



BIOLOGY

BOOKS - GR BATHLA & SONS BIOLOGY (HINGLISH)

MENDELIAN INHERITANCE

Multiple Choice Questions

1. Genetic is the branch of science which deals with the study of:

- A. Cell function
- B. Cell structure
- C. Heredity and Variation
- D. Relation between plant and environment

Answer: C



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2. The term 'genetics' was proposed by:

- A. T.H. Morgan
- B. W. Johannsen
- C. Gregor Mendel
- D. William Bateson

Answer: D



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3. 'Like begets like' is an important and universal phenomenon

- A. heredity
- B. epistasis
- C. evolution

D. pleiotropy

Answer: A



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4. Which is the functional unit of inheritance?

A. Gene

B. Intron

C. Cistron

D. Chromosome

Answer: A



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5. The term 'gene' was introduced by:

A. Mendel

B. Bateson

C. Morgan

D. Johannsen

Answer: D



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6. Identify the correct match between scientists and their contributions:

Scientists	Contributions
A Gregor Mendel	1 Polygenic inheritance
B Johannsen	2 Term 'Genetics'
C William Bateson	3 Fundamentals of heredity
D Nilsson-Ehle	4 Term 'Gene'

A. A=3, B=4, C=2, D=1

B. A=3, B=1, C=2, D=4

C. A=4, B=3, C=2, D=1

D. A=3, B=2, C=1, D=4

Answer: A



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7. Match the following and choose the correct combination from the options given:

Column I		Column II	
A	J. B. S. Haldane	1	American geneticist
B	Gregor Mendel	2	Dutch botanist
C	Hugo de Vries	3	British geneticist
D	T. H. Morgan	4	Austrian monk

A. A=1, B=4, C=2, D=3

B. A=1, B=3, C=2, D=1

C. A=3, B=4, C=2, D=1

D. A=2, B=4, C=1, D=3

Answer: C



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8. Genes which code for a pair of contrasting characters are called:

- A. alleles
- B. traits
- C. factors
- D. gametes

Answer: A



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9. Genes which code for a pair of contrasting characters are called:

- A. factors
- B. alleles
- C. alloloci
- D. paramorphs

Answer: B



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10. Alleles are:

- A. chromatids
- B. chromosomes
- C. isomers of a gene
- D. alternate forms of a gene

Answer: D



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11. Alleles of a gene are found on:

- A. same chromosome

- B. any chromosomes
- C. homologous chromosomes
- D. nonhomologous chromosomes

Answer: C



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12. Which statement about alleles is not true?

- A. There may be several at a locus
- B. One may be dominant over another
- C. They may show incomplete dominance
- D. They occupy different loci on the same chromosome

Answer: D



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13. A gamete normally contains:

- A. one allele of a gene
- B. two alleles of a gene
- C. all alleles of a gene
- D. many alleles of a gene

Answer: A



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

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

Answer: D



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15. An allele is recessive if it is expressed only in:

- A. first filial generation
- B. homozygous combination
- C. heterozygous combination
- D. both homozygous and heterozygous state

Answer: B



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16. When an allele fails to express itself in the presence of another, the former is said to be:

- A. epistatic
- B. recessive
- C. hypostatic
- D. dominant

Answer: B



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17. A recessive mutant is one which is:

- A. not expressed
- B. rarely expressed
- C. expressed only in heterozygous state
- D. expressed only in homozygous and hemizygous state

Answer: D



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18. Whether an allele is dominant or recessive depends on:

- A. how common the allele is relative to other alleles
- B. whether or not it is linked to other genes
- C. which chromosome it is on
- D. none of the above

Answer: D



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

- A. alloloci
- B. paramorphs
- C. allelomorphs

D. multiple alleles

Answer: C



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20. Allelomorphic pair implies

- A. any two characters
- B. sex-linked characters
- C. a pair of contrasting characters
- D. a pair of non-contrasting characters

Answer: C



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21. Alleles are:

A. different molecular forms of a gene

B. true breeding homozygotes

C. different phenotype

D. heterozygotes

Answer: A



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

A. dominant

B. homozygous

C. segregating

D. heterozygous

Answer: B



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23. when different alleles of the same gene are present in an individual, it is a:

- A. diploid
- B. mosaic
- C. homozygous
- D. heterozygous

Answer: D



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24. The physical appearance of an individual is known as:

- A. genotype
- B. heterotype
- C. phenotype

D. morphotype

Answer: C



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25. The phenotype of an individual:

- A. determines the genotype
- B. is either monohybrid or dihybrid
- C. is either homozygous or heterozygous
- D. depends at least in part on the genotype

Answer: D



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26. The genetic complement of an organism is known as:

- A. genotype
- B. physiotype
- C. phenotype
- D. morphotype

Answer: A



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27. The terms 'genotype' and 'phenotype' were introduced by:

- A. Darwin
- B. Bateson
- C. Mendel
- D. Johannsen

Answer: D



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28. Plants having similar genotypes produced by plant breeding are called

- A. clones
- B. haploid
- C. autoploid
- D. none of these

Answer: A



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29. Mating between two individuals differing in genotype to produce genetic variation is called

- A. mutation
- B. introduction
- C. hybridization

D. domestication

Answer: C



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30. When cross is made between two species of the same genus, then the cross is known as:

- A. intraspecific hybridization
- B. interspecific hybridization
- C. intergeneric hybridization
- D. intervarietal hybridization

Answer: B



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31. A character expressed in hybrid is

- A. recessive
- B. dominant
- C. co-dominant
- D. epistatic

Answer: B



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32. Cross between unrelated group of organisms is called

- A. hybrid
- B. heterosis
- C. test cross
- D. back cross

Answer: A



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33. The phenomenon where the offspring superior than either of the parents is:

- A. influence
- B. inheritance
- C. penetrance
- D. heterosis (hubrid vigour)

Answer: D



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34. Heterosis is referred to as the phenomenon of attainment of:

A. increased vigour in a hybrid

B. organogenesis in plant

C. production of spores

D. localized over growth

Answer: A



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35. Hybrid vigour is mostly due to:

A. homozygosity of pure characters

B. superiority of all the genes

C. heterozygosity

D. none of the above

Answer: C



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36. Which of the following is an example of hybrid vigour?

- A. Mule
- B. Horse
- C. Donkey
- D. Neopilina

Answer: A



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37. The horse (*Equus caballus*) has a diploid complement of 64 chromosomes including 36 acrocentric autosomes, the ass (*Equus asinus*) has 62 chromosomes including 22 acrocentric autosomes. Predict the number of chromosomes to be found in the hybrid offspring (mule) produced by mating ass (jack) to a female horse (mare):

A. 33

B. 63

C. 36

D. 64

Answer: B



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38. Emasculation of flower body is achieved by removal of:

A. anthers

B. carpels

C. flowers

D. perianth

Answer: A



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39. Emasculation is the removal of:

- A. calyx from the flower of the male parent
- B. stigma from the flower of the male parent
- C. calyx from the flower of the female parent
- D. stamen from the flower of the female parent

Answer: D



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40. Emasculation is a part of:

- A. hybridization
- B. mass selection
- C. clonal selection

D. pure line selection

Answer: A



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41. The first great geneticist was:

A. Miller

B. Darwin

C. Mendel

D. Morgan

Answer: C



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42. Mender is called the father of:

- A. Genetics
- B. Taxonomy
- C. Palaeobotany
- D. None of these

Answer: A



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43. What was Mender's most important contribution to the modern understanding of biology?

- A. The concept of meiosis
- B. The concept of chromosome
- C. Chromosome theory of heredity
- D. The concept that hereditary information comes in discrete units

Answer: D



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44. Gregor Johann Mendel was born in:

- A. Russia
- B. Austria
- C. Czechoslovakia
- D. United Kingdom

Answer: B



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45. Gregor Johann Mendel was born in the year:

- A. 1815
- B. 1822
- C. 1884

D. 1901

Answer: B



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46. Gregor Johann Mender died in the year:

A. 1884

B. 1822

C. 1894

D. 1902

Answer: A



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47. Mendel worked in:

A. 17th century

B. 18th century

C. 19th century

D. 20th century

Answer: C



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48. Mendel published the results of his experiments in the year:

A. 1568

B. 1773

C. 1921

D. 1866

Answer: D



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49. Mendelism is related with:

- A. meiosis during sexual reproduction
- B. mutations in living organisms
- C. heredity in living beings
- D. none of the above

Answer: C



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50. Laws of inheritance were given by:

- A. Mendel
- B. Darwin
- C. Correns

D. Lamarck

Answer: A



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51. Which of the following plants were selected for Mendel's famous experiments on inheritance?

A. Wild pea

B. Sweet pea

C. Garden pea

D. Sweet potato

Answer: C



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52. The organism chosen by Mendel to explain the laws of inheritance was:

- A. Homo sapiens
- B. Pisum sativum
- C. Antirrhinum majus
- D. Drosophia melanogaster

Answer: B



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53. Following are the statements, which are either true or false. Examine them and find out the incorrect answer. Mendel had selected Pisum sativum (garden pea) as his experimental tool because:

- A. the hybrids remain infertile
- B. the plants can be self-fertilized

C. these small herbaceous plants can be easily cultivated

D. there are several pairs of contrasting characters of allotropic traits

Answer: D



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54. Mendel chose pea plants because they:

A. were cheap

B. were easily available

C. have great economic importance

D. were having contrasting characters

Answer: D



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55. Which one of the following was rediscoverer of Mendel's work?

- A. Muller
- B. Bridges
- C. Morgan
- D. Correns

Answer: D



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56. Mendel's work was rediscovered by three scientists in the year

- A. 1756
- B. 1865
- C. 1900
- D. 1910

Answer: C



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57. In 1900 AD, three biologists independently rediscovered Mendel's principals. They were:

- A. Sutton, Morgan and Bridges
- B. Bateson, Punnett and Bridges
- C. Avery, MacLeod and McCarty
- D. de Vries, Correns and Tschermak

Answer: D



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58. Mendel's work was got republished in 'Flora' by

- A. Correns
- B. de Vries
- C. Tschermak
- D. All of these

Answer: B



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

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

Answer: C



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

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

Answer: A



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61. Which of the following characters in pea was not chosen by Mendel?

- A. Pod shape
- B. Pod colour

C. Location of pod

D. Location of flower

Answer: C



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62. Which trait was not incorporated by Mendel for his experiments?

A. Colour of pea pod

B. Colour of pea seed

C. Colour of pea plant

D. Colour of pea flower

Answer: C



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63. Which of the following are dominant characters according to Mendel?

- A. Green coloured pod and rounded seed
- B. Terminal fruit and wrinkled seed
- C. White testa and yellow pericarp
- D. Dwarf plant and yellow fruit

Answer: A



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64. Which of the following is considered as a recessive character of Mendel?

- A. Green pod
- B. Axial flower
- C. Round seed
- D. Wrinkled seed

Answer: D



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65. In pea, wrinkling of seeds is due to nonformation of starch because of the absence of:

A. diastase

B. invertase

C. amylase

D. branching enzyme

Answer: D



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66. Which of the following characters selected by Mendel are recessive?

A. Yellow pod colour and wrinkled seeds

B. Green pod colour and dwarf plant

C. Dwarf plant and round seeds

D. Tall plant and axial flowers

Answer: A



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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. Green seed colour

D. Axial flower position

Answer: C



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68. The haploid chromosome number in *Pisum sativum* is:

- A. 8
- B. 10
- C. 7
- D. 14

Answer: C



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69. In *Pisum sativum* there are 14 chromosomes. How many pairs with different chromosomal composition can be prepared?

- A. 2^7
- B. 2^{14}

C. 7

D. 14

Answer: A



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70. Gens that are present on the same chromosome are called:

A. linear

B. syntenic

C. synaptic

D. none of these

Answer: B



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71. The genes for which of the following characters in pea plants are syntenic?

- A. Plant height
- B. Pod shape
- C. Flower position
- D. All of these

Answer: D



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72. The genes for flower colour and seed colour in pea plant are located on the chromosome pair:

- A. 1
- B. 4
- C. 5

D. 7

Answer: A



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73. The genes for flower position and pod shape in pea plant are located on the chromosome pair:

A. 1

B. 4

C. 5

D. 7

Answer: B



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74. The procedure adopted by Mendel which was different from his predecessors in:

- A. keeping breeding records
- B. quantitative analysis of data
- C. differentiating inherited traits
- D. employing many traits at one time

Answer: B



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

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

Answer: D



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76. The reason why pea plants were more suitable than dogs for Mendel's experiments?

- A. Dogs have many genetic traits
- B. Pea plants can be self fertilized
- C. There are no pedigree records of dogs
- D. The pea plants favour cross-fertilization

Answer: B



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77. A series of self-breeding generations having homozygous genotypes is called:

- A. hybrid
- B. pure line
- C. phenocopy
- D. heterozygote

Answer: B



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78. Pure line breed refers to:

- A. homozygosity only
- B. heterozygosity only
- C. heterozygosity and linkage
- D. homozygosity and independent assortment

Answer: A



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79. Selection of homozygous plant is:

- A. mass selection
- B. mixed selection
- C. pure line selection
- D. none of these

Answer: C



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80. Which of the following is true for Mendelism but not for Darwinism?

- A. It was based on insufficient data
- B. It was modified by subsequent workers
- C. It influence human thought tremendously

D. It gave well defined principles even in early stage

Answer: D



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81. The three principles of Mendelism are:

- A. linkage, segregation and independent assortment
- B. linkage, dominance-recessiveness and segregation
- C. dominance-recessiveness, segregation and independent assortment
- D. dominance-recessiveness, linkage and independent assortment

Answer: C



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82. Mendel's laws are applicable only in:

- A. interacting genes of two chromosomes
- B. genes which are linked
- C. true breeding parents
- D. all of the above

Answer: C



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83. Mendel's law of heredity can be explained with the help of

- A. mitosis
- B. meiosis
- C. both of these
- D. none of these

Answer: B



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84. Mendel enunciated principles of inheritance

- A. two
- B. four
- C. five
- D. three

Answer: A



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85. Who and on which animal the Mendelian laws of inheritance were first confirmed?

- A. Correns on dog
- B. Muller on guinea pig
- C. de Vries on *Oenothera*

D. Morgan on *Drosophila*

Answer: D



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86. Mendel's first law is called:

- A. law of variation
- B. law of inheritance
- C. law of segregation
- D. law of independent assortment

Answer: C



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87. Law of segregation of gametes was proposed by:

- A. Mendel
- B. Huxley
- C. Hugo de Vries
- D. Robert Hooke

Answer: A



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88. Mendel's law of segregation is also known as

- A. probability
- B. purity of gametes
- C. punnett hypothesis
- D. independence of gametes

Answer: B



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89. "Gametes are never hybrids". This is a statement of law of:

- A. dominance
- B. segregation
- C. random fertilization
- D. independent assortment

Answer: B



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90. Mendel's law of segregation is applicable to:

- A. dihybrid cross only
- B. monohybrid cross only
- C. dihybrid but not monohybrid cross

D. both dihybrid and monohybrid cross

Answer: D



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91. Mendel's law of segregation was based on the separation of alleles in the garden pea during:

A. pollination

B. seed formation

C. gamete formation

D. embryonic development

Answer: C



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92. Mendel's law is still true because it takes place in:

- A. sexually reproducing plants
- B. asexually reproducing plants
- C. apomictic reproducing plants
- D. all types of reproducing plants

Answer: A



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93. If a plant heterozygous for tallness is selfed, the F_2 generation has both tall and dwarf plants. This proves the principle of:

- A. dominance
- B. segregation
- C. incomplete dominance
- D. independent assortment

Answer: B



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94. In order to explain the mode of inheritance of character through successive generations Mendel proposed that the two alternative factors for each character become separated during the formation of gametes and each factor has an equal chance of being transferred to the offspring. This phenomenon is known as:



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95. When a cross is made between two parents with respect to a single character, it is called:

A. dihybrid

B. trihybrid

C. monohybrid

D. none of these

Answer: C



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96. Mendel formulated the law of purity of gametes on the basis of:

A. test cross

B. back cross

C. dihybrid cross

D. monohybrid cross

Answer: D



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97. Law of dominance-recessiveness is proved by:

- A. back cross
- B. dihybrid cross
- C. monohybrid cross
- D. incomplete dominance

Answer: C



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98. Monohybrid cross involves individuals:

- A. with parent
- B. different in one trait
- C. different in two traits
- D. with two different parents

Answer: B



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99. Which of the following is the monohybrid ratio?

A. 3 : 1

B. 9 : 7

C. 1 : 2

D. 9 : 3 : 3 : 1

Answer: A



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100. When a tall pea plant (TT) is crossed with a dwarf plant (tt) what will be the F_2 generation?

A. All tall plants

B. All dwarf plants

C. Both tall and dwarf plants in 3 : 1 ratio

D. Both tall and dwarf plants in 1 : 1 ratio

Answer: C



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101. A monohybrid cross produced tall and dwarf plants in the ratio 3 : 1.

The genotype of the hybrids can be:

A. $Tt \times TT$

B. $Tt \times Tt$

C. $tt \times TT$

D. $tt \times Tt$

Answer: B



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102. In a cross 45 tall and 14 dwarf plants were obtained. Genotypes of parents are:

- A. $Tt \times tT$
- B. $TT \times tt$
- C. $TT \times Tt$
- D. $TT \times TT$

Answer: A



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103. In a monohybrid cross, the genotypic ratio of F_2 is:

- A. 3 : 1
- B. 1 : 2 : 1
- C. 4 : 0
- D. 1 : 1 : 1 : 1

Answer: B



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104. In all of Mendel's experiments, the two alleles causing a trait were:

- A. co_recessive
- B. co-dominant
- C. dominant-recessive
- D. incompletely dominant

Answer: C



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105. If two alleles come together, only one is able to express it self. This is called:

- A. Law of dominance
- B. Law of segregation
- C. Law of incomplete dominance
- D. law of independent assortment

Answer: A



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106. The character which appears at F_1 generation is:

- A. recessive
- B. dominant
- C. incomplete recessive
- D. incomplete dominant

Answer: B



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107. A gene is said to dominant if:

- A. it never expresses in any condition
- B. it expresses only in heterozygous condition
- C. it express its effect only in homozygous condition
- D. it expresses both in heterozygous and homozygous condition

Answer: D



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108. Pure tall plant is crossed to dwarf plant. F_1 generation consists of only tall plants while F_2 generation has both tall and dwarf in ratio of 3:1.

The phenomenon is due to

- A. heredity
- B. dominance

C. inheritance

D. co-dominance

Answer: B



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109. 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. test cross

B. reverse cross

C. dihybrid cross

D. reciprocal cross

Answer: D



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110. Pure red flowered and white flowered plants were crossed. It produced 120 offspring with

- A. All red flowered
- B. 90 white-flowered and 30 red-flowered
- C. 90 red-flowered and 30 white-flowered
- D. 60 white-flowered and 60 red-flowered

Answer: A



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111. A homozygous plant with red flower is crossed with recessive white. Red is dominant over white. The progeny in the F_1 generation will be:

- A. All red
- B. All white
- C. 50% red and 50% white

D. 75% red and 25% white

Answer: A



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112. How many types of gametes will be produced in F_2 generation of a monohybrid cross of Mendel?

A. 3

B. 4

C. 8

D. 16

Answer: B



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113. Mendel's principle of segregation means that the germ cells always receive:

- A. one pair of alleles
- B. one quarter of the genes
- C. one of the paired alleles
- D. any pair of alleles

Answer: C



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114. A red-flowered pea plant was crossed with white-flowered plant. In F_1 generation all plants were red. It confirms that white colour is:

- A. recessive character
- B. dominant character
- C. non genetic expression

D. none of the above

Answer: A



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115. One of Mendel's pure strains of pea plants had white flowers. How many different kinds of eggs could such a plant produce with regard to flower colour?

A. one

B. two

C. four

D. eight

Answer: A



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116. A woman with straight hair mates with man with curly hair who is known to be heterozygous for that trait. What is the chance that their first child will have curly hair?

- A. No chance
- B. One in two
- C. It is certain
- D. One in four

Answer: B



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117. Percentage of heterozygous individuals obtained from selfing Rr individuals is:

- A. 25
- B. 75

C. 50

D. 100

Answer: C



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118. If the frequency of a recessive phenotype in a stable population is 25%, the frequency of recessive allele in the population would be:

A. 0.75

B. 0.5

C. 0.375

D. 0.25

Answer: B



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119. Black coat of guinea pigs is a dominant trait, white is the recessive trait. When a pure black guinea pig is crossed to a white one, what fraction of the black F_2 is expected to be heterozygous?

A. $1/2$

B. $1/3$

C. $2/3$

D. $1/4$

Answer: C



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120. Which statement about Mendel's cross of RR peas with rr peas is not true?

A. This is an example of a monohybrid cross

B. Three genotypes are observed in F_2 generation

C. Three phenotypes are observed in F_2 generation

D. Each parent can produce only one type of gamete

Answer: C



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121. A heterozygous round seeded (Rr) plant is crossed to recessive wrinkled (rr) seeded plant. The progeny would be:

A. 20 rounded : 99 wrinkled

B. 99 rounded : 301 wrinkled

C. 301 rounded : 100 wrinkled

D. 303 rounded : 301 wrinkled

Answer: D



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122. A pure tall and a pure dwarf plant were crossed to produce offsprings. Offsprings were self crossed, then find out the ratio between true breeding tall to true breeding dwarf?

A. 1 : 1

B. 3 : 1

C. 2 : 1

D. 1 : 2 : 1

Answer: A



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123. In human being, brown eye (B) is dominant over blue eye (b) A brown-eyed couple has a blue-eyed child. What is the possible genotypes of the couple?

A. $Bb \times bb$

B. $Bb \times bB$

C. $BB \times bb$

D. $BB \times bB$

Answer: B



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124. Which of the following crosses and resultant phenotypic ratios are mismatched?

A. Cross Phenotypic ratio
(a) $Tt \times Tt$ — 3:1

B. Cross Phenotypic ratio
(b) $tt \times Tt$ — 2:1

C. Cross Phenotypic ratio
(c) $TtYy \times ttyy$ — 1:1:1:1

D. Cross Phenotypic ratio
(d) $TtYy \times TtYy$ — 9:3:3:1

Answer: B



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125. Match the items given in column I with those listed in column II.

Choose the answer with correct combination of alphabets of the two columns:

Column I	Column II
<i>A</i> Monohybrid cross	<i>p</i> T and t
<i>B</i> Test cross	<i>q</i> TT
<i>C</i> Alleles	<i>r</i> TT×tt
<i>D</i> Homozygous tall	<i>s</i> tt
	<i>t</i> Tt×tt

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

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

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

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

Answer: C



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126. In humans, freckles is dominant over no freckles. A man with freckles marries a woman having freckles, but the children have no freckles. What chances did each child have for freckles?

A. 0.25

B. 0.5

C. 0.75

D. 1

Answer: C



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127. In fruits flies, L = long wings and l = short wings. The offsprings exhibit a 1:1 ratio when a long-winged fly is crossed with short-winged fly. What is the genotype of parents?

A. Ll , Ll

B. LL , Ll

C. Ll , LL

D. Ll , ll

Answer: D



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128. In the garden pea, round seeds are dominant over wrinkled seeds. An investigator crosses a plant having round seeds with a plant having wrinkled seeds. He counts 400 offspring. How many of the offspring have wrinkled seeds if the plant having round seeds is a heterozygote?

A. 200

B. 250

C. 300

D. all 400

Answer: A



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129. In human, pointed eyebrows (B) are dominant over smooth eyebrows (b). Sita's father has pointed eyebrows, but she and her mother have smooth. What is the genotype of the father?

A. bb

B. BB

C. Bb

D. any one of these

Answer: C



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

- A. homozygous
- B. merozygous
- C. hemizygous
- D. heterozygous

Answer: D



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131. A tobacco plant heterozygous for recessive character is self-pollinated and 1200 seeds are subsequently germinated. How many seedlings would have the parental genotype ?

A. 300

B. all

C. 600

D. none of these

Answer: C



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132. If a cross is made between AA and aa, the nature of F_1 progeny will be:

A. genotypically aa, phenotypically A

B. genotypically Aa, phenotypically a

C. genotypically AA, phenotypically a

D. genotypically Aa, phenotypically A

Answer: D

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133. Ratio of progeny when a red coloured heterozygote is crossed with a white coloured plant in which red colour is dominant to white colour:

A. 3 : 1

B. 1 : 1

C. 1 : 2 : 1

D. 9 : 3 : 3 : 1

Answer: B

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134. Two pea plants were subjected cross pollination. Of the 183 plants produced in the next generation, 94 plants were found to be tall and 89 plants were found to be dwarf. The genotypes of the two parental plants are likely to be:

A. TT and tt

B. Tt and Tt

C. Tt and tt

D. TT and TT

Answer: C



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135. Chi-square test is:

A. calculated of percentage

B. calculated on frequency

C. both (a) and (b)

D. calculated on original data

Answer: D



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

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

Answer: B



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137. When an F_1 individual is crossed with its either of the two parents, the cross is known as:

- A. test cross
- B. back cross

C. reciprocal cross

D. monohybrid cross

Answer: B



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138. Back cross involves:

A. crossing between the two parents

B. crossing between two F_1 hybrids

C. crossing between two hybrids in F_2

D. crossing the F_1 hybrid to either of the parents

Answer: D



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139. When a cross is made between off srpings and one of its parents, it is known as:

- A. back cross
- B. dihybrid cross
- C. reciprocal cross
- D. monohybrid cross

Answer: A



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140. In a back cross, a F_1 hydrid is crossed with dominant parent , the offsprings :

- A. All will be tall
- B. 3 tall : 1 short
- C. 1 tall : 1 short

D. 1 tall : 3 short

Answer: A



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141. The back cross of F_1 hybrid with the recessive parent is called :

- A. Monohybrid cross
- B. Reciprocal cross
- C. dominant-recessive cross
- D. Punnett square cross

Answer: A



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142. If an organism is crossed with homozygous recessive recessive individual, it is called :

- A. back cross
- B. test cross
- C. simple cross
- D. monohybrid cross

Answer: B



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

- A. test cross
- B. back cross
- C. dihybrid cross

D. perdigree analysis

Answer: A



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144. A cross used to ascertain whether a dominant is homozygous or heterozygous is termed :

- A. test cross
- B. Reciprocal
- C. dihybird cross
- D. hybrid cross

Answer: A



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145. Cross between recessive parent and F_1 hybrid is called :

- A. test cross
- B. back cross
- C. reciprocal cross
- D. monohybrid cross

Answer: A



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146. $Tt \times tt$ cross is called:

- A. back cross
- B. test cross
- C. reciprocal cross
- D. hybrid cross

Answer: B



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147. Test cross is cross of:

- A. F_1 individual with any parent
- B. F_1 individual with F_1 individual
- C. F_1 individual with homozygous recessive
- D. F_1 individual with heterozygous recessive

Answer: C



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148. The term test cross refers to a cross between:

- A. F_1 hybrid and F_2 individual

- B. F_1 hybrid with another F_1 hybrid
- C. F_1 hybrid and either of the parents
- D. F_1 hybrid and a double recessive individual

Answer: D



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149. In a test cross we perform a cross between :

- A. $F_1 \times$ any parent
- B. $F_2 \times$ recessive parent
- C. $F_1 \times$ recessive parent
- D. recessive parent \times dominant parent

Answer: C



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150. A test cross distinguishes between :

- A. two homozygous forms
- B. two heterozygous forms
- C. a homozygous recessive and heterozygous form
- D. a homozygous dominant and heterozygous form

Answer: D



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151. Which of the following pairs on hybridization produces 1 :1 phenotypic ratio ?

- A. Tt, tt
- B. TT, Tt
- C. TT, tt
- D. None of these

Answer: A



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152. Heterozygosity of F_1 hybrids can be determined by :

- A. test cross
- B. back cross
- C. reciprocal cross
- D. hybrid cross

Answer: A



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153. Which statements about a test cross is not true?

- A. It tests whether an unknown individual is homozygous or heterozygous
- B. The test individual is crossed with a homozygous recessive individual
- C. If the test individual is heterozygous, the progeny will have a 1:1 ratio
- D. If the test individual is homozygous, the progeny will have a 1:1 ratio

Answer: D



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154. A cross between F_1 hybrid and a recessive parent gives a ratio of:

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

C. 1:1

D. 4:1

Answer: C



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155. Phenotypic ratio of monohybrid test cross is:

A. 1:1

B. 3:1

C. 1:2:1

D. None of these

Answer: A



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156. A cross in which an organism showing a dominant phenotype is crossed with the recessive parent in order to know its genotype is called:

- A. back cross
- B. test cross
- C. dihybrid cross
- D. monohybrid cross

Answer: B



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157. Heterozygous purple flower is crossed with recessive white flower.

The progeny has the ratio:

- A. All white
- B. All purple
- C. 50% purple and 50% white

D. 75% purple and 25% white

Answer: C



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158. Heterozygous tall plant (Tt) is crossed with homozygous dwarf (tt) plant. Then what will be the percentage of dwarf plants in the next generation?

A. 0.25

B. 1

C. 0

D. 0.5

Answer: D



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159. To determine heterozygosity or homozygosity a plant must be crossed with:

- A. recessive
- B. dominant
- C. homozygous dominant
- D. heterozygous dominant

Answer: A



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160. Test cross is a cross between:

- A. hybrid \times recessive parent
- B. hybrid \times dominant parent
- C. hybrid \times hybrid parent
- D. two distantly related species

Answer: A



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161. Tt mates with tt. What will be characteristic of offsprings?

- A. All dominant
- B. 25% recessive
- C. 50% recessive
- D. 75% recessive

Answer: C



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162. When heterozygous red (dominant) flower is crossed with white flower the progeny would be:

A. 450 red : 250 white

B. 350 red : 350 white

C. 380 red : 320 white

D. none of the above

Answer: B



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163. Mating of an organism to a double recessive in order to determine whether it is homozygous for a character under consideration is called:

A. test cross

B. back cross

C. dihybrid cross

D. reciprocal cross

Answer: A

164. Test cross involves:

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

Answer: A

165. When tall and dwarf plants are crossed, from which cross 1 : 1 ratio is obtained?

- A. tt and tt
- B. $Tt \times Tt$

C. Tt and tt

D. TT and Tt

Answer: C



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166. Mendel's second law is:

A. segregation

B. dominance

C. polygenic inheritance

D. independent assortment

Answer: D



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167. Mendel's law of independent assortment can be demonstrated by:

- A. test cross
- B. dihybrid cross
- C. back cross
- D. monohybrid cross

Answer: B



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168. A cross between two pairs of alleles is called:

- A. linkage
- B. dihybrid cross
- C. crossing over
- D. monohybrid cross

Answer: B



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169. A cross between plants having RRY \bar{Y} and rryy composition will yield plants with:

- A. round and yellow seeds
- B. round and green seeds
- C. wrinkled and green seeds
- D. wrinkled and yellow seeds

Answer: A



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170. Organism heterozygous for two genes shall be:

A. RRYy

B. RrYY

C. RRYy

D. RrYy

Answer: D



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171. Ratio 9 : 3 : 3 : 1 is due to:

A. lethal genes

B. dihybrid cross

C. duplicate genes

D. monohybrid cross

Answer: B



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172. Dihybrid test cross ratio is

- A. 1 : 2 : 1
- B. 1 : 1
- C. 9 : 3 : 4
- D. 9 : 3 : 3 : 1

Answer: D



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173. Phenotypic dihybrid ratio in F_2 generation is:

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

D. 1:1:1:1

Answer: B



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174. In F_2 the phenotypic ratio of dihybrid cross is:

A. 1:1:1:1

B. 3:1

C. 9:3:3:1

D. 9:3:4

Answer: C



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

- A. 0
- B. $1/2$
- C. $1/4$
- D. $1/16$

Answer: D



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176. A dihybrid for qualitative trait is crossed with homozygous recessive individual of its type, the phenotypic ratio is:

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

C. 1:1:1:1

D. 9:3:3:1

Answer: C



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177. When two hybrids of $rrTt$ and $Rrtt$ are crossed, the phenotypic ratio of offspring shall be:

A. 1:1

B. 1:1:1:1

C. 3:1

D. 9:3:3:1

Answer: B



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178. Tall pea plant with red flower crossed to dwarf with white flower yields only tall red plants. A test cross shall give a ratio of:

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

Answer: B



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179. Ratio 1:1:1:1 is obtained from a cross of

- A. $RRYY \times rryy$
- B. $RRYy \times rrYy$
- C. $RrYY \times Rryy$
- D. $RrYy \times rryy$

Answer: D



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180. Phenotypic ratio of dihybrid test cross is:

A. 15:1

B. 3:1

C. 9:3:3:1

D. 1:1:1:1

Answer: D



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181. In a dihybrid cross, pure homozygous plants will be:

A. 2

B. 1

C. 3

D. 9

Answer: A



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182. Genotypic ratio of dihybrid cross is:

A. 1 : 2 : 2 : 4 : 3 : 1 : 2 : 1

B. 1 : 3 : 2 : 4 : 2 : 1 : 2 : 1 : 2

C. 1 : 2 : 2 : 4 : 2 : 1 : 2 : 1 : 1

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

Answer: C



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183. In pumpkins, yellow (Y) is dominant over white, big (B) is dominant over small (b). What is the expected phenotypic ratio of the offsprings when pumpkins, heterozygous for both traits are crosses?

- A. 9: 7
- B. 1: 1: 1: 1
- C. 9: 3: 4
- D. 9: 3: 3: 1

Answer: D



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184. In a cross between $AABB \times aabb$, the ratio of F_2 genotype between $AABB, AaBB, Aabb$ and $aabb$ would be

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

C. 1:2:2:4

D. 1:2:2:1

Answer: C



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185. Mendel's law of independent assortment is based on F_2 ratio of

A. 3:1

B. 1:2:1

C. 2:1

D. 9:3:3:1

Answer: D



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186. Female AaBb is crossed with male Aabb. The gametes shall be:

- A. Female Aa, and Ab, male Ab
- B. Female AB, ab, Ab, aB and male Ab
- C. Female Aa, Bb, ab, AB and male Ab
- D. Female AB, ab, Ab, aB and male AA, bb

Answer: B



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187. From a cross $AABb \times aaBb$, the genotypes AaBB, AaBb, Aabb, aabb will be obtained in the following ratio:

- A. 1:2:1:0
- B. 1:1:1:1
- C. 0:3:1:0
- D. 1:1:1:0

Answer: A



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188. In a certain plant, red fruit (R) is dominant over yellow fruit (r) and tallness (T) is dominant over dwarfness (t). If a plant with RRTt genotype is crossed with a plant that is rrtt, what will be the percentage of tall plants with red fruits in the progeny?

A. 1

B. 0.25

C. 0.5

D. 0.75

Answer: C



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189. In guinea pigs, smooth coat (S) is dominant over rough coat (s) and black coat (B) is dominant over white coat (b). In the cross $SsBb \times SsBb$, how many of the offsprings will have a smooth black coat an average?

- A. 1 / 16
- B. 3 / 16
- C. 9 / 16
- D. 12 / 16

Answer: C



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190. In humans, short fingers and discontinuous hairline are dominant over long fingers and continuous hairline. A heterozygote in both regards reproduces with a similar heterozygote. What is the chance of any one child having the same phenotype as the parents?

A. $12/16$

B. $9/16$

C. $3/16$

D. $1/16$

Answer: B



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191. 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: B



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192. The cytological event that corresponds to Mendel's law of independent assortment is seen in:

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

Answer: A



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193. Which of these could be a normal gamete?

A. Ry

B. Ryy

C. RrY

D. RrYy

Answer: A



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194. Gametes of AaBb individuals can be:

A. Aa, Bb

B. AB, aB, ab

C. AB, ab

D. AB, Ab, aB, ab

Answer: D



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195. Genetic traits are often carried on separate chromosomes. Which of the following genotype represents a dihybrid organism?

A. ttrr

B. ttRr

C. TtRr

D. TTRR

Answer: C



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196. An individual heterozygous for two alleles (CcDd) produce one million sperms, how many of the sperms will have both dominant alleles?

A. 1 million

B. 0.50 million

C. 0.25 million

D. 0.75 million

Answer: C



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197. Probability of genotype TTrr in F_2 generation of a dihybrid cross is:

A. $1/16$

B. $3/16$

C. $9/16$

D. $6/16$

Answer: A



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198. Had Mendel decided to study those traits together which are determined by linked genes, he would not have found out:

- A. dominance
- B. crossing over
- C. principle of segregation
- D. principle of independent assortment

Answer: D



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199. Mendelian recombinations are due to:

- A. mutation
- B. pleiotrophy
- C. crossing over
- D. independent assortment

Answer: D



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200. Independent assortment means:

- A. separation of parental characters
- B. segregation of parental characters
- C. recombination of parental characters
- D. non-separation of parental characters

Answer: C



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201. In Mendelism, linkage was not observed due to:

- A. synapsis

B. mutation

C. crossing over

D. independent assortment

Answer: D



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202. Mendel did not notice/ An exception to Mendel's laws:

A. linkage

B. dominance

C. segregation

D. independent assortment

Answer: A



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

- A. He would have discovered sex linkage
- B. He would have mapped the chromosome
- C. He would have discovered blending or incomplete dominance
- D. He would not have discovered the law of independent assortment

Answer: D



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204. Which of the following demonstrates the 'laws of independent assortment'?

- A. test cross
- B. back cross
- C. Trihybrid cross

D. Monohybrid cross

Answer: C



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205. Independent assortment of genes does not take place when:

- A. genes are located on homologous chromosomes
- B. genes are linked and located on the same chromosome
- C. genes are located on nonhomologous chromosomes
- D. all of the above

Answer: B



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206. Law of Mendel which is not completely applicable is:

- A. co-dominance
- B. law of dominance
- C. law of segregation
- D. law of independent assortment

Answer: D



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207. Mendel's law of independent assortment is applicable for:

- A. all linked genes only
- B. all genes in all organism
- C. all genes of pea plant only
- D. all non-linked genes only

Answer: D



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208. In dihybrid crosses the F_1 heterozygous plants are self fertilized to produce an F_2 generation and if offsprings are computed in Punnett square the phenotypic F_2 ratio as per Mendel's independent assortment will yields:

- A. 9:7
- B. 9:3:3:1
- C. 9:6:1
- D. 12:3:1

Answer: B



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209. The ratio of 9:3:3:1 is due to

- A. segregation of characters

- B. crossing over of chromosomes
- C. independent assortment of genes
- D. homologous pairing between chromosomes

Answer: C



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210. Which type of gametes are produced by RrYy?

- A. ry, ry, rY, ry
- B. RY, Ry, rY, ry
- C. RY, RY, rY, rY
- D. RY, RY, RY, RY

Answer: B



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211. A cross involving F_1 hybrid and a double recessive parent is:

- A. test cross
- B. dihybrid cross
- C. multiple cross
- D. trihybrid cross

Answer: A



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212. The dihybrid test cross ratio is:

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

Answer: D



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213. In a cross between individuals with genotypes TtRr, if the resulting number of offspring is 16, identify the number of genotypes with TtRr and TtRR amongst them:

A. 4 and 2

B. 2 and 3

C. 3 and 1

D. 1 and 2

Answer: A



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

- A. 25% will be tall with red fruit
- B. 50% will be tall with red fruit
- C. 75% will be tall with red fruit
- D. all the offspring will be tall with red fruit

Answer: B



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215. How many different types of gametes can be formed by F_1 progeny resulting from the following cross?

AABBCC \times aabbcc

- A. 3

B. 8

C. 27

D. 64

Answer: B



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216. A trihybrid cross is made between two yeasts, both with genotypes $AsBbCc$. What proportion of the offspring will be of the genotypes $aabbcc$?

A. 0

B. $1/16$

C. $1/4$

D. $1/64$

Answer: D

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217. A plant of F_1 generation with genotype $AABbBB$. On selfing of this plant what is the phenotypic ratio in F_2 generation?

A. 1:1

B. 3:1

C. 9:3:3:1

D. 27:9:9:9:3:3:3:1

Answer: B

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218. How many difference types of gametes can be produced by an organism of the genotype $AaBBCc$?

A. 3

B. 8

C. 4

D. 9

Answer: C



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219. How many types of genetically different gametes can be produced by an animal of genotype AaBBCC?

A. one

B. two

C. four

D. eight

Answer: B



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220. How many types of genetically different gametes will be produced by heterozygous plant having the genotype AABbcc?

- A. two
- B. six
- C. four
- D. eight

Answer: A



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221. How many genetically different gametes can be made by an individual of genotype AaBbccDDEe?

- A. 5
- B. 10

C. 8

D. 32

Answer: C



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222. If an individual of genotype $AaBbCcDd$ is test crossed, how many different phenotypes can appear in progeny?

A. 4

B. 12

C. 8

D. 16

Answer: D



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223. If individuals of genotype $AaBbCc$ are intercrossed, how many different phenotypes can occur in their progeny?

- A. 3
- B. 8
- C. 6
- D. 16

Answer: B



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224. If individuals of genotype $AaBbCc$ are intercrossed, how many different genotypes can occur in their progeny?

- A. 6
- B. 16
- C. 8

D. 27

Answer: D



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225. How many phenotypes will be obtained from a test cross of AaBbCc?

A. 4

B. 16

C. 8

D. 32

Answer: C



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226. Number of genotypes produced when individuals of genotype 'YyRrTt' are crossed with each other

- A. 4
- B. 45
- C. 28
- D. 27

Answer: D



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227. A self-fertilizing trihybrid plant forms:

- A. 4 different gametes and 16 different zygotes
- B. 8 different gametes and 32 different zygotes
- C. 8 different gametes and 64 different zygotes
- D. 8 different games and 16 different zygotes

Answer: C



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228. Cross between homozygous black rough (BBRR) guinea pig and homozygous white smooth guinea pig (bbrr) produced black and rough animals in F_1 generation. Presuming the genes to be present on different chromosomes, the percentage of F_2 individuals which are heterozygous for both the gene pairs would be

A. 0.25

B. 0.5

C. 0.75

D. 0.35

Answer: A



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229. For finding the different types of gametes produced by genotype AaBb, it should be crossed with genotype

A. aabb

B. aaBB

C. AABB

D. AaBb

Answer: A



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230. When heterozygous tall plant is crossed with homozygous tall, fate of progeny to be heterozygous tall is:

A. 0.2

B. 0.25

C. 0.5

D. 1

Answer: C



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231. When proportion of the offspring of the cross $AABBcc \times AaBbCc$ will be completely heterozygous if all genes segregate independently?

A. $1/2$

B. $1/4$

C. $1/8$

D. $1/16$

Answer: C



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232. The total number of progeny obtained through dihybrid cross of Mendel is 1280 in F_2 generation. How many are recombinants?

- A. 240
- B. 360
- C. 480
- D. 720

Answer: C



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

- A. Two
- B. Three
- C. Four

D. Nine

Answer: A



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234. How many types of gametes may be produced by genotype

$D/d : E/e : F/f$?

A. 3

B. 6

C. 8

D. 27

Answer: C



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235. A trihybrid cross involve three pair of characters which will give rise to the F_1 hybrids which are heterozygous for three genes. How many types of gametes will be produced in both male and female?

A. 2

B. 4

C. 6

D. 8

Answer: D



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236. In Mendel's experiments with Garden Pea, round seed shape (RR) was dominant over wrinkled seeds (rr), yellow cotyledons (YY) was dominant over green cotyledons(yy). What are expected phenotypes in F_2 generation $RRYY \times rryy$?

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

Answer: A



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237. which genotype represents a true hybrid condition?

- A. TTrr
- B. TtRr
- C. TTRr
- D. ttrr

Answer: B



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238. A dihybrid plant on self pollination, produced 400 phenotypes with 4 types of genotype. How many seeds will have genotype TtRr?

- A. 50
- B. 150
- C. 200
- D. 100

Answer: D



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239. Which of the following points further strengthened Mendelism?

- A. Law of independent assortment which was based on monohybrid cross

- B. Law of independent assortment which could be stated on the basis of segregation of gametes
- C. Incomplete dominance gave a new way to Mendelism
- D. A character controlled by a pair of unit factors

Answer: B



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240. Mendel observed that some characters did not assort independently.

Later researchers found it to be due to

- A. crossing over
- B. linkage in traits
- C. both (a) and (b)
- D. dominance of one trait over the other

Answer: B

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241. The gene for right handedness is dominant over the gene for left handedness. Most probable gene types of two right handed parents with left handed child is

A. $RR \times rr$

B. $RR \times Rr$

C. $Rr \times Rr$

D. $Rr \times RR$

Answer: C

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242. Match the following and choose the correct combination from the options given:

	Column I	Column II
A	$Rr \times Rr$	1 1 : 1
B	$Rr \times rr$	2 3 : 1
C	$RrYy \times RrYy$	3 1 : 1 : 1 : 1
D	$RrYy \times rryy$	4 9 : 3 : 3 : 1

A. A=2, B=4, C= 3, D=1

B. A=1, B=3, C= 2, D=4

C. A=4, B=3, C= 2, D=1

D. A=2, B=1, C= 4, D=3

Answer: D



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243. The term 'phenocopy' was introduced by:

A. Mendel

B. Johannsen

C. Bateson

Answer: D



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244. A dwarf pea plant was treated with gibberellic acid. It grows as a pure tall pea plant. If the treated plant is crossed with a pure tall plant, the phenotypic ratio of F_1 is likely to:

- A. all tall
- B. 75% tall and 25% dwarf
- C. all dwarf
- D. 50% tall and 50% dwarf

Answer: A



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245. Genetically dwarf plant can be converted into a plant of normal height with help of:

- A. auxins
- B. ethylene
- C. cytokinins
- D. gibberellins

Answer: D



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246. A genetically dwarf plant made tall by use of gibberellin was crossed with a plant purely tall. Then the progenies would be:

- A. all dwarf
- B. all tall
- C. 50% tall and 50% dwarf

D. may be tall or dwarf

Answer: B



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247. A tall pea plant was grown in nutrient deficient soil and remained dwarf. When it is crossed with dwarf plant then:

- A. All hybrid plants are tall
- B. 50% tall and 50% dwarf
- C. 75% tall and 25% dwarf
- D. All hybrid plants are dwarf

Answer: A



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248. Mendel did not propose:

- A. dominance
- B. segregation
- C. incomplete dominance
- D. independent assortment

Answer: C



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249. A plant having 24 cm long internodes is crossed with a plant having 12 cm long internodes. The hybrids have 18 cm long internodes due to

- A. multiple allelism
- B. complete dominance
- C. recessive dominance
- D. incomplete dominance

Answer: D



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250. F_1 hybrid is intermediate between the two parents. The phenomenon is:

- A. dominance
- B. co-dominance
- C. breeding inheritance
- D. incomplete dominance

Answer: D



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251. Incomplete dominance was discovered by:

A. Bateson

B. Mendel

C. Correns

D. Johannsen

Answer: C



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252. Incomplete dominance is shown by:

A. Primrose

B. Mirabills

C. Helianthus

D. China rose

Answer: B



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253. The complete dominance is absent for the flower colour in:

- A. *Mirabilis jalapa*
- B. *Pisum sativum*
- C. *Lathyrus odoratus*
- D. *Oenothera lamarckiana*

Answer: A



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254. Flower colour in *Mirabilis jalapa* is an example of:

- A. Non-Mendelian inheritance
- B. Mendelian inheritance
- C. Chemical inheritance

D. Both (b) and ©

Answer: A



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255. In *Mirabilis jalapa*, hybrid between red and white flowered plants produces pink flowers due to:

- A. linkage
- B. segregation
- C. heterosis
- D. incomplete dominance

Answer: D



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256. In *Mirabilis jalapa*, TT, Tt, tt determine red, pink and white colour respectively. When F_1 hybrid got from TT and tt was crossed with TT, ratio produced is:

- A. All red
- B. 2 red : 2 pink
- C. All white
- D. 2 pink : 2 white

Answer: B



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257. Phenotypic and genotypic ratio is similar in case of

- A. incomplete dominance
- B. complete dominance
- C. over dominance

D. epistasis

Answer: A



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258. During incomplete dominance, F_2 generation will have:

- A. 3: 1 geotypic ratio
- B. 3: 1 phenotypic ratio
- C. 1: 2: 1 phenotypic ratio
- D. 2: 2: 0 genotypic ratio

Answer: C



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259. When red and white flowered *Mirabilis* plants are crossed all pink flowers are seen in F_1 generation. When F_1 progeny is selfed, the expected phenotypic and genotypic ratios are:

- A. 3:1 and 1:2:1
- B. 1:1 and 1:1:1
- C. 1:2:1 and 3:1
- D. 1:2:1 and 1:2:1

Answer: D



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

- A. co-dominance
- B. dihybrid cross

C. monohybrid cross with complete dominance

D. monohybrid cross with incomplete dominance

Answer: D



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261. 1 : 2 : 1 phenotypic and genotypic ratio is found in:

A. pseudoalleles

B. multiple alleles

C. blending inheritance

D. complementary genes

Answer: C



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262. Incomplete dominance is found in

- A. *Pisum stivum*
- B. *Antirrhinum majus*
- C. Both of these
- D. None of these

Answer: B



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263. Snapdragon flowers can be red (RR) , pink (Rr) or white (rr). When red-flowered plants are crossed to white-flowered, the possibility of an F_2 offspring being homozygous is:

- A. $1/2$
- B. $1/4$
- C. $3/4$

Answer: A



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

- A. hybrid
- B. supplementary genes
- C. dominance-recessive
- D. incomplete dominance

Answer: D



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265. What would be the colour of flowers in F_1 progeny as a result of cross between homozygous red and homozygous white -flowered Snapdragon

- A. Pink
- B. Red
- C. White
- D. Both (b) and (C)

Answer: A



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266. A blue Andalusian fowl is the product of mating black fowl with white fowl. A cross of blue fowl with another blue fowl results in:

- A. 1 black : 2 white : 1 blue
- B. 1 black : 2 blue : 1 white

C. 2 black : 1 white : 1 blue

D. none of the above

Answer: B



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267. Due to incomplete dominance a cross between blue and white Andalusian fowl results in:

A. 50% blue and 50% black

B. 50% white and 50% black

C. 50% blue and 50% white

D. 75% black and 25% white

Answer: C



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268. In Andalusian fowls, if a cross is made between black fowl and splashed white, what will be the phenotypic ratio in F_2 ?

A. 1:1

B. 3:1

C. 9:3:1

D. 1:2:1

Answer: B



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269. In monohybrid cross, when both alleles express equally well, the F_2 phenotypic ratio becomes:

A. 1:1

B. 3:1

C. 9:3:1

D. 1 : 2 : 1

Answer: D



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270. In *Mirabilis* a hybrid for red (RR) and white (rr) flower produces pink (Rr) flower. A plant with pink flower is crossed with flower. The expected phenotypic ratio is:

- A. red : pink (1 : 1)
- B. red : white (3 : 1)
- C. pink : white (1 : 1)
- D. red : pink : white (1 : 2 : 1)

Answer: C



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271. What does the following indicate?

Parent $R_1R_1 \times R_2R_2$ (white)

F_1 R_1R_2 (Pink)

F_2 $1/4$ Red : $1/4$ White

- A. Additive
- B. Over dominance
- C. Complete dominance
- D. Incomplete dominance

Answer: D



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272. In the F_1 generation of any attempted cross when neither the gene for red nor white is dominant or recessive. In this case, both the genes express themselves partially the phenomenon is known as:

- A. dominance

B. co-dominance

C. pseudo-dominance

D. incomplete dominance

Answer: D



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273. In *Antirrhinum* two plants with pink flowers were hybridized. The F_1 plants produced red, pink and white flowers in the proportion of 1 red, 2 pink and 1 white. What could be the genotype of the two plants used for hybridization. Red flower colour is determined by RR, and white rr genes

A. rrrr

B. RR

C. rr

D. Rr

Answer: D



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274. The F_2 generation offspring in plant showing incomplete dominance, exhibit:

- A. a genotypic ratio of 1 : 1
- B. a phenotypic ratio of 3 : 1
- C. variable genotype and phenotypic ratios
- D. similar phenotypic and genotypic ratios of 1 : 2 : 1

Answer: D



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275. In shortorn cattle genes for red (r_1) and white (r_2) coat colour occur. Crosses between red (r_1r_2) and white (r_2r_2) produced (r_1r_2)

roan. This an example of

- A. epistasis
- B. co-dominance
- C. complementary genes
- D. incomplete dominance

Answer: B



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276. The genotypes C^+ / C^h (normal colour), C^{ch} / C^h (chinchilla colour), C^{hc} (Himalayan colour), related to skin colour of rabbit represent:

- A. multiple alleles
- B. co-dominance
- C. polygenic inheritance
- D. complementary genes

Answer: A



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277. How many different genotypes can exist in a population with the dominance hierarchy $C^+ > C^{ch} > C^h > c$?

- A. 6
- B. 10
- C. 8
- D. 16

Answer: B



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278. Multiple allelism is observed in:

- A. Haemophilia in man
- B. Sex determination in birds
- C. ABO blood types
- D. Flower colour in Snapdragon

Answer: C



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279. Which of the following is the number of alleles for a blood group in an individual

- A. 1
- B. 2
- C. 4
- D. 3

Answer: D

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280. ABO blood group is determined by three different alleles. How many genotypes and phenotypes are possible?

- | | | | |
|-----|---|----------|-----------|
| A. | | Genotype | Phenotype |
| (a) | 6 | 4 | |
| B. | | Genotype | Phenotype |
| (b) | 3 | 1 | |
| C. | | Genotype | Phenotype |
| (c) | 4 | 6 | |
| D. | | Genotype | Phenotype |
| (d) | 9 | 7 | |

Answer: A

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281. A mother of blood group O has group O child. The group of father could be:

- A. A or B

- B. O only
- C. AB only
- D. A or B or O

Answer: D



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282. A child with blood group genotype $I_A I_B$ is born of a woman with genotype $I_B I_B$. The father could not be a man of genotype:

- A. $I^A I^A$
- B. $I^A I^B$
- C. $I^B I^B$
- D. $I^A i$

Answer: C



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283. A man with blood group B marries a woman with blood group A and their first child is having group B. What is the genotype of the child?

A. $I^A I^B$

B. $I^B I^B$

C. $I^B i$

D. $I^A i$

Answer: C



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284. In the ABO blood typing system, which of the following progeny are not possible?

A. an O child from a mating of two A individuals

B. an O child from a mating of an A and O individual

C. an AB child from a mating of an A and O individual

D. an A child from a mating of an AB individual to a B individual

Answer: C



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285. Biometric genetics is connected with

A. the inheritance of quantitative traits

B. the genetical radiations on the living organisms

C. the effect of environment on genetic set up organisms

D. the biochemical explanations of various genetical phenomena

Answer: A



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286. Genes whose combined action affects one particular character are known as:

- A. polygenes
- B. oncogenes
- C. dominant genes
- D. pleiotropic genes

Answer: A



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287. Polygenic inheritance shows:

- A. different genotypes
- B. different phenotypes
- C. Both of these
- D. none of these

Answer: C



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288. Select the statement which is not correct?

- A. height, weight, skin colour are polygenic
- B. polygenic character is controlled by multiple genes
- C. polygenic character is controlled by multiple alleles
- D. in case of polygenic inheritance thousands of intermediate phenotypes are found between two extreme ones

Answer: B



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289. Which one of the following pairs of features is a good example of polygenic inheritance?

- A. Human height and skin colour
- B. Human eye colour and sickle-cell anaemia
- C. Hair pigment of mouse and tongue rolling in humans
- D. ABO blood group in humans and flower colour of *Mirabilis jalapa*

Answer: A



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290. In human beings, multiple genes are involved in the inheritance of:

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

Answer: A



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291. Skin colour inheritance in man is:

- A. epistasis
- B. polygenic
- C. sex linked
- D. monogenic

Answer: B



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292. Skin colour of human beings is determined by cumulative genes. This hypothesis was originally proposed by:

- A. Sutton
- B. Correns
- C. Bateson

D. Davenport

Answer: D



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293. In a mating between two mulattos, each heterozygous at all three gene loci for the skin colour, what is the chance their child will have very light skin?

A. $1/4$

B. $5/8$

C. $9/16$

D. $1/64$

Answer: D



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294. Human skin colour is polygenic trait with each dominant determining a part of melanin deposition while the recessive are coding for no melanin. If a very dark skinned person marries a very light skinned women, the chances of a very dark skinned offspring are

- A. 0
- B. $1/4$
- C. $5/8$
- D. $9/64$

Answer: A



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295. Inheritance of skin colour in human being is an example of

- A. pleiotropy
- B. intragenic interaction

C. quantitative inheritance

D. interallelic interaction

Answer: C



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296. grain colour in wheat is determined by three pairs of polygenes. Following the cross AABBCC (dark colour) \times aabbcc (light colour), in F_2 generation what proportion of the progeny likely to resemble either parent

A. None

B. Half

C. One third

D. Less than 5 per cent

Answer: D



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297. Kernel colour in wheat shows an F_2 ratio of 1 : 4 : 6 : 4 : 1. It is due to:

- A. two polygenes
- B. supplementary genes
- C. different number of dominant genes
- D. different number of recessive genes

Answer: A



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298. The phenotypic ratio obtained in quantitative inheritance of a dihybrid cross is

or

In a cross between red kernelled and white kernelled varieties of wheat

showing polygenic inheritance the phenotypic inheritance the phenotypic ratio in F_2 generation will be

- A. 1: 2: 1
- B. 9: 3: 3: 1
- C. 1: 4: 6: 4: 1
- D. 1: 6: 15: 20: 15: 6: 1

Answer: C



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299. Which of the following is not a quantitative trait?

- A. height in humans
- B. ear length in corn
- C. skin colour in humans
- D. leaf size in tobacco

Answer: D



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300. Identify the correct match between inheritance and their examples:

Inheritance	Example
A Complete dominance	1 Flower colour in snapdragon
B Multiple alleles	2 Coat colour of cattle
C Co-dominance	3 Blood group inheritance
D Incomplete dominance	4 Flower colour in pea

A. A=3, B=4, C=2, D=1

B. A=1, B=3, C= 2, D=4

C. A=4, B=3, C= 2, D=1

D. A=1, B=2, C=3, D=4

Answer: C



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301. In *Lathyrus odoratus*, cross between two purple flowered plants give a pink/white progeny. It is due

- A. segregation
- B. co-dominance
- C. complementary genes
- D. incomplete dominance

Answer: C



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302. Two dominant independently assorting genes react with each other. They are

- A. duplicate genes
- B. supplementary genes
- C. collaborative genes

D. complementary genes

Answer: D



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303. The ratio of 9: 7 is due to:

A. lethal genes

B. supplementary genes

C. epistatic genes

D. complementary genes

Answer: D



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304. Two or more independent genes present on different chromosomes which determine nearly same phenotype are called

- A. epistasis
- B. polygene
- C. complementary genes
- D. non-complementary genes

Answer: C



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305. Genes A and B are necessary for normal hearing. What is the possible genotype of a normal child of deaf mother/ father?

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

D. Aabb

Answer: A



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306. Supplementary gene interaction in F_2 results in a phenotypic ratio:

A. 9, 7

B. 12: 3: 1

C. 9: 3: 4

D. 12: 1: 3

Answer: C



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307. In a dihybrid cross F_2 ratio of 15 : 1 is due to:

- A. duplicate genes
- B. recessive epistasis
- C. dominant epistasis
- D. supplementary genes

Answer: A



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308. Which one is an interaction of genes

- A. Pleiotropy
- B. Epistasis
- C. Dominance
- D. Recessiveness

Answer: B



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309. In epistasis:

- A. one gene alters the effect of another
- B. a portion of a chromosome is deleted
- C. a portion of a chromosomes is inverted
- D. nothing changes from generation to generation

Answer: A



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310. The gene which suppresses and masks the expression of other is:

- A. recessive
- B. epistasis
- C. co-dominant

D. complementary

Answer: B



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311. Epistasis effect in which the dihybrid cross $AaBb \times AaBb$ resulting in the ratio 12 : 3 : 1 is due to:

- A. interaction between two alleles of different loci
- B. interaction between two alleles of the same locus
- C. dominance of one allele on another allele of both loci
- D. dominance of one allele on another allele of the same locus

Answer: A



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312. Gene which suppresses other gene's activity but do not lie on same locus is called as:

- A. co-dominant
- B. supplementary
- C. epistatic
- D. hypostatic

Answer: C



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313. F_2 dihybrid ratio 12 : 3 : 1 is explained on the basis of:

- A. epistatic interaction
- B. complementary gene action
- C. interaction between two alleles
- D. both (a) and (b)

Answer: A



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314. The process that involves intergenic suppression or the masking effect which on gene locus has upon the expression of another is called:

- A. epistasis
- B. recessive
- C. dominance
- D. pleiotropy

Answer: A



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

- A. mutation
- B. Epistasis
- C. dominance
- D. none of these

Answer: B



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316. In a genetic cross having recessive epistasis, F_2 phenotypic ratio would be:

- A. 12:3:1
- B. 15:1
- C. 9:6:1
- D. 9:3:4

Answer: D



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317. Epistasis results from:

- A. only one gene
- B. two different alleles present on same loci
- C. two different genes present on different loci
- D. two different chromosomes which are not homologous

Answer: C



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318. Epistasis is the:

- A. one pair of gene can completely mask the expression of another pair of genes
- B. one pair of genes independently controls a particular phenotype

C. one pair of gene enhances the phenotype expression of another pair of gene

D. many genes collectively control a particular phenotype

Answer: A



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319. The gene interaction when one gene masks the effect

or

When a gene pair hides the effect of another, the phenomenon is called

A. epistatic factor

B. duplicate factor

C. complementary factor

D. supplementary factor

Answer: A



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320. Recessive epistasis is defined as:

- A. a situation in which a gene pair in homozygous recessive condition masks the effect of one or both the member of another gene pair
- B. a situation in which the dominant allele of the first gene pair masks the effect of both the members of the second gene pair and the dominant allele of the second gene pair masks the effect of both the members of the first gene pair
- C. a situation in which one allele does not allow its alternative form to express
- D. a situation in which the dominant allele of one gene pair masks the effect of both members of another gene pair

Answer: A



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321. Sometimes a gene masks the expression of another, gene at a different locus. This phenomenon is known as:

- A. epistasis
- B. co-dominance
- C. incomplete dominance
- D. none of these

Answer: A



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322. Match the genetic phenomena with their respective ratios.

Column I	Column II
A Inhibitory gene ratio	1 9 : 3 : 4
B Complementary gene ratio	2 1 : 1 : 1 : 1
C Recessive epistasis ratio	3 12 : 3 : 1
D Dihybrid epistasis ratio	4 13 : 3
E Dominant epistasis ratio	5 9 : 7

A. $A=5, B=4, C=3, D=2, E=1$

B. $A=1, B=2, C=4, D=3, E=5$

C. $A=4, B=5, C=1, D=2, E=3$

D. $A=5, B=4, C=1, D=2, E=3$

Answer: C



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323. A gene whose phenotypic effect kills the bearer is called:

A. lethal

B. pleiotropic

C. supplementary

D. complementary

Answer: A



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324. Who has discovered the lethal gene of yellow coat in mice?

- A. Muller
- B. Cuenot
- C. Morgan
- D. Correns

Answer: B



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325. Albinism in corn is due to

- A. pathogen
- B. lethal gene
- C. deficiency of light

D. deficiency of minerals

Answer: B



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326. A dominant lethal gene:

- A. determine the sex of the organism
- B. kills the organism in which it is present
- C. allows the organism to survive and to reproduce
- D. allows the organism to survive but not to reproduce

Answer: B



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327. Recessive lethal genes are:

- A. genes present on different chromosomes but influencing single trait
- B. causative for appearance of ancestral traits
- C. killers in homozygous state
- D. none of the above

Answer: C



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

- A. penetrance
- B. polyploidy
- C. pleiotropy
- D. polydactyly

Answer: C



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329. Genes with multiple phenotypic effects are known as

- A. hypostatic genes
- B. duplicate genes
- C. pleiotropic genes
- D. complementary genes

Answer: C



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330. Which of the following is associated with multiple phenotypes

- A. mutation
- B. Epistasis
- C. Pleiotropy

D. Polygenic inheritance

Answer: C



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331. A pleiotropic gene is one which

- A. affects one character
- B. affects more than one character
- C. supplements effect of another gene
- D. requires another gene for its expression

Answer: B



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332. Which of the following is caused by pleiotropic gene?

- A. Thalessemia
- B. Haemophilia
- C. Sickle-cell anaemia
- D. Colour blindness

Answer: C



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333. In *Drosophila* gene for white eye mutation is also responfor depigmentation of body parts. Thus a gene that controls several phenotypes is called

- A. oncogene
- B. epistatic gene
- C. hypostatic gene
- D. pleiotropic gene

Answer: D



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334. A single gene mutation affecting more than one phenotype is called

- A. Azotropic
- B. Auxotropic
- C. Pleiotropic
- D. myxotrophic

Answer: C



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335. Pleiotropic gene:

- A. inhibits crossing over

- B. promotes crossing over
- C. controls only one phenotype
- D. controls several phenotypes

Answer: D



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336. Height is

- A. continuous variation
- B. blastogenic variation
- C. somatogenic variation
- D. discontinuous variation

Answer: A



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337. The main aim of plant breeding is to:

- A. make soil fertile
- B. control pollution
- C. become more progressive
- D. produce improved varieties

Answer: D



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338. Which of the following is more likely to be heterozygous?

- A. pure lines
- B. autopolyploids
- C. self-pollinated crops
- D. cross-pollinated crops

Answer: D



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339. Which of the following variations are temporary and have nothing to do with the last or next generation

- A. Hereditary variations
- B. Discontinuous variations
- C. Environmental variations
- D. None of the above

Answer: C



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340. Discontinuous variations are

- A. mutation
- B. essential features
- C. acquired characters
- D. noneessential features

Answer: A



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341. Primary source of allelic variation is

- A. mutation
- B. polyploidy
- C. recombination
- D. independent assortment

Answer: C



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342. Variations occur mostly due to:

- A. linkage
- B. nutrition
- C. segregation
- D. crossing over

Answer: D



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343. A child has a single kidney since birth. This variation is

- A. substantive
- B. blastogenic
- C. positive meristic

D. negative meristic

Answer: D



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344. Pedigree chart is used to identify:

- A. genetic drift
- B. genetic diseases
- C. genetic diversity
- D. genetic mutation

Answer: B



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345. In a certain plant, red fruit (R) is dominant over yellow fruit (r) and tallness (T) is dominant over dwarfness (t). If a plant with RRTt genotype is crossed with a plant that is rrtt, what will be the percentage of tall plants with red fruits in the progeny?

A. 0.25

B. 0.5

C. 0.75

D. 1

Answer: B



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346. When a cross is conducted between black feathered hen and a white feather cock, blue feathered fowls are formed. When these fowls are allowed for interbreeding, in F_2 generation, there are 20 blue fowls. What would be the number of black and white fowls?

- A. Black 10, white 10
- B. Blackk 10, white 20
- C. Black 20, white 10
- D. Black 20, white 20

Answer: A



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347. Which of the following represents a test cross?

- A. $Ww \times WW$
- B. $Ww \times Ww$
- C. $Ww \times ww$
- D. $WW \times WW$

Answer: C



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348. In pigs, white coat (W) is dominant to black (w). Two white pigs are breed to produce 9 white and 2 black pigs. What are the genotype of the parents?

A. $Ww \times Ww$

B. $ww \times ww$

C. $WW \times WW$

D. $WW \times Ww$

Answer: A



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349. The term heterosis was first coined by:

A. Poweri

B. McClintock

C. Swaminathan

D. None of these

Answer: D



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350. The term heterosis was first used by:

A. Shull

B. R. Mishra

C. N.E. Borlaug

D. M.S. Swaminathan

Answer: A



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351. In guinea pigs, black short hair (BBSS) is dominant over white long hair (bbss). During a dihybrid cross, the F_2 generation individuals with genotypes, BBSS, BbSS, BBss and Bbss are in the ratio of:

A. 9:3:3:1

B. 4:2:1:2

C. 1:2:2:4

D. 1:2:1:2

Answer: C



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352. In a dihybrid cross between RRYy and rryy parents, the number of RrYy genotypes in F_2 generation will be:

A. 2

B. 1

C. 4

D. 3

Answer: C



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353. A dihybrid test cross yielding a result of 1 : 1 : 1 : 1 ratio is indicative of:

- A. Homozygous condition of the F_1 dihybrid
- B. 4 different types of F_1 generation dihybrid
- C. 4 different types of gametes produced by the P_1 parent
- D. 4 different types of gametes produced by the F_1 dihybrid

Answer: D



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

- A. 2
- B. 4
- C. 8
- D. 12

Answer: B



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355. A condition where a certain gene is present in only a single copy in a diploid cell is called:

- A. Hemizygous
- B. Heterozygous
- C. Monogamous

D. Homozygous

Answer: A



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356. How many types of gametes are obtained from a plant of genotype TTRr?

A. one

B. two

C. four

D. many

Answer: B



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357. 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 you would expect in F_2 generation?

A. 3

B. 9

C. 4

D. 1

Answer: C



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358. In F_2 generation, quantitative inheritance 1 : 4 : 6 : 4 : 1 is obtained instead of:

A. 9 : 3 : 3 : 1

B. 8 : 6 : 4 : 1

C. 7:4:1:4

D. 6:6:4:7

Answer: A



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

A. recessive

B. epistatic

C. dominant

D. co-dominant

Answer: C



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

- A. 2
- B. 1
- C. 3
- D. 4

Answer: A



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361. A true breeding plant producing red flowers is crossed with a pure plant producing white flowers.

Allele for red colour of flower is dominant. After selfing the plants of first filial generation, the proportion of plants producing white flowers in the progeny would be:

A. $1/3$

B. $1/2$

C. $3/4$

D. $1/4$

Answer: D



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

A. 9

B. 4

C. 1

D. 2

Answer: C



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363. When both alleles express their effect on being present together, the phenomenon is called

- A. dominance
- B. co-dominance
- C. pseudodominance
- D. amphidominance

Answer: B



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364. In which one of the following, complementary gene interaction ratio of 9 : 7 is observed?

- A. Flower colour in pea

- B. Four 'O' clock plant
- C. Coat colour in mouse
- D. Feather colour in fowl

Answer: A



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365. The dominant epistasis ratio is:

- A. 9:7
- B. 9:3:4
- C. 9:6:1
- D. 12:3:1

Answer: D



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366. Phenotypic ratio in plant Snapdragon in F_2 is:

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

Answer: D



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367. Mendel found that reciprocal crosses yielded identical results. From that he concluded

- A. sex has no influence on the dominance of traits
- B. sex plays a role in deciding the dominance of trait
- C. there is independent assortment of traits
- D. there is no dominance of a trait

Answer: A



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368. graphical representation to calculate the probability of all possible genotypes of offsprings in a genetic cross

- A. karyotype
- B. genotype ratio
- C. Punnett square
- D. chromosome map

Answer: C



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

- A. Factors occur in pairs
- B. The discrete unit controlling a particular character is called a factor
- C. Out of one pair of factors one is dominant and the other recessive
- D. Alleles do not show any blending and both the character recover as such in F_2 generation

Answer: D



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370. When two unrelated individuals or lines are crossed, the performance of F_1 hybrid is often superior to both its parents. This phenomenon is called:

- A. splicing
- B. heterosis
- C. transformation
- D. metamorphosis

Answer: B



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371. The variation/difference in the offspring of a species from their parents constitutes an important component of:

- A. Genetics
- B. Heredity
- C. Speciation
- D. Species fixation

Answer: A



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372. If two pea plants having red (dominant) coloured flowers with unknown genotypes are crossed, 75% of the flowers are red and 25% are

white. The genotypic constitution of the parents having red coloured flowers will be:

- A. both hemizygous
- B. both homozygous
- C. both heterozygous
- D. one homozygous and other heterozygous

Answer: C



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373. In a polygenic cross $Aa Bb Cc \times Aa Bb Cc$, the phenotypic ratio of offspring is $1:6:'X':20:X:6:1$. What is the value of 'X'?

- A. 3
- B. 9
- C. 15

D. 25

Answer: C



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374. Mendel's principle of segregation means that the germ cells always receive:

- A. One pair of alleles
- B. one quarter of the genes
- C. one of the paired alleles
- D. any pair of alleles

Answer: C



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375. In Mendelian dihybrid cross when heterozygous Round Yellow are self crossed, Round Green offsprings are represented by the genotype:

- A. $rrYy, rrYY$
- B. $RRyy, Rryy$
- C. $RrYy, rryy, Rryy$
- D. $Rryy, Rryy, rryy$

Answer: B



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376. If a cross between two individuals produces offsprings with 50% dominant character (A) and 50% recessive character (a) the genotype of parents are:

- A. $Aa \times aa$
- B. $Aa \times Aa$

C. AA \times aa

D. AA \times Aa

Answer: A



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

A. Two

B. Four

C. Six

D. Nine

Answer: B



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378. Test cross in plants or in *Drosophila* involves crossing:

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

Answer: C



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379. Test cross of dihybrid ratio is $1:1:1:1$. It proves that

- A. Two different progeny are produced by P_1 parents
- B. F_1 hybrid produces four different progeny
- C. F_1 hybrid is homozygous
- D. None of the above

Answer: B



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380. If F_1 generation has all tall plants and ratio of F_2 generation is 3 tall : 1 dwarf, it proves

- A. law of independent assortment
- B. incomplete dominance
- C. law of segregation
- D. law of dominance

Answer: C



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381. Multiple phenotype is seen in

A. dominance relationship

B. particular inheritance

C. monogenic inheritance

D. Polygenic inheritance

Answer: D



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382. Mendel was successful in discovering the principles of inheritance as

A. He was a famous mathematician

B. He took pea plants for his experiments

C. He had an in-depth knowledge on hybridisation

D. He did not encounter linkage between the genes for the characters he considered

Answer: D



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383. Mendelism principles are not applicable in case of:

- A. Asexually reproducing forms
- B. Diploid homozygous forms
- C. Sexually inbreeding forms
- D. Sex-linked alleles

Answer: A



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384. How many different types of gametes are formed from AaBbCcDdEe?

- A. 2
- B. 8
- C. 16

D. 32

Answer: D



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385. When yellow round heterozygous Pea Plants are self fertilized, the frequency of occurrence of RrYY genotype among the offspring is

A. $2/16$

B. $1/16$

C. $9/16$

D. $3/16$

Answer: A



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386. A test cross is carried out:

- A. predict whether two traits are linked
- B. asses the number of alleles of a gene
- C. determine the genotype of a plant at F_2
- D. determine whether two species or varities will breed successfully

Answer: C



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387. A man having the genotype $EEffGgHH$ can produce P number of genetically different sperms, and a woman of genotype $liLLMnNn$ can generate Q number of genetically different eggs. Determine the values P and Q

- A. $P=4, Q=4$
- B. $P=4, Q=8$

C. $P=8, Q=4$

D. $P=8, Q=8$

Answer: B



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388. In an organism, tall phenotype is dominant over recessive dwarf phenotype, and the alleles are designated as T and t, respectively. Upon crossing two different individuals, total 250 offsprings were obtained, out of which 124 displayed tall phenotype and rest were dwarf. Thus, the genotype of the parents were

A. $TT \times TT$

B. $TT \times tt$

C. $Tt \times Tt$

D. $Tt \times tt$

Answer: D

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389. In a monohybrid cross between two heterozygous individuals, the number of pure homzygous individuals obtained in F_1 generation is:

A. 2

B. 4

C. 6

D. 8

Answer: A

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390. Two or more independent genes present on different chromosomes which determine nearly same phenotype are called

A. supplementary genes

B. complementary genes

C. duplicate genes

D. none of these

Answer: C



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391. 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. Partial dominance

C. Complete dominance

D. Incomplete dominance

Answer: A



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

- A. codominance
- B. law of dominance
- C. incomplete dominance
- D. inheritance of one gene

Answer: A



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393. which of the following statements is correct?

- A. Each back cross is a test cross.
- B. Each test cross is a back cross.
- C. Crossing F_2 with F_1 is a test cross.
- D. Crossing F_2 with P_1 is called a test cross.

Answer: B



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394. In Mendel's seven characters of Pea, total number of colours tested by him was

- A. 2
- B. 3
- C. 4
- D. 5

Answer: C

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395. Heterozygous tall plant (Tt) is crossed with homozygous dwarf (tt) plant. Then what will be the percentage of dwarf plants in the next generation?

A. 0.25

B. 0.5

C. 0.75

D. 1

Answer: B

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396. The graphical representation to calculate the probability of all possible genotypes of offspring in a genetic cross was developed by:

- A. Kornberg
- B. Gregor Mendel
- C. George Gamow
- D. Reginald C. Punnett

Answer: D



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397. Mendel conducted hybridization experiments on garden pea for:

- A. 7 years
- B. 6 years
- C. 5 years
- D. 4 years

Answer: A



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398. Two plants one with black flower and other with white flower were crossed in an experiment. In the next generation grey coloured flowers were obtained. The reason for the result is:

- A. codominance
- B. pseudodominance
- C. incomplete dominance
- D. none of the above

Answer: C



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399. Statement A: For a particular character in an individual, each gamete gets only one allele.

Statement B : Chromatids of a chromosomes split (separate) and move towards opposite poles during anaphase of mitosis.

- A. Statement A is correct and statement B is wrong.
- B. Both the statements are correct and B is the reason for A.
- C. Statement B is correct and statement A is wrong.
- D. Both the statements are correct and B is not the reason for A.

Answer: D



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400. In Garden Pea, round shape is dominant over wrinkled shape. A pea plant heterozygous for round shape of seed is selfed and 1600 seeds produced during the cross are subsequently germinated. How many offspring will have parental phenotype

- A. 400
- B. 800
- C. 1200
- D. 1600

Answer: C



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401. Which of the following cross will give recessive progeny in F_1 generation

A. $tt \times tt$

B. $TT \times TT$

C. $TT \times tt$

D. $Tt \times TT$

Answer: A



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402. In a dihybrid cross between two heterozygotes, $AaBb \times AaBb$, if we get a 3:1 ratio among offspring, the reason would be

- A. polygenes
- B. linked genes
- C. pleiotropic genes
- D. hypostatic genes

Answer: B



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403. Multiple alleles are present:

- A. On non-sister chromosomes
- B. On different chromosomes
- C. At the same locus on the chromosome
- D. At different loci on the same chromosome

Answer: C



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404. An example for codominance is:

- A. seed shape and colour in pea plants
- B. eye colour in *Drosophila*
- C. AB blood group in man
- D. haemophilia in man

Answer: C



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405. Phenotype of an organism is result of

- A. environmental changes and sexual dimorphism
- B. genotype and environment interactions
- C. cytoplasmic effects and nutrition

D. mutations and linkages

Answer: B



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406. In Mendel's experiments with Garden Pea, round seed shape (RR) was dominant over wrinkled seeds (rr), yellow cotyledons (YY) was dominant over green cotyledons(yy). What are expected phenotypes in F_2 generation $RRYY \times rryy$?

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

Answer: D



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407. In first step of monohybrid cross experiment, Mendel selected pea plant which were:

- A. pure tall as female and pure dwarf as male
- B. pure tall as male and pure dwarf as female
- C. heterozygous tall as male and pure dwarf as female
- D. heterozygous tall as female and pure dwarf as male

Answer: A



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408. The phenotypic ratio obtained in quantitative inheritance of a dihybrid cross is

or

In a cross between red kernelled and white kernelled varieties of wheat showing polygenic inheritance the phenotypic inheritance the phenotypic ratio in F_2 generation will be

A. 2:1

B. 1:2:1

C. 1:4:6:4:1

D. 1:6:15:20:15:6:1

Answer: C



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409. What is not true about emasculation of a flower while performing an artificial cross?

A. It is done before anthesis.

B. It is to avoid self pollination.

C. It is removal of anthers from flower.

D. It is done in flowers of plants selected as male parent.

Answer: D



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410. How many types of gametes will be produced by an individual having genotype AaBbcc:

A. one

B. Two

C. Four

D. Three

Answer: C



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411. A gene showing codominance has:

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

Answer: D



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412. A pleiotropic gene:

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

Answer: C



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

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

Answer: A



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

A. 3 : 1 :: Tall : Dwarf

B. 3 : 1 :: Dwarf : Tall

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

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

Answer: C



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415. Match the terms in column I with their description in column II and

choose the correct option:

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

A. A B C D
(a) (iv) (i) (ii) (iii)

B. A B C D
(b) (iv) (iii) (i) (ii)

C. A B C D
(c) (ii) (i) (iv) (iii)

- | | | | | |
|----|-----|------|-------|------|
| | A | B | C | D |
| D. | (d) | (ii) | (iii) | (iv) |
| | | | | (i) |

Answer: D



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

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

Answer: A



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417. A true breeding plant is:

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

Answer: B



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