: C



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58. Extranuclear inheritance is a consequence of presence of genes in

- A. mitochondria and chloroplasts
- B. endoplasmic reticulum and mitochondria
- C. ribosomes and chloroplast
- D. lysosomes and ribosomes

Answer: A



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59. 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



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60. In a mutational event, when adenine is replaced by guanine, it is the case of

A. frameshift mutation

B. transcription

C. transition

D. transversion

Answer: C



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61. One of the parents of a cross has mutation in mitochondria. In that cross, that parent is taken as a male. During segregation of F_2 -progenies that mutation is found in

A. one-third of the progenies

B. none of the progenies

C. all of the progenies

D. fifty per cent of the progenies

Answer: B



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62. Pattern baldness, moustanches and beard in human males are examples of :

- A. sex differentiating traits
- B. sex determining traits
- C. sex linked traits
- D. sex limited traits

Answer: D



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63. Two crosses between the same pair of genotypes or phenotypes in which the sources of the gametes are reversed in one cross, is known as:

- A. dihybrid cross
- B. reverse cross
- C. test cross
- D. reciprocal cross

Answer: D



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64. the linkage map of X -chromosomes of fruitfly has 66 units with yellow body gene (y) at one end and bobbed hair (b) gene at the other end the recombination frequency between these two genes (y and b) should be :

- A. $\leq 50 \%$
- B. 100%
- C. 66%
- D. $> 50 \%$

Answer: B



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65. Down's syndrome is caused by an extra copy of chromosome number 21. What percentage of offspring produced by an affected mother and a normal father would be affected by this disorder

- A. 50 %
- B. 25 %
- C. 100 %
- D. 75 %

Answer: A



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66. The genes controlling the seven pea characters studied by Mendel are now known to be located on how many different chromosomes?

- A. Five
- B. Four
- C. Seven
- D. Six

Answer: B



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67. Which one of the following traits of garden pea studied by Mendel was a recessive feature?

- A. Green pod colour
- B. Round seed shape
- C. Axial flower position

D. Green seed colour

Answer: D



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68. Which of the following discoveries resulted in a Nobel Prize

- A. Recombination of linked genes
- B. Genetic engineering
- C. X-rays induce sex-linked recessive lethal mutations
- D. Cytoplasmic inheritance

Answer: C



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69. When a cluster of genes shows linkage behaviour they

- A. do not show independent assortment
- B. induce cell division
- C. do not show a chromosome map
- D. show recombination meiosis

Answer: A



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70. In *Drosophila*, the sex is determined by

- A. the ratio of pairs of X-chromosomes to the pairs of autosomes
- B. whether the egg is fertilised or develops parthenogenetically
- C. the ratio of number of X-chromosomes to the set of autosomes
- D. X and Y-chromosomes

Answer: A



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71. Genes for cytoplasmic male sterility in plants are located in

- A. nuclear genome
- B. cytosol
- C. chloroplast genome
- D. mitochondrial genome

Answer: D



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72. In recent years, DNA sequences (nucleotide sequence) of maternal DNA and Y-chromosome were considered for the study of human evolution, because :

- A. their structure is known in greater detail
- B. they can be studied from the samples of fossil remains

C. they are small and therefore, easy to study

D. they are uniparental in origin and do not take part in recombination

Answer: D



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73. Genetic map is one that :

A. shows the stages during the cell division

B. shows the distribution of various species in a region

C. establishes sites of the genes on a chromosome

D. establishes the various stages in gene evolution

Answer: C



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74. There are three genes a, b, c, percentage of crossing over between a and b is 20%, b and c is 28% and a and c is 8%. What is the sequence of genes on chromosome?

- A. b, a, c
- B. a, b, c
- C. a, c, b
- D. None of these

Answer: A



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75. Which of the following is the example of sex-linked disease?

- A. AIDS
- B. Colour blindness
- C. Syphilis

D. Gonorrhoea

Answer: B



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76. Which of the following is the example of pleiotropic gene , -

A. haemophilia

B. thalassemia

C. sickle-cell anaemia

D. colour blindness

Answer: C



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77. Change in the sequence of nucleotide in DNA is called as

- A. Mutagen
- B. Mutation
- C. Translation
- D. recombination

Answer: B



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78. A plant of F_1 -generation has genotype 'AABbCC'. On selfing of this plant, the phenotypic ratio in F_2 -generation will be

- A. 3 : 1
- B. 1 : 1
- C. 9 : 3 : 3 : 1
- D. 27 : 9 : 9 : 3 : 3 : 3 : 1

Answer: A



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79. Mendel obtained wrinkled seeds in pea due to deposition of sugars instead of starch. It was due to which enzyme :-

- A. amylase
- B. invertase
- C. diastase
- D. absence of starch-branching enzyme

Answer: D



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80. Which of these do not follow independent assortment?

- A. Genes on non-homologous chromosomes and absence of linkage
- B. Genes on homologous chromosomes

C. Linked genes on same chromosome

D. Unlinked genes on same chromosome

Answer: C



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81. Inheritance would be extranuclear in case of

A. Killer Paramecium

B. Killer Amoeba

C. Euglena

D. Hydra

Answer: A



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82. Number of Barr bodies in XXXX female would be

A. 1

B. 2

C. 3

D. 4

Answer: C



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83. Male XX and female XY sometime occur due to :

A. deletion

B. transfer of segments in X and Y-chromosomes

C. aneuploidy

D. hormonal imbalance

Answer: D



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84. Two nonallelic genes produces the new phenotype when present together but fail to do so independently then it is called : -

- A. epistasis
- B. polygene
- C. non-complementay gene
- D. complementary gene

Answer: D



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85. A and B genes are linked. What shall be the genotype of progeny in a cross between AB/ab and ab/ab ?

A. Aabb and aabb

B. AaBb and aabb

C. AABB and aabb

D. None of these

Answer: B



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86. Ratio of complementary genes is

A. 9 : 3 : 4

B. 12 : 3 : 1

C. 9 : 3 : 3 : 4

D. 9 : 7

Answer: D



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87. During organ differentiation in *Drosophila*, an organ is modified to another organ (such as wings may be replaced by legs). Genes responsible for such metamorphosis are called

- A. double dominant genes
- B. plastid genes
- C. complementary genes
- D. homeotic genes

Answer: D



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88. *Drosophila* flies with XXY genotype are females, but human beings with such genotype are abnormal males. It shows that

- A. Y-chromosome is essential for sex determination in *Drosophila*

B. Y-chromosome is female determining in Drosophila

C. Y-chromosome is male determining in human beings

D. Y-chromosome has no role in sex determination either in Drosophila or in human beings

Answer: C



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89. Mutation generally produces

A. recessive genes

B. lethal genes

C. polygenes

D. dominant genes

Answer: A



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

- A. Green seed colour
- B. Terminal flower position
- C. Green pod colour
- D. Wrinkled seed

Answer: C



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91. Hybridisation between $Tt \times tt$ gives rise to the progeny of ratio

- A. 1:1
- B. 1:2:1
- C. 1:2

D. 4: 1

Answer: A



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92. Haemophilic man marries a normal woman. Their offspring will be

A. all boys haemophilic

B. all normal

C. all girls haemophilic

D. all haemophilic

Answer: B



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93. Which of the following is the main category of mutation?

- A. Somatic mutation
- B. Genetic mutation
- C. Zygotic mutation
- D. All of these

Answer: B



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94. A woman with two genes (one on each X-chromosome) for haemophilia and one gene for colour blindness on the X-chromosomes marries a normal man. How will the progeny be?

- A. All sons and daughters haemophilic and colour blind
- B. Haemophilic and colour blind daughters
- C. 50% haemophilic colour blind sons and 50% haemophilic sons
- D. 50% haemophilic daughters and 50% colour blind daughters

Answer: C



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95. Albinism is known to be due to an autosomal recessive mutation. The first child of a couple with normal skin pigmentation was an albino. What is the probability that their second child will also be an albino?

A. 100 %

B. 25 %

C. 50 %

D. 75 %

Answer: B



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96. Crossing over in diploid organism is responsible for

- A. dominance of genes
- B. linkage between genes
- C. segregation of alleles
- D. recombination of linked alleles

Answer: D



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97. How many types of genetically different gametes will be produced by a heterozygous plant having genotype AABbCc?

- A. Two
- B. Four
- C. Six
- D. Nine

Answer: B



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98. Mental retardation in man, associated with sex chromosomal abnormality is usually due to

- A. reduction in X-complement
- B. increase in X-complement
- C. moderate increase in Y-complement
- D. large increase in Y-complement

Answer: B



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99. Which base is responsible for hotspots for spontaneous point mutations?

- A. Guanine

B. Adenine

C. 5-bromouracil

D. 5-methylcytosine

Answer: D



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100. If Mandel had studied 7 traits using a plant with 12 chromosomes instead of 14, he would have

A. He would have mapped the chromosome

B. He would have discovered blending or incomplete dominance

C. He would not have discovered the law of independent assortment

D. He would have discovered sex-linkage

Answer: C



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101. When a single gene influences more than one trait it is called

- A. pleiotropy
- B. epistasis
- C. pseudodominance
- D. None of these

Answer: A



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102. Loss of an X-chromosome in a particular cell, during its development, results into

- A. diploid individual
- B. triploid individual
- C. gynandromorphs

D. Both (a) and (b)

Answer: C



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103. The formation of multivalents at meiosis in diploid organism is due to

A. monosomy

B. inversion

C. deletion

D. reciprocal translocation

Answer: D



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104. A fruit fly heterozygous for sex-linked genes, is mated with normal female fruit fly. Male specific chromosome will enter egg cell in the proportion

A. 1 : 1

B. 2 : 1

C. 3 : 1

D. 7 : 1

Answer: A



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105. Foetal sex can be determined by examining cells from the amniotic fluid by looking for

A. Barr bodies

B. autosomes

C. chiasmata

D. kinetochore

Answer: A



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106. A mutation at one base of the first codon of a gene produces a non-functional protein. Such a mutation is referred as

A. frameshift mutation

B. mis-sense mutation

C. non-sense mutation

D. reverse mutation

Answer: B



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107. The hereditary material (DNA) present in the bacterium E.coli is :

- A. single stranded RNA
- B. double stranded RNA
- C. single stranded DNA
- D. double stranded DNA

Answer: D



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108. Genetic identity of a human male is determined by

- A. autosome
- B. nucleolus
- C. sex chromosome
- D. cell organelles

Answer: C



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109. Different mutations referable to the same locus of chromosome give rise to

- A. pseudoalleles
- B. polygenes
- C. oncogenes
- D. multiple alleles

Answer: D



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110. After crossing two plants, the progenies are found to be male sterile. The phenomenon is found to be maternally inherited and is due to some

genes which reside in

- A. nucleus
- B. chloroplast
- C. mitochondria
- D. cytoplasm

Answer: C



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111. HJ Muller was awarded Noble Prize for his

- A. discovery that chemicals can induce gene mutations
- B. discovery that ionizing radiations can induce gene mutations
- C. work on gene mapping in *Drosophila*
- D. efforts to prevents the use of nuclear weapons

Answer: A



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112. A man with a certain disease marries a normal woman. They have eight children (3 daughters and 5 sons). All the daughters suffer from their father's disease but none of the sons are affected. Which of the following mode of inheritance do you suggest for this disease?

- A. Sex-linked recessive
- B. Sex-linked dominant
- C. Autosome dominant
- D. Sex-linked recessive

Answer: B



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113. A person with 47 chromosomes due to an additional X-chromosome suffers from a condition called

- A. Down's syndrome
- B. Super female
- C. Turner's syndrome
- D. Klinefelter's syndrome

Answer: D



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114. Alleles that produce independent effects in their heterozygous condition are called

- A. codominant alleles
- B. epistatic alleles
- C. complementary alleles
- D. supplementary alleles

Answer: A



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115. An individual exhibiting both male and female sexual characteristics in the body is known as

- A. hermaphrodite
- B. intersex
- C. gynandromorphs
- D. bisexual

Answer: C



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116. The most striking example of point mutation is found in a disease called

- A. thalassemia

- B. night blindness
- C. Down's syndrome
- D. sickle-cell anaemia

Answer: D



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117. The polytene chromosomes were discovered for the first time in

- A. Drosophila
- B. Chironomus
- C. Musca nebulo
- D. Musca domestica

Answer: B



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118. When two genetic loci produce identical phenotypes in cis as well as in trans position ,they are considered to be

- A. pseudoalleles
- B. different genes
- C. multiple alleles
- D. parts of same gene

Answer: A



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119. In a dihybrid cross $AABB \times aabb$, F_2 progeny of $AABB$, $AABb$, $AaBB$ and $AaBb$ occurs is the ratio of:

- A. 1:1:1:1
- B. 9:3:3:1
- C. 1:2:2:1

D. 1:2:2:4

Answer: D



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120. A cross between pure tall Pea plant with green pods and dwarf Pea Plant with yellow pods will produce short F_2 plant out of 16

A. 9

B. 3

C. 4

D. 1

Answer: C



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121. Out of A-T,G-C pairing bases of DNA may exist in alternate valencyt state owing to arrangement calld

- A. analogue substitution
- B. tautomerisational mutation
- C. frameshift mutation
- D. point mutation

Answer: B



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122. A colourblind woman marries a normal visioned male. In the offspring

- A. both son and daughter are colour blind
- B. all daughters are colour blind
- C. all sons are normal
- D. all sons are colour blind

Answer: D



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123. Genes located on Y-chromosome are

- A. mutant genes
- B. sex-linked genes
- C. autosomal genes
- D. holandric genes

Answer: D



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124. A woman with albinic father marries an albinic man. The proportion of her progeny is

A. 2 normal : 1 albinic

B. all normal

C. all albinic

D. 1 normal : 1 albinic

Answer: D



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125. A child of blood group 'O' cannot have parents of blood groups:

A. AB and AB/O

B. A and B

C. B and B

D. O and O

Answer: A



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126. 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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127. Two dominant non-allelic genes are 50 map units apart. The linkage is

A. cis type

B. trans type

C. complete

D. absent/incomplete

Answer: D



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128. Medel studied inheritance of seven pairs of traits in pea which can have 21 possible combinations. If you are told that in one of these combinations. If you are told that in one of these combinations, independent assortment is not observed in later studies, your reaction will be

- A. independent assortment principle may be wrong
- B. Mendel might not have studied all the combinations
- C. it is impossible
- D. later studies may be wrong

Answer: B



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129. Of both normal parents, the chance of a male child becoming colour blind are

- A. no
- B. possible only when all the four grand parents had normal vision
- C. possible only when father's mother was colour blind
- D. possible only when mother's father was colour blind

Answer: D



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130. Mr Kapoor has Bb autosomal gene pair and d allele sex linked. What shall be proportion of Bd in sperms

- A. 0
- B. $\frac{1}{2}$

C. $1/4$

D. $1/8$

Answer: C



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131. Sex is determined in human beings

A. by ovum

B. at the time of fertilisation

C. 40 days after fertilisation

D. seventh to eight week when genitals differentiate in foetus

Answer: B



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132. Of a normal couple half the sons are haemophiliac while half the daughters are carriers. The gene is located on

- A. X-chromosome of father
- B. Y-chromosome of father
- C. one X-chromosome of mother
- D. both the X-chromosomes of mother

Answer: C



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133. A polygenic inheritance in human beings is

- A. skin colour
- B. phenylketonuria
- C. colour blindness
- D. sickle-cell anaemia

Answer: A



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134. In human being ,45 chromosomes (44+ XO) cause:

- A. Down's syndrome
- B. klinefelter's syndrome
- C. Turner's syndrome
- D. Edward's syndrome

Answer: C



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135. A colourblind mother and normal father would have

- A. colour blind sons and normal/carrier daughters

B. colour blind sons and daughters

C. all colour blind

D. all normal

Answer: A



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136. Down's syndrome is due to

A. crossing over

B. linkage

C. sex-linked inheritance

D. non-disjunction of chromosomes

Answer: D



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137. When a certain character is inherited only through female parent it probably represents

- A. multiple plastid inheritance
- B. cytoplasmic inheritance
- C. incomplete dominance
- D. Mendelian nuclear inheritance

Answer: B



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138. Out of 8 ascospores formed in *Neurospora* the arrangement is 2a : 4a : 2a showing

- A. no crossing over
- B. some meiosis
- C. second generation division

D. first generation division

Answer: C



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139. An organism with two identical alleles for a given trait is:

A. dominant

B. hybrid

C. heterozygous

D. homozygous

Answer: D



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140. Segregation of Mendelian factors (no linkage no crossing over) occurs during:

- A. anaphase-I
- B. anaphase-II
- C. diplotene
- D. metaphase-I

Answer: A



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141. An allele is dominant if it is expressed in:

- A. both homozygous and heterozygous states
- B. second generation
- C. heterozygous combination
- D. homozygous combination

Answer: A



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142. One gene pair hides the effect of another. The phenomenon is:

- A. epistasis
- B. dominance
- C. mutation
- D. None of these

Answer: A



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143. RR (red) *Antirrhinum majus* is crossed with white (rr) one. Offsprings (Rr) are pink. This is an example of:

A. dominant-recessive

B. incomplete dominance

C. hybrid

D. supplementary genes

Answer: B



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144. The allele which is unable to express its effect in the presence of another is called

A. codominant

B. supplementary

C. complementary

D. recessive

Answer: D



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145. The contrasting pairs of factors in Mendelian crosses are called

- A. multiple alleles
- B. allelomorphs
- C. alloloci
- D. paramorphs

Answer: B



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146. First geneticist/father of genetics was

- A. De Vries
- B. Mendel
- C. Darwin

D. Morgan

Answer: B



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147. Mendel's last law is

- A. segregation
- B. dominance
- C. independent assortment
- D. polygenic inheritance

Answer: C



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148. A dihybrid condition is

A. tt Rr

B. Tt rr

C. tt rr

D. Tt Rr

Answer: D



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149. A colour blind girl is rare because she will be only when :

A. her mother and maternal grandfather were colourblind

B. her father and maternal grandfather were colourblind

C. her mother is colour blind and father has normal vision

D. parents have normal vision but grand parents were colourblind

Answer: B



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150. Blue eye colour is recessive to brown eye colour. A brown eyed man whose mother was blue eyed marries a blue eyed women. The children shall be

- A. both blue eyed and brown eyed 1 : 1
- B. all brown eyed
- C. all blue eyed
- D. blue eyed and brown eyed 3 : 1

Answer: A



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151. Multiple alleles control inheritance of

- A. phenylketonuria
- B. colour blindness

C. sickle-cell anaemia

D. blood groups

Answer: D



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152. Which one is a hereditary disease?

A. Cataract

B. Leprosy

C. Blindness

D. Phenylketonuria

Answer: D



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153. Haemophilia is more common in males because it is a

- A. recessive character carried by Y-chromosome
- B. dominant character carried by Y-chromosome
- C. dominant trait carried by X-chromosome
- D. recessive trait carried by X-chromosome

Answer: D



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154. Both husband and wife have normal vision though their father were colour blind and mother did not have any gene for colour blindness .The probability of their daughter becoming colour blind is :

- A. 0 %
- B. 25 %
- C. 50 %

D. 75 %

Answer: A



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155. In Down 's syndrome of a male child , the sex complement is

A. XO

B. XY

C. XX

D. XXY

Answer: B



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156. When an albino female plant of maize is crossed with normal green male plant, all plants in the progeny are albino because

- A. trait for albinism is dominant
- B. the albinos have biochemical to destroy plastids derived from green male
- C. plastids are inherited from female parent
- D. green plastids of male must have mutated

Answer: C



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157. Two linked genes *a* and *b* show 20% recombination the individuals of a hybrid cross between $++/++ \times ab/ab$ should show gametes:

- A. $++ : 80 : ab : 20$
- B. $++ : 50 : ab : 50$

C. $+ + 40:ab40: + a10: + b:10$

D. $+ + 30:ab30: + a20: + b:20$

Answer: C



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158. Diploid chromosome number in humans is :

A. 46

B. 44

C. 48

D. 42

Answer: A



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159. A family of five daughters only is expecting sixth issue. The chance of its being a son is

- A. Zero
- B. 25 %
- C. 50 %
- D. 100 %

Answer: C



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160. Which of the following contributed to the success of Mendel?

- A. Qualitative analysis of data
- B. Observation of distinct inherited traits
- C. His knowledge of Biology
- D. Consideration of one character at one time

Answer: D



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161. Haploids are able to express both recessive and dominant alleles /mutations because there are :

- A. many alleles for each gene
- B. two alleles for each gene
- C. only one allele for each gene in the individual
- D. only one allele in a gene

Answer: C



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