QUIZZES

Unit Wise Test-12 (Variations and Genetics/Inheritance)

30 Questions

25 min

Topics

Mendelian Inheritance, Law of Segregation, Law of independent assortment, Dominance Relations, Multiple Alleles (ABO blood group System), Epistasis and Bombay Phenotype, Gene linkages and crossing over, Patterns of sex determinations, Sex Linkage in Humans (Hemophilia and Color blindness), Recombination Frequency and Genetic Map of Chromosome, Basic Terms, Polygenic Inheritance

Start Quiz

24 : 59

Q 1/30 25 min Hint

Q : All of the following are true about alleles except:

A They are always identical

B They control same trait

C Present on respective homologue

D Can be expressed independently

24 : 58

Q 2/30 25 min Hint

Q : Which one of the following does not have a fix locus?

A Polygenes

B Multiple alleles

C Pleiotropic gene

D Jumping gene

24 : 57

Q 3/30 25 min Hint

Q : _____ is the basic unit of biological information:

A Gamete

B Chromosome

C DNA

D Gene

24 : 56

Q 4/30 25 min Hint

Q : Seed shape in pea plant is:

A Trait

B Phenotype

C Genotype

D Genome

24 : 55

Q 5/30 25 min Hint

Q : Which of the following is considered as a recessive character of Mendel?

A Green pod color

B Round seed shape

C Axial flower position

D Wrinkled seed shape

24 : 51

Q 6/30 25 min Hint

Q : In Mendel's monohybrid cross, what percentage of round seed plants were produced by F_1 heterozygous round on self-fertilization?

A 25%

B 50%

C 75%

D 100%

Q : Mendel's principle of segregation was based on the separation of alleles in the garden pea during:

A Pollination

B Seed formation

C Embryonic development

D Gamete formation

24 : 47

Q 8/30 25 min Hint

Q : According to Mendel's monohybrid cross, the characters which appears in F_1 is said to be:

A Recessive

B Co-recessive

C Dominant

D Partially dominant

24 : 46

Q 9/30 25 min Hint

Q : What will be the probability of a round green seed in a dihybrid cross if the independent probability of a round seed is 3/4 and green seed is 2/4?

A 5/8

B 6/8

C 3/16

D 6/16

24 : 45

Q 10/30 25 min Hint

Q : What percentage of round green seeds in F_2 progeny of dihybrid cross is heterozygous for round seed shape?

A 25%

B 33%

C 66%

D 75%

24 : 44

Q 11/30 25 min Hint

Q : What type of gametes will be formed by genotype RrYy?

A RY, Ry, rY, ry

B Ry, Ry, Yy, ry

C RY, Ry, ry, ry

D Rr, RR, Yy, YY

24 : 43

Q 12/30 25 min Hint

Q : Dominance is physiological effect of an allele over its partner allele occupying:

A Same locus on same chromosome

B Same locus on respective homologue

C Different locus on same chromosome

D Different locus on respective homologue

Q 13/30 25 min Hint

Q : An allele is said to be dominant if:

A It is expressed only in heterozygous combination

B It is expressed only in homozygous combination

C It is expressed in both homozygous and heterozygous condition

D It is expressed only in second generation

24 : 39

Q 14/30 25 min Hint

Q : Which is not true about multiple alleles?

A Formed due to gene mutation

B Belong to polymorphic gene

C Number is always two

D Gamete having just one of them

Q 15/30 25 min Hint

Q : Blood group of a person is O while his children having A. All of the following can be the genotype of mother except:

A Homozygous for gene I^A

B Heterozygous for gene I^A

C Homozygous for gene i

D Heterozygous for gene i

24 : 37

Q 16/30 25 min Hint

Q : How many alleles of ABO blood group are present in an individual?

A 1

B 3

C 2

D 300

24 : 33

Q 17/30 25 min Hint

Q : A trait being controlled by a gene pair on chromosome 9 is interfered by a gene pair on chromosome 19. This effect is called:

A Over dominance

B Mutation

C Epistasis

D Complete dominance

24 : 32

Q 18/30 25 min Hint

Q : Tongue rolling is due to:

A Single recessive gene

B Single dominant gene

C Homozygous recessive

D Multiple alleles

24 : 31

Q 19/30 25 min Hint

Q : Mendel's law of independent assortment is applicable for:

A All genes in all organisms

B All linked genes only

C All genes of pea plant only

D All non-linked genes only

24 : 30

Q 20/30 25 min Hint

Q : Physical association of two genes is known as:

A Heterozygosis

B Recombination

C Linkage

D Homozygosis

24 : 29

Q 21/30 25 min Hint

Q : Genes for which of the following form a linkage group on chromosome 11?

A Leukemia, Albinism

B Hemophilia, Gout

C Gout, Sickle cell anemia

D Color blindness, Hemophilia

24 : 26

Q 22/30 25 min Hint

Q : Genes can be mapped on a chromosome on the basis of their:

A Tetrad formation

B Location of jumping genes

C Chiasmata formation

D Recombination frequencies

Q 23/30 25 min Hint

Q : The probability of having a male or female offspring in ZZ-ZW pattern of sex determination is:

A 25%

B 50%

C 75%

D 100%

24 : 24

Q 24/30 25 min Hint

Q : In humans, sex of an individual depends upon:

A Homogametic mother

B Heterogametic mother

C Homogametic father

D Heterogametic father

Q 25/30 25 min Hint

Q : Chromosomal combination of a person with tfm syndrome is:

A XO

B XY

C XX

D XYY

Q 26/30 25 min Hint

Q : Even a single recessive allele on X chromosome in male can be expressed because:

A All genes on X chromosome can be expressed

B Y chromosome has dominant allele for that trait

C X chromosome alleles are dominant over Y chromosome

D Y chromosome does not have counter part of allele of X chromosome

24 : 20

Q 27/30 25 min Hint

Q : It is an example of X-linked dominant trait and occur more in females as compared to the males:

A Hemophilia

B Color blindness

C Vit. D resistant rickets

D Lesch-Nyhan syndrome

Q 28/30 25 min Hint

Q : Hemophilia B is due to absence or abnormality of blood clotting factor:

A VIII

B IX

C X

D XI

Q : A normal woman whose father was red-blind marries a red-blind man. What proportion of their children can have normal colour vision?

A 25%

B 75%

C 50%

D 100%

Q 30/30 25 min Hint

Q : Hypophosphatemic rickets is due to a protein defect that does not respond to vitamin D signal. This protein is located on:

A Liver cells

B Bone cells

C Intestinal cells

D Skin cells

Correct | Unattempted

Incorrect | 1/30

Q : All of the following are true about alleles except:

A They are always identical

B They control same trait

C Present on respective homologue

D Can be expressed independently

Explanation

Alleles are partners of a gene pair which are present on homologous chromosomes. An organism can be homozygous (same alleles) or heterozygous (different alleles) with respect to alleles.

Correct | Unattempted

Incorrect | 2/30

Q : Which one of the following does not have a fix locus?

A Polygenes

B Multiple alleles

C Pleiotropic gene

D Jumping gene

Explanation

Such genes that keep on hooping from one position to another position, also called as transposons do not have fix locus.

Correct | Unattempted

Incorrect | 3/30

Q : _____ is the basic unit of biological information:

A Gamete

B Chromosome

C DNA

D Gene

Explanation

All traits of an individual are control by specific sequence of nucleotides present on DNA.

Correct | Unattempted

Incorrect | 4/30

Q : Seed shape in pea plant is:

A Trait

B Phenotype

C Genotype

D Genome

Explanation

The inheritable characteristics are traits. i.e. flower colour is a trait and red or white is phenotypes.

Correct | Unattempted

Incorrect | 5/30

Q : Which of the following is considered as a recessive character of Mendel?

A Green pod color

B Round seed shape

C Axial flower position

D Wrinkled seed shape

Explanation

Green pod color, round shaped seeds and axial position of the flowers in *P. sativum* are dominant characters while wrinkled seed shape is a recessive character.

Correct | Unattempted

Incorrect | 6/30

Q : In Mendel's monohybrid cross, what percentage of round seed plants were produced by F_1 heterozygous round on self-fertilization?

A 25%

B 50%

C 75%

D 100%

Explanation

F_2 self-fertilization of heterozygous round will give the same results as self-fertilization of F_1 round.

Correct | Unattempted

Incorrect | 7/30

Q : Mendel's principle of segregation was based on the separation of alleles in the garden pea during:

A Pollination

B Seed formation

C Embryonic development

D Gamete formation

Explanation

In gametogenesis meiosis occurs. Mendel inferred that both alleles for a trait got separated during gamete formation.

Correct | Unattempted

Incorrect | 8/30

Q : According to Mendel's monohybrid cross, the characters which appears in F_1 is said to be:

A Recessive

B Co-recessive

C Dominant

D Partially dominant

Explanation

Dominant and recessive traits exist when a trait has two different forms at the gene level. The trait that first appears or is visibly expressed in the organism is called the dominant trait. The trait that is present at the gene level but is masked and does not show itself in the organism is called the recessive trait.

Correct | Unattempted

Incorrect | 9/30

Q : What will be the probability of a round green seed in a dihybrid cross if the independent probability of a round seed is 3/4 and green seed is 2/4?

A 5/8

B 6/8

C 3/16

D 6/16

Explanation

Probabilities of events in a dihybrid cross are calculated by product rule.

Correct | Unattempted

Incorrect | 10/30

Q : What percentage of round green seeds in F_2 progeny of dihybrid cross is heterozygous for round seed shape?

A 25%

B 33%

C 66%

D 75%

Explanation

Among 3 round green seeds in F2 two are heterozygous for round and one is homozygous.

Correct | Unattempted

Incorrect | 11/30

Q : What type of gametes will be formed by genotype RrYy?

A RY, Ry, rY, ry

B Ry, Ry, Yy, ry

C RY, Ry, ry, ry

D Rr, RR, Yy, YY

Explanation

The genotype RrYy can form gametes with four possible genotypes i.e. RY, Ry, yR, ry.

Correct | Unattempted

Incorrect | 13/30

Q : An allele is said to be dominant if:

A. It is expressed only in heterozygous combination

B. It is expressed only in homozygous combination

C. It is expressed in both homozygous and heterozygous condition

D. It is expressed only in second generation

Explanation

Dominant allele mask over its alternative form so should be expressive whatever will be the genotype.

Correct | Unattempted

Incorrect | 12/30

Q : Dominance is physiological effect of an allele over its partner allele occupying:

A Same locus on same chromosome

B Same locus on respective homologue

C Different locus on same chromosome

D Different locus on respective homologue

Explanation

Dominance is a relationship between partner alleles on homologous chromosomes.

Correct | Unattempted

Incorrect | 14/30

Q : Which is not true about multiple alleles?

A Formed due to gene mutation

B Belong to polymorphic gene

C Number is always two

D Gamete having just one of them

Explanation

In multiple allelic system, gene exists in more than two alternative forms within a population but an individual contains any two of them.

Correct | Unattempted

Incorrect | 15/30

Q : Which is not true about multiple alleles?

A

B

C

D

Explanation

In multiple allelic system, gene exists in more than two alternative forms within a population but an individual contains any two of them.

Correct | Unattempted

Incorrect | 14/30

Q : Which is not true about multiple alleles?

A Formed due to gene mutation

B Belong to polymorphic gene

C Number is always two

D Gamete having just one of them

Explanation

In multiple allelic system, gene exists in more than two alternative forms within a population but an individual contains any two of them.

Correct | Unattempted

Incorrect | 15/30

Q : Blood group of a person is O while his children having A. All of the following can be the genotype of mother except:

A. Homozygous for gene I^A

B. Heterozygous for gene I^A

C. Homozygous for gene i

D. Heterozygous for gene i

Explanation

A person having A blood group must have at least one parent with I^A allele in them.

Correct | Unattempted

Incorrect | 16/30

Q : How many alleles of ABO blood group are present in an individual?

A 1

B 3

C 2

D 300

Explanation

Human ABO blood groups system is controlled by three alleles e.g. I^A, I^B, i.

Correct | Unattempted

Incorrect | 17/30

Q : A trait being controlled by a gene pair on chromosome 9 is interfered by a gene pair on chromosome 19. This effect is called:

A Over dominance

B Mutation

C Epistasis

D Complete dominance

Explanation

Epistasis is the mechanism in which genes which occupy different loci interact with each other to control a single trait.

Correct | Unattempted

Incorrect | 18/30

Q : Tongue rolling is due to:

A Single recessive gene

B Single dominant gene

C Homozygous recessive

D Multiple alleles

Explanation

Tongue rolling is the product of heterozygous genotype.

1 Correct | 0 Unattempted

0 Incorrect | Q 19/30

Q : Mendel's law of independent assortment is applicable for:

A All genes in all organisms

B All linked genes only

C All genes of pea plant only

D All non-linked genes only

Explanation

Linked genes cannot assort independently.

Correct | Unattempted

Incorrect | 20/30

Q : Physical association of two genes is known as:

A Heterozygosis

B Recombination

C Linkage

D Homozygosis

Explanation

Genes are linked linearly on the same DNA molecule within a chromosome.

Correct | Unattempted

Incorrect | 21/30

Q : Genes for which of the following form a linkage group on chromosome 11?

A Leukemia, Albinism

B Hemophilia, Gout

C Gout, Sickle cell anemia

D Color blindness, Hemophilia

Explanation

Genes for Leukemia and Albinism are present on autosome 11. Hemophilia is X linked.

Correct | Unattempted

Incorrect | 22/30

Q : Genes can be mapped on a chromosome on the basis of their:

A Tetrad formation

B Location of jumping genes

C Chiasmata formation

D Recombination frequencies

Explanation

Genes can be mapped on a chromosome on the basis of their recombination frequencies.

Correct | Unattempted

Incorrect | 23/30

Q : The probability of having a male or female offspring in ZZ-ZW pattern of sex determination is:

A 25%

B 50%

C 75%

D 100%

Explanation

In ZZ-ZW pattern, female is heterogametic and produce two types of eggs. Thus, there are equal chances of offspring to be male or female.

Correct | Unattempted

Incorrect | 24/30

Q : In humans, sex of an individual depends upon:

A Homogametic mother

B Heterogametic mother

C Homogametic father

D Heterogametic father

Explanation

Male produces two types of gametes, so sex of offspring is determined by male gametes.

Correct | Unattempted

Incorrect | 25/30

Q : Chromosomal combination of a person with tfm syndrome is:

A XO

B XY

C XX

D XYY

Explanation

It is complete androgen insensitivity syndrome, but genetically they are male.

Correct | Unattempted

Incorrect | 26/30

Q : Even a single recessive allele on X chromosome in male can be expressed because:

A All genes on X chromosome can be expressed

B Y chromosome has dominant allele for that trait

C X chromosome alleles are dominant over Y chromosome

D Y chromosome does not have counter part of allele of X chromosome

Explanation

Hemizygous have only one copy of gene and the other copy is missing on its counterpart.

1 Correct 0 Unattempted

0 Incorrect Q 27/30

Q : It is an example of X-linked dominant trait and occur more in females as compared to the males:

A Hemophilia

B Color blindness

C Vit. D resistant rickets

D Lesch-Nyhan syndrome

Explanation

Hemophilia, color blindness and Lesch-Nyhan syndrome are examples of X-linked recessive traits while Vit. D resistant rickets is an example of X-linked dominant trait.

Correct | Unattempted

Incorrect | 28/30

Q : Hemophilia B is due to absence or abnormality of blood clotting factor:

A VIII

B IX

C X

D XI

Explanation

Haemophilia A is due to abnormality of factor VIII, while haemophilia C is due to XI.

Correct | Unattempted

Incorrect | 29/30

Q : A normal woman whose father was red-blind marries a red-blind man. What proportion of their children can have normal colour vision?

A 25%

B 75%

C 50%

D 100%

Explanation

Since, the female is carrier and her husband is red blind, so 50% of their children can inherit red color blindness. And 50% of their children will be normal phenotypically.

Correct | Unattempted

Incorrect | 29/30

Q : A normal woman whose father was red-blind marries a red-blind man. What proportion of their children can have normal colour vision?

A 25%

B 75%

C 50%

D 100%

Explanation

Since, the female is carrier and her husband is red blind, so 50% of their children can inherit red color blindness. And 50% of their children will be normal phenotypically.

Correct | Unattempted

Incorrect | 30/30

Q : Hypophosphatemic rickets is due to a protein defect that does not respond to vitamin D signal. This protein is located on:

A Liver cells

B Bone cells

C Intestinal cells

D Skin cells

Explanation

Mineralization of bone needs vitamin D to deposit calcium.