1. Question1 points

ABO blood grouping in human is an example of

1. A. Polygenic inheritance
2. B. Multiple allelism
3. C. Co-dominance
4. D. Epitasis
5. E. Both B and C

Correct

Explanation: E

A. Polygenic inheritance: Occurs when one characteristic is controlled by two or more genes. Often the genes are large in quantity but small in effect. Examples of human polygenic inheritance are height, skin color, eye color and weight.

B. Multiple allelism: Presence of more than two alleles for a gene is called Multiple alleles. These are present on the same locus of homologous chromosomes. e.g.: ABO blood group.

C. Co–dominance: Co dominance is a phenomenon in which alleles which do not show dominance-recessive relationship are able to express themselves independently when present together.

D. Epitasis: A gene which masks the action of another gene is termed as epitasis. The gene is called epistatic gene and the gene whose effect is masked is termed as hypostatic gene.

E. Incomplete dominance – When none of the factors of a gene is dominant, the phenotype of a heterozygous dominant individual is a blend of dominant and recessive traits. This is called as incomplete dominance. For example, flower color in Mirabilis Jalapa.

2. Question1 points

Genes

1. A. Are the unit of inheritance
2. B. contain the information that is required to express a particular trait in an organism
3. C. were the unit of Recombination
4. D. Both A and B

Correct

Explanation D

The gene is the basic physical unit of inheritance. Genes are passed from parents to offspring and contain the information needed to specify traits. Genes are arranged, one after another, on structures called chromosomes.

GENES

◉ Biological unit of heredity:

◉ Gene hold the information to build and maintain their cells and pass genetic traits to offsprings.

◉ In cells, a gene is portion of DNA.

3. Question1 points

Which of the following correctly defines phenotype?

1. A. Basic unit of biological information
2. B. Appearance of a trait
3. C. Partners of a gene pair
4. D. Position of a gene on the chromosome

Correct

Explanation B

Phenotype is a form of appearance of a trait.

Gene is the basic unit of biological information.

Alleles are partners of a gene pair. Locus is the position of a gene on the chromosome.

Phenotype is the appearance of one organism while genotype is the gene complement it has from its ancestors. These genes only show their effect in phenotype but environment also plays an important role in this.

GENOTYPES AND PHENOTYPES

◉ A genotype is the genetic makeup of an organism.

◉ A Phenotype is the physical characteristics of an organism – what the organism look like.

Characteristic (Character)

♦ a heritable feature that varies among individuals (e.g. eye colour, flower colour, etc.)

Trait

♦ Each variant of a characteristic (e.g. blue vs. brown eyes, purple vs. white flowers)

4. Question1 points

The tendency of individuals to resemble their parent is called?

1. A. Heredity
2. B. Variation
3. C. Genetics
4. D. Inheritance

Correct

Explanation: A

The tendency of individuals to resemble their parents is called heredity while the differences between them is called variation

The science that deals with the mechanism of heredity and variation is called genetics

Living organisms are distinguished by their ability to reproduce their own kind.

Genetics is the scientific study of heredity and variation.

Heredity is the transmission of traits from one generation to the next.

Variation is demonstrated by the differences in appearance that offspring show from parents and siblings

5. Question1 points

The gene of haemophilia is located on the “X” chromosome. Hence, it is normally impossible for

1. A. Haemophilia father to pass the gene to his daughter.
2. B. Carrier mother to pass the gene to her daughter.
3. C. Carrier mothers to pass the gene to her son.

4. D. Haemophilia father to pass the gene to his son.

Correct

Explanation: D

Haemophilia is an X chromosome-linked recessive disorder in which people do not produce clotting factors.

It is impossible for a father to pass affected chromosome to his son but he can pass affected chromosome to his daughter as she will take one chromosome from her father and another one from mother. If her father has an affected chromosome she will acquire the same.

The mother has an XX chromosome in which one X is normal and the other one is affected. When she inherits one affected X chromosome, she compensates with another normal X chromosome and thus is called a carrier.

But a haemophilic father has XY chromosome and none of his sons will be affected as he carries only the Y chromosome from his father. Hence, the correct option is D, i.e., ''Haemophilic father to pass the gene to his son.''

6. Question1 points

Biological unit controlling heredity is _____.

1. A. Genome
2. B. Chromosome
3. C. Genotype
4. D. Gene

Correct

Explanation D

A. Genome – a set of chromosome in an organism in a body.

B. Chromosome – Dark colored, small rod like structures, appear in the dividing nucleus is called Chromosome.

C. Genotype – It is the representation of an individual's genetic constitution with respect to a single character or set of characters.

D. Gene – A gene is the basic physical and functional unit of heredity. Genes are made up of DNA. Some genes act as instructions to make molecules called proteins.

So, the correct option is ‘Gene’

7. Question1 points

How many round yellow seeds offspring’s were obtained in F2 generation of dihybrid cross?

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

Correct

Explanation: B

The phenotypic ratio in dihybrid cross was:

9 : 3 : 3 : 1

→ 9 Round yellow

→ 3 Round green

→ 3 Wrinkled yellow

→ 1 Wrinkled green

8. Question1 points

The alleles for haemophilia A and B are located on the?

1. A. X-Chromosome
2. B. Y-Chromosome
3. C. Autosomal chromosome
4. D. XY-Chromosome

Correct

Explanation: A

Haemophilia A and B are X-linked recessive traits that is why their alleles are found on X-chromosome

9. Question1 points

Which of the following will be haemophilic?

1. A. XHXh
2. B. XHXH
3. C. XhY
4. D. XHY

Correct

Explanation C

Haemophilia is a rare X-linked recessive trait. Haemophilia is of three types: A, B and C. Haemophilia A and B are recessive sex-linked, but haemophilia C is an autosomal recessive trait. 80% haemophiliac, suffer from haemophilia A due to abnormality of factor VIII, about 20% suffer from haemophilia B due to disturbance in factor IX, but less than 1 % suffer from haemophilia C due to reduction in factor XI.

Chances for a man to be affected by haemophilia A and B are greater than a woman. A woman can suffer from haemophilia A or B only when she is homozygous for the recessive allele, but a man with just one recessive allele will display the trait. Haemophilia A and B zigzag from maternal grandfather through a carrier daughter to a grandson. It never passes directly from father to son. Gene for normal is H.

10. Question1 points

Which of the following crosses best demonstrates the law of segregation?

1. A. AA×aa

2. B. aa×aa

3. C. Aa×aa

4. D. Aa×Aa

5. E. AA×AA

Correct

Explanation: D

The law of Segregation states that alleles separate during gamete formation. This is best proved by choice D because both parents express the dominant trait, A, but some offspring would show the recessive trait. This could not happen if it were not for homologous chromosomes separating during meiosis. In Option A and C you see both traits in a parents and both traits in offspring so there is nothing about odd that. In choice B and E, the parents appear with one phenotype and the offspring have same phenotype so again it does not relate to Segregation.

11. Question1 points

The contrasting pair of a factor in Mendelian crosses are called:

1. A. Factor

2. B. Alleles

3. C. Paramorphism

4. D. None

Correct

Explanation B

The contrasting pairs of factors in Mendelian crosses are called allelomorphs or Alleles.

Alleles are the different forms of a gene, having the same locus on homologous chromosomes and are subject to Mendelian (alternative) inheritance

12. Question1 points

In the male the sex-determining gene is

1. A. XY

2. B. SRY

3. C. SYX

4. D. SXX

Correct

Explanation B

Humans have 46 chromosomes in the form of 23 pairs. 22 pairs are of autosomes and one pair is of sex-chromosomes. Autosome pairs are common in both the sexes but the 23rd sex chromosome pair is very different in males and female. A woman has two similar X chromosomes in her 23rd pair but a man has an X chromosome along with a much shorter Y chromosome in his 23rd pair. The 23rd pair in man is heteromorphic. She is XX, but he is XY. SRY is the male-determining gene. It is located at the tip of the short arm of Y-chromosome. Its name SRY stands for “Sex determining regions of Y.”

13. Question1 points

A gene is said to be dominant if

1. A. It expresses its effect only in homozygous state.

2. B. It expresses its effect only in heterozygous condition.

3. C. It expresses its effect both in homozygous and heterozygous condition.

4. D. It never expresses its effect in any conditions.

Correct

Explanation: C

A dominant gene would lead to the expression of its phenotype irrespective of the fact whether its allelic gene is dominant or recessive.

14. Question1 points

Multiple alleles are present:

1. A. At different loci on the same chromosome

2. B. At the same locus of the chromosome

3. C. One non-sister chromatids

4. D. On different chromosomes

Correct

Explanation: B

All alleles of a gene are situated on the same locus of chromosome in organism

FEATURES OF MULTIPLE ALLELES

◉ Multiple alleles always occupy the same locus on the chromosome.

◉ Multiple alleles always influence the same character.

◉ No crossing over among the member alleles of the same multiple allelic series.

15. Question1 points

Independent assortment of genes does not take place when

1. A. Genes are linked and located on same chromosomes.

2. B. Genes are located on non-homologous chromosomes.

3. C. Both.

4. D. None

correct

Explanation: A

Principle of law of independent assortment is applicable to only those factors or genes which are present on different chromosomes

Independent assortment of genes takes place only when they are located on separate non-homologous chromosome. When two or more than two genes are located on same chromosome, independent assortment will not be possible.

LINKED GENES

Linked genes do not assort independently

◉ The principle of independent assortment does not apply to loci on the same homologous pair of chromosomes.

◉ Using a dihybrid cross, Mendel developed the law of independent assortment

◉ The law of independent assortment states that each pair of alleles segregates independently of each other pair of alleles during gamete formation

◉ Strictly speaking, this law applies only to genes on different, nonhomologous chromosomes.

◉ Genes located near each other on the same chromosome tend to be inherited together.

16. Question1 points

The Mendelian principle which has always stood true is

1. A. The law of independent assortment
2. B. The law of segregation
3. C. The law of dominance
4. D. All the above

Correct

Explanation: B

Mendel Genetical principles

1. Law of dominance,

2. Law of segregation

3. Law of independent assortment.

In these principles, the law of dominance and Law of Independent assortment have deviations or exceptions. Law of segregation does not have any deviations of exceptions. So it always stands true.

Law of segregation is the universally accepted law of inheritance. It is the only law without any exceptions. It states that each trait consists of two alleles which segregate during the formation of gametes and one allele from each parent combines during fertilization, both parents contribute to the factors of offspring equally. In case, alleles of a pair are heterozygous, one is dominant and other recessive, alleles are not mixed up, the dominant one gets expressed. The recessive traits tend to reappear in the subsequent generation.

There is no such contrary model indicating that alleles mix up in the progeny so far, hence it is accepted and applicable

MENDEL'S LAWS

The Law of Segregation

◉ Each pair of alleles separates during meiosis (gamete formation)

The Law of Dominance

◉ When two alleles differ,

◉ One can control the trait – Dominant

◉ The other can be hidden – Recessive

The Law of Independent Assortment

◉ Pairs of genes segregate into gametes randomly and independently (due to random separation of homologous pairs).

17. Question1 points

Mendel's law of segregation is also known as _____

1. A. Law of separation
2. B. Law of dominance
3. C. Law of purity of gametes
4. D. Law of independent assortment

Correct

Explanation: C

According to Mendel's monohybrid cross, during gamete formation, the alleles for each gene segregate from each other so that each gamete carries only one allele for each gene. It is called Law of Segregation. It is also called Law of purity of gametes as each gamete is pure or true for the trait it is carrying. It is universally applicable law.

So, the correct option is ‘Law of purity of gametes’

THE LAW OF SEGREGATION

The law of purity of gametes

◉ When a pair of alleles is brought together in a hybrid (F1) they remain together without contaminating each other and they separate or segregate from each other into a gamete during the formation of gametes.

OR

◉ The two alleles of a gene remains separate and do not contaminate each other in F1 generation or in hybrid. At the time of gamete formation in F1, the two alleles separate out and pass into different gametes.

MENDEL’S LAWS

The Law of Segregation

◉ Each pair of alleles separates during meiosis (gamete formation)

The Law of Dominance

◉ When two alleles differ,

◉ One can control the trait – Dominant

◉ The other can be hidden – Recessive

The Law of Independent Assortment

◉ Pairs of genes segregate into gametes randomly and independently (due to random separation of homologous pairs).

18. Question1 points

Which law states that the inheritance of one trait is independent on the inheritance of another trait?

1. A. Law of dominance
2. B. Law of universal inheritance
3. C. Law of segregation
4. D. Law of independent assortment

Correct

Explanation: D

Law of independent assortment states that the alleles of two (or more) different genes get sorted into gametes independently of one another. In other words, the allele a gamete receives for one gene does not influence the allele received for another gene.

According to the law of dominance, a trait is represented by two contrasting factors of a gene in a heterozygous individual; the allele/factor that can express itself in a heterozygous individual is called as a dominant trait. Whereas the law of segregation states that the two factors for a trait, present together in a heterozygous individual, do not get mixed and are separated during gametogenesis.

◉ Using a dihybrid cross, Mendel developed the law of independent assortment.

◉ The law of independent assortment states that each pair of alleles segregates independently of each other pair of alleles during gamete formation.

◉ Strictly speaking, this law applies only to genes on different, nonhomologous chromosomes.

◉ Genes located near each other on the same chromosome tend to be inherited together

19. Question1 points

Genes are segments of

1. A. Chromosome
2. B. DNA
3. C. mRNA
4. D. Nucleolus

Correct

Explanation: B

Gene is the segment of DNA that carries information and inherits it from one generation to the next.

20. Question1 points

Number of linkage groups in drosophila are

1. A. 4
2. B. 8
3. C. 2
4. D. 16

Correct

Explanation: A

No of linkage groups in an organism are equal to number of homologous pair of chromosomes.

⟹ Drosophila has 4 homologous pair of chromosomes so 4 linkage groups.

Linkage groups

Linkage group refers to a group of genes which are present in one chromosome. In other words, all those genes which are located in one.

Chromosome constitute one linkage group. The number of linkage groups is limited in each individual. The maximum number of linkage groups is equal to the haploid chromosome number of an organism.

For example: There are ten linkage groups in corn (2n = 20), seven in garden pea (2n = 14), seven in barley (2n = 14), four in Drosophila melanogaster (2n = 8) and 23 in man (2n = 46).

21. Question1 points

The process which is responsible for recombination to linked genes?

1. A. Synapsis
2. B. Pairing
3. C. Crossing Over
4. D. Synapses

correct

Explanation: C

The process which is responsible for the recombination of linked genes is crossing over. It occurs during prophase of meiosis I.

22. Question1 points

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

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

correct

Explanation C

Haemophilia is an X-linked recessive disease. It occurs due to mutation in gene present on the X chromosome. It is most commonly seen in human males as males have only one copy of X chromosome and only one altered copy of the gene is sufficient to cause the disease. In females, there are two copies of X chromosomes and two altered copies of gene is required to cause the disease. Since it is recessive disease, one copy of altered gene in females will result in carrier state.

23. Question1 points

According to modern concept, Mendel's factor is called as _____.

1. A. Chromosome
2. B. Gene
3. C. DNA
4. D. Chromatid

correct

Explanation B

According to the modern concept, Mendel's factor is called a gene. Mendel believed that heredity is the result of discrete units of inheritance, and every single unit (or gene) was independent in its actions in an individual's genome. According to this Mendelian concept, inheritance of a trait depends on the passing-on of these units. For any given trait, an individual inherits one gene from each parent so that the individual has a pairing of two genes.

◉ Mendelian factors are now called genes.

◉ Alleles are different versions of the same gene.

◉ An individual with two identical alleles is termed homozygous.

◉ An individual with two different alleles, is termed heterozygous.

◉ Genotype refers to the specific allelic composition of an individual.

◉ Phenotype refers to the outward appearance of an individual.

24. Question1 points

A physical relationship between genes?

1. A. Crossing over
2. B. Recombination
3. C. Synapsis
4. D. Gene linkage

correct

Explanation: D

All genes located on the same chromosome are linked to each other. This phenomenon of staying together is called linkage. Gene linkage is a physical relationship between genes

25. Question1 points

All of the following characters of pea plant were studied by Mendel except?

1. A. Flower color
2. B. Stem position

3. C. Pod color

4. D. Flower position

correct

Explanation: B

Following seven characteristics were studied by Mendel:

1) Flower color 2) Flower position

3) Seed shape 4) Seed color

5) Pod shape 6) Pod color

7) Stem height

→ stem position was not studied by Mendel.

1. Question1 points

A couple has 6 children, 5 are girls and 1 is boy. The percentage of having a girl on next time is

1. A. 10%

2. B. 20%

3. C. 50%

4. D. 100%

Correct

Explanation C

Determination of sex of each child is an independent and exclusive event so the probability that whether the child will be a boy or a girl is 50% in each and every case.

2. Question1 points

Genetics is

1. A. Genes + Alleles

2. B. Heredity + Variation

3. C. DNA + RNA

4. D. Dominant + Recessive

Correct

Explanation B

The branch of biology that deals with heredity and variation is genetics. Gregor Mendel is the father of genetics.

◉ Genetics is the scientific study of genes, heredity and variation in living organisms.

◉ Heredity is the passing of traits to offspring from its parents or ancestor.

◉ Inheritance is how traits, or characteristics, are passed on from generation to generation.

3. Question1 points

In which of the following sex determining types the males are heterogametic?

i) XO-XX

ii) XY-XX

iii) ZZ-ZW

1. A. i only

2. B. ii only

3. C. i and ii only

4. D. i, ii and iii.

Correct

Explanation C

Males are heterogametic in both XO-XX and XY-XX

4. Question1 points

Method used to determine whether on individual is homozygous or heterozygous is?

1. A. Crossing over
2. B. Test cross
3. C. Hybridization
4. D. Random assortment

Correct

Explanation: B

Test cross is used to determine whether individual is homozygous or heterozygous.

5. Question1 points

Lack of independent assortment between two genes A and B would be due to

1. A. Crossing over
2. B. Linkage
3. C. Recombination
4. D. All

Correct

Explanation: B

According to Mendel's law of independent assortment, segregation of one trait is independent of the other. The two factors or alleles of different genes assort independently at the time of gamete formation. Morgan showed that when genes are present on the same chromosome, they show physical association or linkage, due to which they are often inherited together and there are more parental combinations. Linkage depends on the distance between two genes present on the same chromosome while Crossing over is the process of exchange of genetic material between non-sister chromatids of homologous chromosomes to produce new genetics combinations or variations; it does not interfere with an independent assortment of genes so Option b is correct.

6. Question1 points

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

1. A. Multiple allelism
2. B. Mosaicism
3. C. Pleiotropy
4. D. Polygeny

Correct

Explanation C

Occasionally, a single gene may express more than one trait. This phenomenon is called pleiotropy, Polygeny refers to a single characteristic that is controlled by more than two genes

7. Question1 points

Holandric genes are one situated on

1. A. X-chromosome
2. B. Y-chromosome
3. C. Both (A) and (B)
4. D. Autosomes

Correct

Explanation B

The genes present exclusively on the chromosomes are known as X-linked genes and those genes that are present on the Y-chromosomes are known as holandric genes

♦ Y-linked, or holandric genes include the gene that initiates differentiation of the embryo into a male, several genes that encode testis specific spermatogenesis factors, a minor histocompatibility antigen (termed HY), and a gene in which mutations can cause hearing loss (DFNY1).

♦ Y-linked or holandric inheritance implies that only males are affected.

♦ Male-to-male transmission. An affected male transmits Y-linked traits to all of his sons but to none of his daughters.

8. Question1 points

How many pairs of contrasting characters are there in pea?

1. A. Five
2. B. Six
3. C. Eight
4. D. Seven

Correct

Explanation D

Seven pairs of contrasting characters in pea plants were studied by Mendel in his experiments.

9. Question1 points

Genetic identity of a human male is determined by

1. A. Sex-chromosome
2. B. Cell organelles
3. C. Autosome
4. D. Nucleolus

Correct

Explanation A

Sex chromosomes are those chromosomes whose presence, absence or particular form determines the sex of the individual in unisexual or dioecious organisms.

10. Question1 points

A man can inherit his X-chromosome from his

1. A. Maternal grandmother or maternal grandfather

2. B. Father

3. C. Maternal grandfather

4. D. Paternal grandmother

5. E. Paternal grandfather

correct

Explanation A

A man can inherit his X-chromosome from his maternal grandfather only because males pass their X-chromosome only to their daughters.

11. Question1 points

From where can a man inherit his X chromosome?

1. A. His maternal grand mother or maternal grand father

2. B. His father

3. C. His maternal grand father only

4. D. His paternal grand father

5. E. His paternal grand mother

correct

Explanation: A

A man can inherit his X chromosome from maternal grandmother or maternal grandfather. It is because men are heterozygous with XY chromosomes, where Y cannot carry any genes.

12. Question1 points

If a character is always transmitted directly from a father to all his sons and from their sons to all their sons, then which chromosome carries the gene for the character?

1. A. Autosome

2. B. X-chromosome

3. C. Y-chromosome

4. D. None of these

Correct

Explanation C

If a character is transmitted from father to his sons and then to grandson only, it means it is located on Y-chromosome (inheritance of Y linked genes)

13. Question1 points

Which of the following is controlled by multiple alleles?

1. A. Sickle cell anemia
2. B. Color blindness
3. C. Blood groups
4. D. None of these

Correct

Explanation C

Although a diploid organisms always has 2 alleles for a particular gene on autosome, a gene can exist in more than two allelic forms known as multiple allele, e.g., blood group ABO type.

14. Question1 points

Which of the following conditions is related to haemophilia?

1. A. A responsible recessive gene present in the X-chromosome
2. B. A responsible dominant gene present in the X-chromosome
3. C. A responsible dominant gene present in the Y-chromosome
4. D. A responsible dominant gene present in the autosomal chromosome

Correct

Explanation A

Haemophilia is the most serious and notorious disease which is more common in man than in woman. The person which contains the recessive gene for haemophilia lacks normal clotting substance (thromboplastin) in blood so, amino injuries cause continuous bleeding and ultimate death. It is X-linked disease

15. Question1 points

Genes which code for a pair of contrasting traits are known as

1. A. Dominant genes
2. B. Alleles
3. C. Linked genes
4. D. None of these

Correct

Explanation B

Genes are the units of inheritance and contain the information that is required to express a particular trait in an organism. Alternating form of a single gene which code for a pair of contrasting traits are known as alleles, i.e., tall and dwarf are alleles determining the height of pea plant.

16. Question1 points

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

1. A. Codominant
2. B. Supplementary
3. C. Complementary
4. D. Recessive.

Correct

Explanation D

The allele which is unable to express its effect in the presence of another is called recessive. A member of a pair of alleles that does not show its effect in the phenotype in the presence of any other allele. It is denoted by small letter.

Dominant Factor or Allele:

Allele which can express itself in both homozygous or heterozygous state., e.g., the factor for tallness in hybrid and homozygous states Tt and/or TT.

Recessive Factor or Allele:

Allele which is unable to express its effect in the presence of its contrasting factor in a heterozygous condition is called recessive factor or allele. e.g., the factor for dwarfness is able to express in homozygous states tt only.

17. Question1 points

The characters which appear in the first filial generation are called

1. A. Recessive characters
2. B. Dominant characters
3. C. Holandric characters
4. D. Lethal characters

Correct

Explanation B

In heterozygous individuals or hybrids, out of the two factors or alleles representing the alternate traits of a character, one is dominant and expresses itself in the hybrid or F1 generation. The other factor or allele is recessive and does not show its effect in the heterozygous individual (Principle of dominance).

18. Question1 points

An organism with two identical alleles is

1. A. Dominant
2. B. Hybrid

3. C. Heterozygous

4. D. Homozygous

Correct

Explanation D

An organism with two identical alleles is homozygous. Homozygous have identical genes at the same locus on each member of a pair of homologous chromosomes

♦ Punnett Square – chart that shows all the possible combinations of alleles that can result from a genetic cross.

♦ Phenotype – is the physical appearance of an organisms

♦ Genotype – an organism's genetic makeup or allele combination

♦ Homozygous – an organism that has two identical alleles for the same trait

♦ Heterozygous – an organism with two different alleles for the same trait

19. Question1 points

Mendel was not imagining about which of the following?

1. A. Linkage

2. B. Incomplete dominance

3. C. Dominance

4. D. Segregation of alleles

Correct

Explanation A

Linkage is the tendency of the genes to remain together on the same chromosome. Mendel was unknown about gene and linkage of genes phenomenon was discovered by Bateson and Punnet (1906) in Lathyrus odoratus.

20. Question1 points

XO type of sex determination is seen in

1. A. Man

2. B. Grasshopper

3. C. Drosophila

4. D. Birds

5. E. Horse

Correct

Explanation B

Grasshopper is an example of XO type of sex determination in which the males have only one X-chromosome besides the autosomes, whereas females have a pair of X-chromosomes.

21. Question1 points

The incorrect statement with regard to hemophilia is

1. A. It is a sex-linked disease

2. B. It is a recessive disease

3. C. It is a dominant disease

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

Correct

Explanation C

Haemophilia is a sex linked recessive disease. A single protein that is a part of the cascade of protein is involved in the clotting of blood is affected. The heterozygous female for hemophilia may transmit the disease to sons.

22. Question1 points

Which of the following most appropriately describes haemophilia?

1. A. Chromosomal disorder

2. B. Dominant gene disorder

3. C. Recessive gene disorder

4. D. X-linked recessive gene disorder

Correct

Explanation D

Haemophilia is a sex-linked disease. It occurs due to the presence of a recessive sex-linked gene

, which is carried by X-chromosome.

23. Question1 points

“Gametes are never hybrid”. This is a statement of

1. A. Law of dominance
2. B. Law of independent assortment
3. C. Law of segregation
4. D. Law of random fertilization

correct

Explanation C

“Gametes are never hybrid”. This is a statement of law of segregation.

Mendel’s principle of segregation is inherent in the results of Mendel. Though in , the dominant phenotype appears, the recessive phenotype is not lost but reappears in . This suggested that there is no blending of Mendelian factors in , but that they stay together and only one is expressed. At the time of the formation of gametes, these two factors obviously separate or segregate, otherwise recessive type will not appear in . The gametes which are formed are always pure for a particular character. A gamete may carry either the dominant or the recessive factor but not both. That is why it is called either as “principle of segregation” or as “law of purity of gametes.”

MENDEL’S LAW

Law of Dominance: If the two alleles at a locus differ, then one, the dominant allele, determines the organism’s appearance; the other, the recessive allele, has no noticeable effect on the organism’s appearance.

Law of Segregation: The two alleles for a heritable character separate (segregate) during gamete formation and end up in different gametes.

Law of Independent Assortment: Each pair of alleles segregates independently of other pairs of alleles during gamete formation.

24. Question1 points

Sometimes there are more than two alleles for a given chromosome locus in this case a trait is controlled by

1. A. Codominance
2. B. Pseudo dominance
3. C. Incomplete dominance
4. D. Multiple alleles

Correct

Explanation D

Inheritance by multiple alleles causes a trait to exhibit more than two possible phenotypes.

FEATURES OF MULTIPLE ALLELES

♦ Multiple alleles always occupy the same locus on the chromosome.

♦ Multiple alleles always influence the same character.

♦ No crossing over among the member alleles of the same multiple allelic series.

25. Question1 points

All genes located on the same chromosome

1. A. Form different groups depending upon their relative distance
2. B. Form one linkage group
3. C. Will not from any linkage groups
4. D. Form interactive groups that affect the phenotype

Correct

Explanation B

Linked genes are the genes which occur on the same chromosome. A linkage group is a physical association of linked genes which are normally inherited together except for crossing over.

1. Question1 points

Probability of four sons to a couple is

1. A. 1/4
2. B. 1/8
3. C. 1/16
4. D. 1/32

Correct

Explanation: C

2. Question1 points

Phenotype of an organism is the result of

1. A. Cytoplasmic effects and nutrition
2. B. Environmental changes and sexual dimorphism
3. C. Genotype and environment interactions
4. D. Mutations and linkages

Correct

Explanation: C

Phenotype is the appearance of one organism while genotype is the gene complement it has from its ancestors. These genes only show their effect in phenotype but environment also plays an important role in this. Hence phenotype is a result of genotype and environmental interaction.

3. Question1 points

Alleles are

1. A. True breeding homozygotes
2. B. Different molecular forms of a gene
3. C. Heterozygous
4. D. Different phenotype

Correct

Explanation: B

Alleles are defined as alternative forms of the same gene.

4. Question1 points

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

1. A. Trichomes – Glandular or non – glandular
2. B. Seed – Green or Yellow
3. C. Pod – Inflated or Constricted
4. D. Stem – Tall or Dwarf

Correct

Explanation: A

During his experiment Mendel have taken seven characters in a pea plant. Among these, nature of Trichomes i.e. glandular or non-glandular was not considered by Mendel.

5. Question1 points

In his classic experiments on Pea plants, Mendel did not use

1. A. Pod length

2. B. Seed shape

3. C. Flower position

4. D. Seed color

Correct

Explanation: A

Mendel did not use pod length for his experiment

6. Question1 points

Which of the following characteristics represents ‘Inheritance of blood groups’ in humans?

I. Dominance

II. Co-dominance

III. Multiple allele

IV. Incomplete dominance

V. Polygenic inheritance

1. A. II, III and V

2. B. I, II and III

3. C. I, III and V

4. D. II, IV and V

Correct

Explanation: B

IAIO, IBIO –Dominant – recessive relationship

IAIB – Codominance

IA, IB & IO – Three different allelic forms of a gene (multiple allelism)

7. Question1 points

Which of the following most appropriately describes haemophilia?

1. A. Recessive gene disorder
2. B. X – linked recessive gene disorder
3. C. Chromosomal disorder
4. D. Dominant gene disorder

Correct

Explanation: B

Haemophilia A and haemophilia B are inherited in an X – linked recessive pattern. The genes associated with these conditions are located on the X chromosome, which is one of the two sex chromosome. In male (who have only one X chromosome), one altered copy of the gene in each cell is sufficient to cause the condition. In females (who have two X chromosome), a mutation would have to occur in both copies of the gene to cause the disorder because it is unlikely that females will have two altered copies of this gene, it is very rare for females to have haemophilia. A characteristic of X – linked inheritance is that fathers cannot pass X – linked traits to their sons.

8. Question1 points

A pleiotropic gene:

1. A. Is a gene evolved during Pliocene
2. B. Controls a trait only in combination with another gene
3. C. Controls multiple traits in an individual
4. D. Is expresses only in primitive plants.

Correct

Explanation: C

A pleiotropic gene regulates multiple traits (characteristic) in an individual

9. Question1 points

In our society women are blamed for producing female children. Choose the correct answer for the sex-determination in humans.

1. A. Due to some defect in the women
2. B. Due to some defect like aspermia in man
3. C. Due to the genetic make-up of the particular sperm which fertilizes the egg
4. D. Due to the genetic make-up of the egg

Correct

Explanation: C

In case of humans, the sex determining mechanism is xy type. Out of 23 pairs of chromosome, 22 pairs are exactly same in both males and females called autosomes. A pair of x chromosomes is present in the female, whereas the presence of an x and y chromosome are determinant of male characteristic. In case the ovum fertilizes with a sperm carrying x chromosome the zygote develops into a female (xx) and the fertilization of ovum with y chromosome carrying sperm results into a male offspring.

10. Question1 points

Which traits in humans is an example of multiple alleles?

1. A. Eye color
2. B. Skin color
3. C. ABO blood group
4. D. Rh blood group

Correct

Explanation C

ABO blood group is the first discovered multiple allelic blood groups system in humans. This system has 4 different phenotypes which are distinct from each other on basis of specific antigens on surface of RBC.

11. Question1 points

Human have which of the following sex determining type?

1. A. XO-XX

2. B. XY-XX

3. C. ZZ-ZW

4. D. None of the above

Correct

Explanation B

Humans have XY-XX sex determining type in which the males determine the sex of the child.

12. Question1 points

Which of the following trait is transmitted directly from father to son?

1. A. Autosomal dominant

2. B. Autosomal recessive

3. C. X-linked

4. D. Y-linked

Correct

Explanation D

Y-linked trait is transmitted from father to son directly as Y gene is received by son only.

13. Question1 points

Mendel's perform series of experiments on pea plant because it's _____?

1. A. Flowers were hermaphrodite

2. B. Had sharply distinct trait

3. C. Self-fertilization is easy

4. D. All of above

Correct

Explanation D

Self Explanatory

14. Question1 points

What is the pathophysiology in hemophilia?

1. A. Disseminated intervascular coagulation
2. B. Thromboembolism
3. C. Blood fails to clot after an injury
4. D. Increase viscosity of blood

Correct

Explanation C

In hemophilia blood fails to clot to reduction or complete absence of clotting factor.

15. Question1 points

Mendel used_____ for his experiment

1. A. Pisum sativum
2. B. Pisum album
3. C. Oryza sativa
4. D. Oryza orientalis

Correct

Explanation: A

Garden pea or Pisum sativum was used by Mendel for his experiment. This was because he observed many distinguishable characteristic traits in it and it could be easily grown and self-pollinated.

Mendel's Garden Peas, Pisum sativum

1. Mendel did a statistical study (he had a mathematical background).

2. He prepared his experiments carefully and conducted preliminary studies.

3. He chose the garden pea, Pisum sativum, because peas were easy to cultivate, had a short generation time, and could be cross-pollinated.

4. From many varieties, Mendel chose 22 true-breading varieties for his experiments.

16. Question1 points

Mendelian recombination's are due to

1. A. Mutation
2. B. Gametes
3. C. Crossing over
4. D. Independent assortment of characters

Correct

Explanation D

When genes are located at different chromosome, they assort independently

17. Question1 points

Who perform famous experiments of Heredity on pea plant

1. A. Lamarck
2. B. Darwin
3. C. De-varies
4. D. Mendel

Correct

Explanation D

Gregor Mendel conducted hybridization experiments on around 29,000 pea plants. Peas were an ideal choice for Mendel to use because they had easily observable traits there were 7 of which he could manipulate. He began his experiments on peas with two conditions.

18. Question1 points

The cross between two parents differing in one trait is called:

1. A. double recessive trait inheritance
2. B. Monohybrid
3. C. Dihybrid
4. D. None

Correct

Explanation B

When fertilization occurs between two true-breeding parents that differ in only one characteristic, the process is called a monohybrid cross, and the resulting offspring are monohybrids. Mendel performed seven monohybrid crosses involving contrasting traits for each characteristic.

19. Question1 points

Punnet squares show the possible _____ of offspring.

1. A. Genotypes
2. B. DNA sequence
3. C. Number of chromosomes
4. D. Letters of a sequence

Correct

Explanation A

20. Question1 points

The observation that inheritance of one trait is not affected by the inheritance of another trait by Gregor Mendel is known as

1. A. Law of dominance
2. B. Law of universal inheritance
3. C. Law of segregation
4. D. Law of independent assortment
5. E. Law of separate chromosomes

Correct

Explanation: D

♦ Using a dihybrid cross, Mendel developed the law of independent assortment

♦ The law of independent assortment states that each pair of alleles segregates independently of each other pair of alleles during gamete formation

♦ Strictly speaking, this law applies only to genes on different, nonhomologous chromosomes.

♦ Genes located near each other on the same chromosome tend to be inherited together.

21. Question1 points

If linkage was known at the time of Mendel then which of the following laws, he would not have been able to explain?

1. A. Law of dominance
2. B. Law of independent assortment
3. C. Law of segregation
4. D. Law of purity of gametes

Correct

Explanation: B

According to Mendel's law of independent assortment, segregation of one trait is independent of the other. The two factors or alleles of different genes assort independently at the time of gamete formation. Morgan showed that when genes are present on the same chromosome, they show physical association or linkage, due to which they are often inherited together and there are more parental combinations. Linkage depends on the distance between two genes present on the same chromosome. On the other hand, linkage refers to the presence of two different genes on the same chromosome. Two genes that occur on the same chromosome are said to be linked, and those that occur very close together are

tightly linked. So, this would have been contradictory as Mendel would have not been able to explain the inheritance of two genes without one affecting the other.

22. Question1 points

X-linked recessive trait is?

1. A. Hypophosphatemia
2. B. Vit. D resistant rickets
3. C. Haemophilia
4. D. Diabetes Mellitus

Correct

Explanation C

The only X linked recessive disease among all the above given options is Haemophilia. All others are hormonal or other conditions but not X-linked.

23. Question1 points

The sex of individual of next generation always depends on one of the parents who is?

1. A. Heterogametic
2. B. Homogametic
3. C. Isogametic
4. D. Isomorphic

Correct

Explanation A

Males are heterogametic because they produce two types of sperms i.e. X and Y and sex of the individual depends on what sperm fertilizes the egg.

24. Question1 points

In humans sex-determination depends upon the nature of?

1. A. Homogametic female
2. B. Heterogametic male
3. C. Heterogametic female
4. D. Homogametic male

Correct

Explanation B

Chromosomes in Male is XY and female is XX. The man is sex-determining in males. It produces two types of sperm X and Y and female produce only X type egg. Two types of sperm fuse with X type egg to produce male or female in next generation.

25. Question1 points

Which one of the following trait undergo a zigzag pattern from maternal Grand-father to a Grand-son?

1. A. Autosomal dominant.
2. B. Autosomal recessive.
3. C. X-linked.
4. D. Y-linked.

Correct

Explanation C

X-linked recessive trait follow a zigzag pattern. Son inherits X chromosome only from his mother and daughter gets X chromosome from each parent. So the X linked trait passes on from maternal grandparent to grand son through the daughter.

1. Question1 points

Which one of the following condition is hybrid?

1. A. RR

2. B. Rr

3. C. rr

4. D. All of the above

Correct

Explanation B

Hybrid is synonymous with heterozygous: any offspring resulting from the mating of two genetically distinct individuals.

2. Question1 points

Chance of occurring of an event is called?

1. A. Probability

2. B. Dominance

3. C. Epistasis

4. D. Pleiotropy

Correct

Explanation A

♦ Each event has an equally likely chance of happening

♦ Each are unbiased

♦ e.g. If you a chain, there is 50% change of getting a Head and 50% change of a Tail.

3. Question1 points

A gene which affects two or more unrelated characteristics is called?

1. A. Pleiotropic

2. B. Epistatic

3. C. Dominant

4. D. Mutated

Correct

Explanation A

A gene which affects two or more unrelated characteristics is called Pleiotropic.

4. Question1 points

Which of the following will be hemophilic?

1. A. X(H) X(h)
2. B. X(H) X(H)
3. C. X(h) Y
4. D. X(H) Y

Correct

Explanation C

Hemophilia is an X-linked recessive trait, so it will be seen only when all the X chromosomes have the recessive gene (h).

5. Question1 points

Partners of gene pair on homologues chromosomes are called?

1. A. Alleles
2. B. Locus
3. C. Genotype
4. D. Phenotype

Correct

Explanation A

Partners of gene pair are called alleles and occupy the same locus on its respective homologue.

6. Question1 points

Which of the following is a characteristic of jumping genes?

1. A. They are found in jumping athletes.
2. B. They are heterozygous.
3. C. They have fixed position on the homologous chromosomes.
4. D. They keep on changing loci.

Correct

Explanation D

Jumping genes do not settle peacefully and keep on changing loci on the same chromosome or the other chromosome

7. Question1 points

Which of the following genotype shall produce phenotype O?

A. IAi

B. IBi

C. IAIB

D. ii

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

Correct

Explanation D

Allele i is recessive to both IA and IB so only ii shall produce phenotype O.

8. Question1 points

Hemophilia is?

1. A. Due to defective gene on sex chromosome.
2. B. Due to extra sex chromosome.
3. C. Due to structural deviation during organogenesis.
4. D. Due to nutritional deficiencies.

Correct

Explanation A

Hemophilia is due to defect in sex chromosome and only male suffer from this disease.

9. Question1 points

The gene of ABO blood group system in humans is represented by the symbol?

1. A. I
2. B. X
3. C. Y
4. D. O

Correct

Explanation A

The blood group system is encoded by a single polymorphic gene I on chromosome 9.

10. Question1 points

Which one of the following reduces the chance of genetic re-combination?

1. A. Linkage
2. B. Independent assortment
3. C. Crossing over
4. D. Mutation

Correct

Explanation A

Strong linkage between gene reduces the chance of separation through crossing over.

11. Question1 points

During his experiment, Mendel called the genes by the term

1. A. Elementen
2. B. Qualities
3. C. Traits
4. D. Characters

Correct

Explanation A

Mendel instead hypothesized that each parent contributes some particulate matter to the offspring. He called this heritable substance “elementen.” (Remember, in 1865, Mendel did not know about DNA or genes.)

12. Question1 points

Mendel’s phenotypic dihybrid cross-ratio is:

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

Correct

Explanation B

Both parents are heterozygous, and one allele for each trait exhibits complete dominance. This means that both parents have recessive alleles but exhibit the dominant phenotype. The phenotype ratio predicted for the dihybrid cross is 9:3:3:1.

13. Question1 points

Traits more common in men than women are

1. A. X-linked recessive
2. B. X-linked dominant
3. C. Pseudo autosomal
4. D. Autosomal

Correct

Explanation A

X-linked recessive traits are less common in females because females may contain other X-chromosome with the normal dominant gene. But the males have only one X-chromosome. So, even recessive X-linked genes get expressed in males.

Choice B X-linked dominant traits are more in females.

14. Question1 points

The phenomenon in which one gene masks the activity of other gene is

1. A. Epistasis
2. B. Codominance
3. C. Complimentary
4. D. Dominant

Correct

Explanation: A

Epistasis occurs when two or more different gene loci contribute to the same phenotype, but not additively. Epistasis is often described as occurring when one gene locus masks or modifies the phenotype of a second gene locus. The epistatic gene pair is present on non-homologous chromosomes, an interaction that is termed as non-allelic.

So, the correct answer is option A.

15. Question1 points

An allele is said to be recessive, when it is expressed in

A. Heterozygous condition only

B. Homozygous condition only

C. F3 generation

D. Both homozygous and heterozygous condition

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

Correct

Explanation: B

An allele is said to be recessive only when it is expressed in Homozygous condition because when any dominant allele is present the phenotype will be dominant.

Therefore, the option (B) is correct

16. Question1 points

When a gene exists in more than one form, the different forms are called as

1. A. Heterozygous
2. B. Complementary genes
3. C. Genotypes
4. D. Alleles

correct

Explanation: D

Alleles are the two copies of a gene which carries contrasting characters. The two alleles express two different phenotypes. The allele which shows its effect is known as dominant allele and those which are unable to express is known as a recessive allele.

So, the correct answer is option D.

17. Question1 points

In heredity, the genes are obtained from

1. A. Father
2. B. Mother
3. C. Both
4. D. None of the above

Correct

Explanation: C

Heredity is the passing on of traits from parents (i.e. both father and mother) to their offspring, either through asexual reproduction or sexual reproduction, the offspring cells or organisms acquire the genetic information of their parents.

So, the correct answer is 'Both'

18. Question1 points

The branch of biology that deals with heredity and variation is

1. A. Reproduction
2. B. Sericulture
3. C. Genetics
4. D. Evolution

Correct

Explanation: C

The branch of biology that deals with heredity and variation is genetics. Gregor Mendel is the father of genetics.

Reproduction (or procreation or breeding) is the biological process by which new individual organisms – "offspring" – are produced from their "parents". Reproduction is a fundamental feature of all known life; each individual organism exists as the result of reproduction.

Sericulture is the production of silk and the rearing of silkworms for this purpose.

Evolution is the change in the heritable traits of biological populations over successive generations.

19. Question1 points

_____ is called father of genetics.

1. A. Mendel
2. B. Hook
3. C. Virchow
4. D. Strasburg

Correct

Explanation: A

Gregor Mendel discovered the fundamental laws of inheritance by working on pea plants.

He deduced that genes come in pairs and are inherited as distinct units, one from each parent. Mendel tracked the segregation of parental genes and their appearance in the offspring as dominant or recessive traits.

He was the first person to figure out genetics well enough to be able to predict the results of crosses that he made.

Some of his findings included the ideas of dominant and recessive factors, independent assortment and segregation of alleles.

20. Question1 points

Genes on same chromosome can be

1. A. Linked
2. B. Homologous
3. C. Autosomes

4. D. Identical alleles

Correct

Explanation: A

21. Question1 points

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

1. A. Translocation
2. B. Crossing-over
3. C. Inversion
4. D. Duplication

correct

Explanation: A

Linkage group refers to number of type of chromosome present in species. Human have 22 autosomal linkage groups, one X and one Y linkage group. Rearrangement of chromosomal segment between two non-homologous chromosomes i.e., translocation moves gene of one linkage group to that of other, which occurs due to an induced abnormality and is not part of the regular cell cycle.

Inversion and duplication cause rearrangement of genes on same chromosome. There is a change in the order of genes within the same linkage group.

Crossing over results in exchange of genes between two homologous chromosomes. A process that occurs during Meiosis I resulting in recombination.

22. Question1 points

A heterozygous individual carrying recessive sex-linked gene is called as

1. A. Carrier
2. B. Crossing over
3. C. Transmitter
4. D. Albino

Correct

Explanation: A.

23. Question1 points

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

1. A. VIII
2. B. IX
3. C. X
4. D. XI

Correct

Explanation B

24. Question1 points

Separation of linked genes is called as

1. A. Crossing over
2. B. Linkage
3. C. Mutation
4. D. Segregation

Correct

Explanation: A

25. Question1 points

A complete set of chromosomes inherited from parent to offspring is called as

1. A. Genome

2. B. Allele

3. C. Diploid

4. D. Gamete

correct

Explanation A

A genome is an organism's complete set of DNA, including all of its genes. Each genome contains all of the information needed to build and maintain that organism.

26. Question1 points

In Drosophila sex is determined by

1. A. X and Y chromosome

2. B. Ratio of pairs of X-chromosomes to the pairs of autosomes

3. C. Ratio of number of X-chromosomes to the sets of autosomes

4. D. Whether the egg is fertilized or develops parthenogenetically

Correct

Explanation: C

SEX DETERMINATION IN DROSOPHILA

♦ Sex in Drosophila is determined by Genic Balance Mechanism.

♦ Ratio of X chromosomes: haploid sets of autosomes (X: A)

♦ X chromosome = Female producing effects

♦ Autosomes = Male producing effects

♦ Y Chromosome = Fertility factor in male

♦ X:A ratio

Female = 1.0 (2X:2n)

Male = 0.5 (1X:2n)

0.6 < X:A < 1.0 = intersex

1. Question1 points

Transmission of genes governing various characters from parents to offspring:

1. A. Inheritance
2. B. Trait
3. C. Variation
4. D. None of these

Correct

Explanation: A

Transmission of genes of various characters from parents to offspring's is called inheritance.

2. Question1 points

Plant used by Mendel in his experiments was:

1. A. Pisum Sativum
2. B. Triticum
3. C. Oryza Sativa
4. D. Marabalis Jelapa

Correct

Explanation: A

• Mendel selected garden pea (Pisum sativum).

• He performed 28000 experiments on pea plant from 1856 to 1863.

• He published his paper experiment of plant hybridization in 1866.

3. Question1 points

It's the basic unit of biological information:

1. A. Gene

2. B. Phenotype

3. C. Allele

4. D. None of these

Correct

Explanation: A

4. Question1 points

Position of a gene on a chromosome is called:

1. A. Focus

2. B. Locus

3. C. Alleles

4. D. None of these

Correct

Explanation: B

• Position of gene on chromosome is called locus.

• An alternative part of a gene is called Allele.

5. Question1 points

The two members of a gene pair are called.

1. A. Traits

2. B. Gene pool

3. C. Alleles

4. D. None of these

Correct

Explanation: C

Two members of a gene pair are called alleles.

6. Question1 points

It is the form of appearance of a trait.

1. A. Pleiotropy
2. B. Phenotype
3. C. Genotype
4. D. None of these

Correct

Explanation: B

Physical Appearance of a trait is called phenotype.

7. Question1 points

Which of the following is heterozygous condition?

1. A. Rr
2. B. rr
3. C. ii
4. D. None of them

Correct

Explanation: A

Heterozygous condition contained one dominant and recessive allele e.g. Aa

8. Question1 points

Which of the following is heterozygous?

1. A. AA
2. B. |A|A
3. C. Aa

4. D. None of these

Correct

Explanation: C

Heterozygous condition contained one dominant and recessive allele e.g. Aa

9. Question1 points

The cross of a phenotypically dominant individual with its recessive is called?

1. A. Test Cross
2. B. Monohybrid Cross
3. C. F1 Cross
4. D. None of these

Correct

Explanation: A

When hybrid is crossed with its recessive it is called test cross.

10. Question1 points

If a tall plant is crossed with a dwarf plant, the cross is called:

1. A. Test Cross
2. B. Back Cross
3. C. Monohybrid Cross
4. D. Dihybrid Cross

Correct

Explanation: C

A tall plant is crossed with a dwarf plant, the cross is called Monohybrid cross.

11. Question1 points

Segregation of alleles occurs at the time of:

1. A. Cleavage
2. B. Meiosis
3. C. Fertilization
4. D. Crossing over

Correct

Explanation: B

Segregation of alleles occurs at the time of Meiosis.

12. Question1 points

A hybrid red flower (Rr) is crossed with a white flower. What %age of the offspring will be red?

1. A. 0%
2. B. 25%
3. C. 50%
4. D. 75%

Correct

Explanation: A

When Rr is crossed with rr then chances of RR is zero,

13. Question1 points

Which of the following crosses best demonstrates the law of segregation?

1. A. AA × aa
2. B. aa × aa
3. C. Aa × aa
4. D. Aa × Aa

Correct

Explanation: A

In Mandel segregation law he crosses homozygous with heterozygous.

14. Question1 points

A test cross is done to:

1. A. Determine if crossover has occurred
2. B. Prevents sex-linked traits from being passed on
3. C. Determine if an organism exhibiting the dominant phenotype is carrying a recessive Allele for that trait
4. D. Prevents cross over from occurring

Correct

Explanation: C

A test cross is done to determine if an organism exhibiting the dominant phenotype is carrying a recessive allele for that trait.

15. Question1 points

A farmer planted 1,000 seeds of corn. The offspring were 544 tall with yellow seeds, 188 tall with green seeds, 183 short with yellow seeds and 64 short with green seeds. What were the genotypes of the parents?

1. A. TTYY × ttyy
2. B. TtYy × TtYy
3. C. TtYy × ttyy
4. D. ttyy × ttyy

Correct

Explanation: A

Mandel law of independent assortment that is 544:188:183:64 gives us a phenotypic ratio of 9:3 : 3:1.

16. Question1 points

The chance of an event to occur is called:

1. A. Paleography
2. B. Probability
3. C. Epitasis
4. D. None of these

Correct

Explanation: B

Chances of an event to occur is called probability.

17. Question1 points

A red flower is crossed with a white flower and all the offspring are pink. Which law of inheritance does this follow?

1. A. Dominance
2. B. Segregation
3. C. Incomplete Dominance
4. D. Co-dominance

Correct

Explanation: C

R1R1 × R2R2 and we get R1R2 this indicates incomplete dominance.

18. Question1 points

A couple has two children. One child has blood type A and the other has blood type O. What are all the possible blood types of the parents?

1. A. Either both have type A or one has type A and other has type O or one has A and the other has type B.
2. B. There is only one possibility, both parents have type A blood
3. C. There is only one possibility, both parents have type O blood
4. D. There is only possibility, one parent has type A and the other has type O

Correct

Explanation: D

One parent is heterozygous A blood group and other parent is blood group O.

19. Question1 points

Which is true about blood type?

1. A. Type A is dominant over type B
2. B. Type B is dominant over type A
3. C. Type AB is dominant over both A and B
4. D. Types A and B are dominant over type O

Correct

Explanation: D

Genotype of blood group O is ii (non antigen producing alleles).

20. Question1 points

Blood group B phenotype contains anti-A antibodies in the serum and agglutinates any RBC with antigen:

1. A. AB
2. B. O
3. C. A
4. D. B

Correct

Explanation: C

ABO blood groups incompatibility.

21. Question1 points

Two parents each of blood groups A, have a daughter of blood group O. What is the probability that their next child has blood group O?

1. A. 0.125
2. B. 0.25
3. C. 0.50
4. D. 0.75

Correct

Explanation: B

Male IAi and female IAi.

22. Question1 points

The genetic basis of ABO blood system was explained in 1925 by:

1. A. Landsteiner
2. B. Bernstein
3. C. Sturtevant
4. D. Sutton

Correct

Explanation: B

The genetic basis of ABO blood system was explained in 1925 by Bernstein.

23. Question1 points

The gene “I” of “ABO” blood groups is present on:

1. A. Chromosome 11
2. B. Chromosome 9
3. C. X-Chromosome
4. D. Y-Chromosome

Correct

Explanation: B

The gene “I” of “ABO” blood groups is present on chromosome 9.

24. Question1 points

Blood group system other than “ABO” and “Rh” are:

1. A. MNS
2. B. Kell
3. C. Lutheran
4. D. All of these

Correct

Explanation: D

Blood group system other than “ABO” and “Rh” are MNS, Kell and Lutheran.

25. Question1 points

Tongue rolling in human is controlled by a single:

1. A. Recessive Gene
2. B. Dominant Gene
3. C. Polygene
4. D. None of these

Correct

Explanation: B

Tongue rolling in human is controlled by a single dominant gene.

26. Question1 points

How many different kinds of gametes will be formed by an individual, who is heterozygous for four gene pairs?

1. A. 8

2. B. 16

3. C. 20

4. D. 30

Correct

Explanation: B

In a cross between two genotypes for four gene pairs, each parent produces 16 different types of gametes.

27. Question1 points

In human, genes for sickle cell anemia, leukemia and albinism are found on chromosome:

1. A. 9

2. B. 11

3. C. 22

4. D. X-Chromosome

Correct

Explanation: B

In human, genes for sickle cell anemia, leukemia and albinism are found on chromosome no. 11.

28. Question1 points

The number of linkage groups in man is:

1. A. 02

2. B. 23

3. C. 46

4. D. 92

Correct

Explanation: B

Male have 23 linkages groups.

29. Question1 points

As a result of a test cross, there will be no linkage between the genes if:

1. A. All four phenotypic combinations (parental and recombinants) are produced in equal 1:1:1:1 ratio
2. B. There are parental types and less recombinant types
3. C. Only parental types are produced
4. D. Only recombinant types are produced

Correct

Explanation: A

As a result of a test cross, there will be no linkage between the genes if all four phenotypic combinations (parental and recombinants) are produced in equal 1:1:1:1 ratio.

30. Question1 points

The proportion of recombinant types between two gene pairs as compared to the sum of all combinations is called:

1. A. Crossing over
2. B. Gene linkage
3. C. Recombination frequency
4. D. Mutation

Correct

Explanation: C

The proportion of recombination types between two gene pairs as compared to the sum of all combinations is called recombination frequency.

31. Question1 points

Farther apart two genes, the probability that a cross over will occur will be:

1. A. Higher

2. B. Lower

3. C. Equal

4. D. None of them

Correct

Explanation: A

Farther apart two genes, the probability that a cross over will occur will be higher.

32. Question1 points

Map units are often called:

1. A. Linkage groups

2. B. Centimorgans

3. C. Recombinants

4. D. None of these

Correct

Explanation: B

Map unit are often called centimorgans in honor of Morgan.

33. Question1 points

A man of blood group A marries a woman of blood group B and they have one child. Which one of the following statements about the child's blood is correct?

1. A. It could be group A only

2. B. It could be group AB only

3. C. It could be group A or group B only

4. D. It could be any of the groups A, B, AB, O

Correct

Explanation: D

Female IAi, male IBi

34. Question1 points

In drosophila, the gene for eye colour is associated with:

1. A. Autosome
2. B. X-Chromosome
3. C. Y- Chromosome
4. D. Both B and C

Correct

Explanation: B

In drosophila, the gene for eye colour is associated with X-chromosome.

35. Question1 points

T.H. Morgan made the first demonstration of a sex-linked trait in:

1. A. 1941
2. B. 193
3. C. 1910
4. D. 1859

Correct

Explanation: C

T.H Morgan made the first demonstration of a sex-liked trait in 1910.

36. Question1 points

All of the following are examples of x-linked recessive disorders except:

1. A. Colour Blindness
2. B. Diabetes Incipidus
3. C. Haemophilia

4. D. Alport's Syndrome

Correct

Explanation: D

Alport’s syndrome is x-linked dominant disorder.

37. Question1 points

Holandric inheritance is related to the inheritance of gene present on:

1. A. X-Chromosome
2. B. Y-Chromosome
3. C. Autosome
4. D. None of these

Correct

Explanation: B

Holandric inheritance is related to Y-chromosome.

38. Question1 points

A man with haemophilia marries a woman who has normal haemoglobin and is not carrier? Which of the following is true?

1. A. None of their children will have the disease nor will they be carriers
2. B. All the boys will have the disease
3. C. All the girls will have the disease
4. D. All the girls will be carriers

Correct

Explanation: D

Cross between XhY and XX produces all girls which are carriers. Haemophilia passes in cross manner. It does not pass directly from father to son.

39. Question1 points

Which of the following character in pea plant are recessive except?

1. A. Axial flower
2. B. Yellow pods
3. C. Wrinkle seed
4. D. White flower

Correct

Explanation: A

40. Question1 points

Two allelic gene are located on

1. A. The same chromosome
2. B. Two homologous chromosomes
3. C. Two nan homologous chromosomes
4. D. Any two chromosome

Correct

Explanation: B

Self explanatory

1. Question1 points

The alleles are:

1. A. A pair of genes governing a specific character such as tallness or dwarfness
2. B. Multiple forms of genes
3. C. Genes governing eye characters
4. D. Genes present in allosomes

Correct

Explanation: A

Self explanatory

2. Question1 points

Which of the following is the unit of Inheritance?

1. A. Phenotype
2. B. Genotype
3. C. Gene
4. D. Genome

Correct

Explanation: C

Self explanatory

3. Question1 points

When F1 hybrids are crossed with recessive parent, individuals with both the phenotypes appear in equal proportions

1. A. Back cross
2. B. Test cross
3. C. Monohybrid cross
4. D. Both A and C

Correct

Explanation: B

Self explanatory

4. Question1 points

The test cross is used to determine the

1. A. Genotype of the plant
2. B. Phenotype of the plant
3. C. Both A and B
4. D. None of these

Correct

Explanation: A

Self explanatory

5. Question1 points

Genotype is:

1. A. Genetic composition of many organisms.
2. B. Genetic composition of plastids.
3. C. Genetic composition of germ cells.
4. D. Genetic composition of an individual

Correct

Explanation: D

Self explanatory

6. Question1 points

Trait controlled by genes located on autosomes are called

1. A. Sex affected
2. B. Sex influenced
3. C. Sex lined
4. D. Genetic trait

Correct

Explanation: D

Self explanatory

7. Question1 points

Genotypes interact with environment to produce

1. A. Characters
2. B. Traits
3. C. Phenotype
4. D. All of them

Correct

Explanation: D

Self explanatory

8. Question1 points

When F1 off springs are crossed with the dominant parents all the F2 off springs develop dominant character

1. A. Test cross
2. B. Back cross
3. C. Both
4. D. None

Correct

Explanation: B

Self explanatory

9. Question1 points

F2-generation of a monohybrid cross yield the offspring's in the genotypic ratio of:

1. A. 3:1

2. B. 1:1

3. C. 1:2:1

4. D. 9: 3: 3: 1

Correct

Explanation: C

Self explanatory

10. Question1 points

Phenotypic ratio 3:1 proves

1. A. Dominance

2. B. Segregation

3. C. Crossing over

4. D. Independent Assortment

Correct

Explanation: B

Self explanatory

11. Question1 points

Which of the following is an example of deviation from Mendel's law of independent assortment?

1. A. Autosomal linkage of gene

2. B. Colour and gender related gene of pea plant seeds

3. C. Skin and gender related gene of humans

4. D. Height and gender related gene of human

Correct

Explanation: A

Self explanatory

12. Question1 points

Two animals are mated. One is homozygous dominant for one character and homozygous recessive for another. The other is heterozygous for both characters. How many phenotypes are expected from the cross?

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

Correct

Explanation: B

Self explanatory

13. Question1 points

In dihybrid cross, out of 16 plants obtained, the number of genotypes shall be

1. A. 4
2. B. 9
3. C. 16
4. D. 12

Correct

Explanation: B

9 Genotypes i.e. RRYY, RRYy, RrYy, RrYY, Rryy, RRyy, rryy, rrYy, rrYY.

14. Question1 points

What type of gametes will be formed by genotype RrYy?

1. A. RY, Ry, rY, ry
2. B. RY, Ry, ry, ry

3. C. Ry, Ry, Yy, ry

4. D. Rr, RR, Yy, YY

Correct

Explanation: A

Self explanatory

15. Question1 points

What is the ratio of homozygous plants for both dominant characters in F2 of a Dihybrid cross?

1. A. 1/16

2. B. 3/16

3. C. 4/16

4. D. 9/16

correct

Explanation: A

Self explanatory

16. Question1 points

When a true breeding pea plant that has yellow seeds is pollinated by a plant that has green seeds, all the F1 plants have yellow seeds. This means that the allele for yellow is

1. A. Heterozygous

2. B. Dominant

3. C. Recessive

4. D. lethal

Correct

Explanation: B

Self explanatory

17. Question1 points

In the F2 generation of a dihybrid cross, the phenotypes occurred in the ratio 3:1. What does this result indicate?

1. A. The alleles segregated independently
2. B. Polygenic inheritance was involved
3. C. Codominance was being shown
4. D. The gene loci were linked

Correct

Explanation: A

Self explanatory

18. Question1 points

Consider a child from a type AB male and a type 0 female, what is the probability that this couple will have a type 0 child?

1. A. 100%
2. B. 75%
3. C. 50%
4. D. 0%

Correct

Explanation: D

19. Question1 points

ABO blood group is an example of:

1. A. Multiple alleles and incomplete dominance
2. B. Codominance and incomplete dominance

3. C. Incomplete dominance only

4. D. Multiple alleles and co-dominance

Correct

Explanation: D

Self explanatory

20. Question1 points

The most popularly known blood grouping is the ABO grouping. It is named ABO and not ABC, because "O" in it refers to having

1. A. Over dominance of this type on the genes for A and B types

2. B. One antibody only - either anti A or anti - B on the RBCs

3. C. No antigens A and B on RBCS

4. D. Other antigens besides A and B on RBCs

Correct

Explanation: C

Self explanatory

21. Question1 points

Inheritance of ABO blood group system is an example of "

1. A. Multiple allelism

2. B. Epistasis

3. C. Dominance

4. D. Partial dominance

Correct

Explanation: A

Self explanatory

22. Question1 points

Which blood type can be transfused to an individual whose blood type is unknown?

1. A. AB+
2. B. AB-
3. C. O-
4. D. O+

Correct

Explanation: C

• O- → Universal donors

• AB– → Universal acceptor.

23. Question1 points

Which of the following is used to determine blood type?

1. A. ABO blood antigen locus
2. B. Rh factors
3. C. Lewis
4. D. All

Correct

Explanation: D

All → Classification of human blood based on the expression of glycoproteins called Lewis (Le)

24. Question1 points

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

1. A. Blood group A
2. B. Blood group B

3. C. Blood group O

4. D. Blood group AB

Correct

Explanation: C

Self explanatory

25. Question1 points

Gene for drepanocytosis is found on chromosome no.

1. A. 9

2. B. 11

3. C. 19

4. D. 22

Correct

Explanation: B

Self explanatory

26. Question1 points

If the ratio of offspring after test cross is more parental & less recombinant. The gene linkage will be:

1. A. Partial

2. B. Incomplete

3. C. Tight

4. D. Both a & b

correct

Explanation: D

Self explanatory

27. Question1 points

In a cross F1(XRXW) × F2(XWY), the percentage of red eyed female is:

1. A. 25%
2. B. 50%
3. C. 75%
4. D. 100%

Correct

Explanation: A

Self explanatory

28. Question1 points

When heterozygous red eye female is crossed with white eyed males, so what will be the total % of male of white eye:

1. A. 0%
2. B. 25%
3. C. 50%
4. D. 100%

correct

Explanation: C

The question is only about male not all offspring

29. Question1 points

When heterozygous red eye female is crossed with red eye male so what will be the total % white eye offspring produced:

1. A. 100%
2. B. 50%
3. C. 25%

4. D. 0%

correct

Explanation: B

Self explanatory

30. Question1 points

Gene located on the same chromosome that tend to be inherited together in genetic crosses are

1. A. Poly genes
2. B. Linkage group
3. C. Linked genes
4. B. All of them

Correct

Explanation: C

Self explanatory

31. Question1 points

Genetic map, an ordered list of genetic loci along a particular chromosome was constructed by

1. A. T.H Morgon
2. B. Alfred H. Sturtevant
3. C. Carl Correns
4. D. Landsteiner

Correct

Explanation: B

• Genetic or Linkage map was introduced by Alfred H. Sturtevant.

• Ordered list of genetic loci along a particular chromosome is called genetic map.

• Distance between genes is map units (arbitrary).

• Map units are also called centimorgans (CM).

32. Question1 points

Map unit or centimorgans (cM) was introduced by:

1. A. T.H morgan
2. B. Johanssen
3. C. William Bateson
4. D. Sturtevant

correct

Explanation: D

Self explanatory

33. Question1 points

An ordered list of genetic loci along a particular chromosome in genome is:

1. A. Linkage group
2. B. Genetic map
3. C. Linkage map
4. D. Both B & C

Correct

Explanation: D

• Genetic or Linkage map was introduced by Alfred H. Sturtevant.

• Ordered list of genetic loci along a particular chromosome is called genetic map.

• Distance between genes is map units (arbitrary).

• Map units are also called centimorgans (CM).

34. Question1 points

All of the following genes for the following diseases are present on chromosome no. 11 except:

1. A. Sickle cell anemia
2. B. Leukemia
3. C. Diabetes mellitus
4. D. Drepanocytosis

Correct

Explanation: C

Self explanatory

35. Question1 points

Cinnabar gene in drosophila's eye produces:

1. A. Bright red eye colour
2. B. Red eye colour
3. C. Brick red eye colour
4. D. White eye colour

Correct

Explanation: C

Self explanatory

36. Question1 points

Which one is a sex-linked disease?

1. A. Herpes
2. B. Paralysis
3. C. Colour blindness
4. D. Albinism

Correct

Explanation: C

Self explanatory

37. Question1 points

Haemophilia allele is recessive and carried on the

1. A. X chromosome
2. B. Y chromosome
3. C. X and Y chromosome
4. D. None of them

Correct

Explanation: A

Self explanatory

38. Question1 points

If father of a baby is hemophilic and mother is a carrier then chances of the baby in inheriting the disease will be:

1. A. 0%
2. B. 50%
3. C. 75%
4. D. 100%

correct

Explanation: B

Self explanatory

39. Question1 points

Chromosome in humans:

1. A. Is completely inert
2. B. Carries few genes:

3. C. Carries many genes

4. D. Contains genes for hemophilia and colour blindness

correct

Explanation: C

Self explanatory

40. Question1 points

The example of holandric inheritance in human is:

1. A. Colour blindness

2. B. Hairy ears

3. C. Alport syndrome

4. D. Diabetic insipidus

Correct

Explanation: B

Self explanatory

1. Question1 points

Which one of the following is/are dominant trait in pea plant?

1. A. White flower

2. B. Yellow pod

3. C. Both A and B

4. D. None of them

Correct

Explanation: D

Self Explanatory.

2. Question1 points

If a trait have three phenotype, the minimum number of allele should be ____

1. A. 02
2. B. 03
3. C. 01
4. D. None of them

Correct

Explanation: A

Self Explanatory.

3. Question1 points

If a male with blood group “O” marries with a female “AB” then what are the chances for the next child to have blood group “O”?

1. A. 100%
2. B. 50%
3. C. 25%
4. D. None of them

Correct

Explanation: D

4. Question1 points

The secretor gene found on chromosome number 19 is

1. A. Dominant

2. B. Recessive

3. C. Homozygous recessive

4. D. None of them

Correct

Explanation: A

Self Explanatory.

5. Question1 points

Drosophila have _____ linkage groups?

1. A. 02

2. B. 04

3. C. 08

4. D. 16

Correct

Explanation: B

Self Explanatory.

6. Question1 points

ABO Blood group is/are the example of _____?

1. A. Qualitative genetics

2. B. Quantitative genetics

3. C. Polygenic inheritance

4. D. Both A and C

Correct

Explanation: A

Self Explanatory.

7. Question1 points

The word gene was first used by _____?

1. A. Johnnson
2. B. Bateson
3. C. Mendle
4. D. Darwin

Correct

Explanation: A

Self Explanatory.

8. Question1 points

Which of the following model about DNA replication is accepted?

1. A. Conservative model
2. B. Semi conservative model
3. C. Dispersive model
4. D. None of them

Correct

Explanation: B

Self Explanatory.

9. Question1 points

Which of the following is/are X-linked dominant trait?

1. A. Alper's syndrome
2. B. Diabetes insipidus
3. C. Both A and B
4. D. None of these

Correct

Explanation: D

Self Explanatory.

10. Question1 points

Which one of the following characteristics in man is controlled by a recessive gene?

1. A. Tongue rolling
2. B. Heamophilia
3. C. Skin color
4. D. Eye color

Correct

Explanation: B

Self Explanatory.

11. Question1 points

Which of the following is/are X-linked recessive disease?

1. A. Coffin Lowery syndrome
2. B. Heamophilia B
3. C. Alport's syndrome
4. D. All of these

Correct

Explanation: B

Self Explanatory.

12. Question1 points

If a heamophilic male marries with a carrier female then what would be the % of their sons to be haemophilic?

1. A. 25%

2. B. 50%

3. C. 0%

4. D. 100%

Correct

Explanation: B

Self Explanatory.

13. Question1 points

Gene for H-substance is located on chromosome no. _____.

1. A. 9

2. B. 19

3. C. 11

4. D. X-chromosome

Correct

Explanation: B

Self Explanatory.

14. Question1 points

Humulin gene is located on chromosome no. _____.

1. A. 9

2. B. 11

3. C. 19

4. D. X-chromosome

Correct

Explanation: B

Self Explanatory.

15. Question1 points

How many different kinds of gametes are formed by individual, who is heterozygous for 3 gene pair?

1. A. 7
2. B. 8
3. C. 64
4. D. 4

Correct

Explanation: B

No, of types of gametes = 2n

where n = number of heterozygous gene,

Here n = 3 So, 23 = 2 × 2× 2 = 8.

16. Question1 points

ABO blood group is the example of:

1. A. Co-dominancy
2. B. Complete dominancy
3. C. Both
4. D. None

Correct

Explanation: C

Self Explanatory.

17. Question1 points

Different genotype for blood group A?

1. A. One
2. B. Two
3. C. Three
4. D. Four

Correct

Explanation: B

Self Explanatory.

18. Question1 points

Recombination frequency is _____ to the distance between genes?

1. A. Directly proportion
2. B. Inversely proportion
3. C. Equal
4. D. None

Correct

Explanation: A

Self Explanatory.

19. Question1 points

Consider a child from AB male and O female who are both heterozygous carriers of the recessive h-allele. What is the probability that this couple will have a type O child?

1. A. 25%
2. B. 50%
3. C. 75%
4. D. 100%

Correct

Explanation: A

Self Explanatory.

20. Question1 points

The pattern of sex-linked inheritance was identified by _____?

1. A. J.Seiler
2. B. Morgan
3. C. Mendal
4. D. Waldayer

Correct

Explanation: B

Self Explanatory.

21. Question1 points

How many different gametes will produce from RRYY.

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

Correct

Explanation: A

Self Explanatory.

22. Question1 points

How many different gametes will produce from RrYy?

1. A. 1
2. B. 2

3. C. 3

4. D. 4

Correct

Explanation: D

Self Explanatory.

23. Question1 points

Land steiner for the first time identified _____?

1. A. ABO blood group

2. B. Rh blood group

3. C. Both

4. D. None

Correct

Explanation: C

Self Explanatory.

24. Question1 points

A male have blood group AB, ____% of their offspring have blood group AB?

1. A. 25%

2. B. 50%

3. C. 75%

4. D. None

Correct

Explanation: D

Self Explanatory.

25. Question1 points

Which one have nucleus?

1. A. Bird RBC
2. B. Erythroblast
3. C. Both
4. D. None

Correct

Explanation: C

• Bird RBC contains an oval nucleus.

• Erythroblast is immature RNC that contains nucleus.

26. Question1 points

If red eyed (dominant) fly is mated with white eyed (recessive) fly, the ratio of red to white eyed in F2 generation would be

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

Correct

Explanation: A

• When a red eyed fly (RR) is crossed to a white eyed fly (rr) in the F2 generation 3 red eyed flies and 1 white eyed fly is produced.

• It is called Mendel monohybrid ratio 3:1.

27. Question1 points

Blood group in human beings are controlled by

1. A. 2 alleles in which A is dominant

2. B. 3 alleles in which A and B are co-dominant and I is recessive

3. C. 3 alleles in which none is dominant

4. D. 3 alleles in which A is recessive

Correct

Explanation: B

Self Explanatory.

28. Question1 points

Mendel published his paper experiments on plants hybridization in the year:

1. A. 1866

2. B. 1876

3. C. 1888

4. D. 1910

Correct

Explanation: A

Self Explanatory.

29. Question1 points

Which of the following is dominant trait of pea plant?

1. A. Axial flower

2. B. Terminal flower

3. C. Yellow pod colour

4. D. Wrinkled seed

Correct

Explanation: A

Self Explanatory.

30. Question1 points

Mendel performed _____ experiments on pea plants.

1. A. 280
2. B. 2800
3. C. 28000
4. D. 280000

Correct

Explanation: C

Self Explanatory.

31. Question1 points

Genes were named in:

1. A. 1906
2. B. 1909
3. C. 1907
4. D. 1908

Correct

Explanation: B

Self Explanatory.

32. Question1 points

Gene linkage can be detected by:

1. A. Back cross
2. B. Test cross
3. C. Reciprocal cross
4. D. None of these

Correct

Explanation: B

Self Explanatory.

33. Question1 points

Total _____ genotypes are produced in dihybrid cross.

1. A. 2
2. B. 4
3. C. 9
4. D. 8

correct

Explanation: C

Self Explanatory.

34. Question1 points

Inheritance of linked genes is called _____ inheritance.

1. A. On-block
2. B. Holandric
3. C. Polygenic
4. D. Hypogenic

Correct

Explanation: A

Self Explanatory.

Assume that blood type is not a sex-linked trait. A mother with genotype “A/O” and a father with genotype “A/B” could not have a child with which blood type?

1. A. A
2. B. B
3. C. AB
4. D. O

1. Question1 points

In a dihybrid cross, how many homozygous off springs can be produced?

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

Icorrect

Explanation: C

In dihybrid cross between organism with the genotypes AABB and aabb, F2 generation will contain only two homozygous plants, one with all dominant and the other with all recessive alleles

2. Question1 points

How many genotypes will be produced by crossing of two alleles “A” and “a”?

1. A. One
2. B. Two
3. C. Three
4. D. Four

Correct

Explanation: C

When alleles “A” and “a” are crossed the genotype possible will be AA, aa and Aa.

3. Question1 points

An individual with contrasting alleles is called:

1. A. Homozygous
2. B. Monoecious
3. C. Heterozygous
4. D. Dioecious

Correct

Explanation: C

Reference: Text Book

4. Question1 points

A Punnett square is used to determine the:

1. A. Result of mitosis
2. B. Result of meiosis
3. C. Actual outcome of a cross
4. D. Probable outcome of cross

Correct

Explanation: D

Reference: Text Book

5. Question1 points

A cross between F1 hybrid with either of parents is called:

1. A. Back cross
2. B. Test cross
3. C. Reverse Cross
4. D. None of these

Correct

Explanation: A

Reference: Text Book

6. Question1 points

Who is considered to be the father of genetics?

1. A. Weisman
2. B. Bateson
3. C. Mendel
4. D. Morgan

Correct

Explanation: C

• Mendel was the pioneer of classical genetics and is known as Father of Genetics.

• Mendel was born on 22nd July, 1822 in Czech Republic.

• He performed 28,000 experiments on pea plant from 1856 to 1863.

• Mendel died on 6th January, 1884.

7. Question1 points

Law of independent assortment cannot be applied on;

1. A. Dominant genes
2. B. Recessive genes
3. C. Linked genes
4. D. Autosomal genes

Correct

Explanation: C

Reference: Text Book

8. Question1 points

The term Gene was coined by:

1. A. Johannson
2. B. Corren
3. C. Tschmarch
4. D. Purkije

Correct

Explanation: A

• Mendel used the word “Factor or element” for gene.

• Gene was discovered by Wilhelm Johansson in 1909.

• The term, Genetics was coined by William Bateson.

9. Question1 points

In a mating between two individuals that are heterozygous for a recessive allele. What genotypic ratio (homozygous dominant: heterozygous: homozygous recessive) would you expect to observe in the offspring?

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

correct

Explanation: A

Reference: Text Book

10. Question1 points

How many pairs of homologous chromosomes are present in pisum sativum?

1. A. Seven pairs
2. B. Eight pairs
3. C. Nine pairs
4. D. Ten pairs

Correct

Explanation: A

Garden Bea (Pisum Sativum) contains 7 pairs of chromosomes.

• Onion – 8 pairs
• Frog – 13 pairs
• Drosophila – 4 pairs
• Wheat – 21 pairs
• Tobacco – 24 pairs
• Pigeon – 40 pairs.

11. Question1 points

Which blood group transfusion can be made without risk?

1. A. Group A to group B
2. B. Group AB to group O
3. C. Group A to group O
4. D. Group B to group AB

Correct

Explanation: D

Reference: Text Book

12. Question1 points

The allele that exist in more than two different forms are called:

1. A. Polygenic alleles

2. B. Multigenic alleles

3. C. Multiple alleles

4. D. Heterogenic alleles

Correct

Explanation: C

Reference: Text Book

13. Question1 points

ABO blood groups are an example of:

1. A. Multiple alleles and incomplete dominance

2. B. Co dominance and incomplete dominance

3. C. Incomplete dominance only

4. D. Multiple alleles and co dominance

Correct

Explanation: D

Reference: Text Book

14. Question1 points

Haemophilia affects males more than females because of:

1. A. Dominant autosome

2. B. Dominant X-linked

3. C. Recessive X-linked

4. D. Y-chromosome linked

Correct

Explanation: C

All hereditary disease which are caused by a recessive allele present on X chromosome are more common in male than females. This is become males get the disease when they have a recessive allele

on their X chromosome whereas female will get the disease only if they have recessive allele on both X chromosome.

15. Question1 points

If father of a body is hemophilic and mother is a carrier then chance of the baby in inheriting the disease will be:

1. A. 0%
2. B. 50%
3. C. 75%
4. D. 100%

Correct

Explanation: B

16. Question1 points

Which one of the following characteristics in man is controlled by a recessive gene?

1. A. Tongue rolling
2. B. Diabetes
3. C. Skin color
4. D. Eye color

Correct

Explanation: B

17. Question1 points

If black and white true breeding mice are mated and they result is all gray off spring. What inheritance pattern would this be indictive of?

1. A. Dominance
2. B. Co dominance

3. C. Multiple alleles

4. D. Incomplete dominance

Correct

Explanation: D

Reference: Text Book

18. Question1 points

A test cross is:

1. A. Tt × Tt

2. B. Tt × tt

3. C. TT × Tt

4. D. TT × TT

Correct

Explanation: B

A test cross is crossing of a phenotypically dominant organism with the recessive parent.

19. Question1 points

Organisms phenotypically similar but genotypically different are said to be:

1. A. Monozygous

2. B. Homozygous

3. C. Heterozygous

4. D. Multizygous

Correct

Explanation: C

Reference: Text Book

20. Question1 points

A woman is homozygous for A__ negative blood type. A man has AB__ negative blood type. What is the probability that the couple's child will be type B__ negative?

1. A. 0%
2. B. 25%
3. C. 50%
4. D. 75%

Correct

Explanation: A

Reference: Text Book

21. Question1 points

If two heterozygous tall plants are crossed together the proportion of phenotypically tall plants will be:

1. A. 50%
2. B. 25%
3. C. 75%
4. D. 100%

Correct

Explanation: C

If two heterozygous fall plants are crossed together the proportion of phenotypically tall plants will be 75%.

22. Question1 points

Gene and chromosomes show parallel behavior except:

1. A. Number
2. B. Inheritance
3. C. Heredity

4. D. Composition

Correct

Explanation: A

Reference: Text Book

23. Question1 points

The transfer of characters from parents to offspring involve

1. A. Inheritance
2. B. Hereditary
3. C. Variation
4. D. All of them

correct

Answer: D

24. Question1 points

The differences among closely related organisms is called

1. A. Inheritance
2. B. Hereditary
3. C. Variation
4. D. All of them

Correct

Answer: C

25. Question1 points

Mendel chose pea plant because of

1. A. Variety of characters

2. B. Different traits of the characters

3. C. Short life cycle

4. D. All of them

Correct

Answer: D

26. Question1 points

The phenotype of F1 generation of monohybrid cross is

1. A. Round yellow

2. B. Round green

3. C. Wrinkled yellow

4. D. Wrinkled green

Correct

Answer: A

27. Question1 points

A certain type of plant is only tall when it has a heterozygous genotype. If two heterozygous plants are crossed, what is the probability of their offspring will also be tall?

1. A. 25%

2. B. 1

3. C. 50%

4. D. 75%

Correct

Answer: C

28. Question1 points

A pure breeding tall pea plant was crossed to dwarf plant. What will be the frequency of dwarf plants in F2?

1. A. 0.25
2. B. 0.5
3. C. 0
4. D. 1

Correct

Answer: A

29. Question1 points

According to law of segregation alleles of the gene separate because

1. A. Chromosomal pair separate
2. B. Nuclei separation
3. C. Cell separation
4. D. None of the above

Correct

Answer: A

30. Question1 points

Phenotypic ratio of F2 generation of monohybrid cross:

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

Correct

Answer: A

31. Question1 points

In a dihybrid cross, what fraction of offspring will be homozygous dominant for both traits?

1. A. 1/2
2. B. 1/4
3. C. 1/8
4. D. 1/16

Incorrect

Answer: D

32. Question1 points

Genotype ratio of Mendel's law of independent assortment is which of the following?

1. A. 3:1
2. B. 1:02:01
3. C. 9:3:3:1
4. D. None of these

Correct

Answer: D

33. Question1 points

The gene for red flowers (R) is dominant, while the gene for white flowers (r) is recessive. Which of the following is the genotype of a white flower?

1. A. RR
2. B. rr
3. C. Rr
4. D. Rr

Correct

Answer: B

34. Question1 points

If the relation b/w red and white flower is incomplete dominance, the phenotype of heterozygous will be

1. A. Red
2. B. Pink
3. C. White
4. D. May be red or white

Correct

Answer: B

35. Question1 points

One plant is homozygous dominant for purple flowers, and the other is homozygous recessive for white flowers. What fraction of the F2 population will have white flowers?

1. A. 1/4
2. B. 1/2
3. C. 1/8
4. D. 1/16

Correct

Answer: A

36. Question1 points

A monohybrid cross yielded 3:1 in F2. What could be mode of inheritance?

1. A. Segregation
2. B. Independent assortment

3. C. Both A and B

4. D. None of these

Correct

Answer: A

37. Question1 points

During test cross, if all off springs are phenotypically dominant then parents are?

1. A. Heterozygous

2. B. One homozygous other heterozygous

3. C. Homozygous

4. D. None of these

Correct

Answer: C

38. Question1 points

Chose a correct statement regarding co-dominance

1. A. One alleles show and the other hide

2. B. Both show their self

3. C. None of them show

4. D.

Correct

Answer: B

39. Question1 points

ABO system has different phenotype on the basis of specific on the surface of RBCs

1. A. Antibody

2. B. Antigen

3. C. Anti A-antigen

4. D. Anti O-antigen

Correct

Answer: B

40. Question1 points

A man with type A blood and a woman with type AB+ blood have a child. Which blood type is impossible for that child to have?

1. A. A-

2. B. B-

3. C. AB+

4. D. O-

Correct

Answer: D

41. Question1 points

Blood group AB is the example of

1. A. Multiple alleles

2. B. Polygenic inheritance

3. C. Co dominance

4. D. Incomplete dominance

correct

Answer: C

42. Question1 points

ABO has how many phenotypes?

1. A. 3
2. B. 4
3. C. 6
4. D. 8

Correct

Answer: B

43. Question1 points

A man with type AB blood marries a woman with type A blood. Which of the following blood types might their sons inherit?

1. A. Type A only
2. B. Type B only
3. C. Type AB only
4. D. Type A, type B, or type AB

Correct

Answer: D

44. Question1 points

If mother is type A blood and father is type B both are heterozygous for I-gene, the percentage of type O child will be

1. A. 100%
2. B. 75%
3. C. 50%
4. D. 25%

Correct

Answer: D

45. Question1 points

Assume that blood type is not a sex-linked trait. A mother with genotype “A/O” and a father with genotype “A/B” could not have a child with which blood type?

1. A. A
2. B. B
3. C. AB
4. D. O

correct

Answer: D

46. Question1 points

A man with blood group A marries a woman of blood group “B”. Both are heterozygous. What is the offspring’s having phenotype” O”

1. A. 10%
2. B. 25%
3. C. 50%
4. D. 75%

Correct

Answer: B

47. Question1 points

A person having both A & B antigen on surface of RBCs, the antibody system of this individual contain

1. A. A only
2. B. B only
3. C. Both A & B

4. D. No antibody

Correct

Answer: D

48. Question1 points

Rh blood group system is:

1. A. only
2. B. AB only
3. C. B only
4. D. A, B, AB, O all

Correct

Answer: D

49. Question1 points

The number of linkage groups in humans is?

1. A. 24
2. B. 23
3. C. 1/23
4. D. 1/24

Correct

Answer: B

50. Question1 points

Crossing over is directly related to

1. A. Distance b/w non linked genes
2. B. Distance b/w linked genes

3. C. Non homologous genes

4. D. Number of genes

Correct

Answer: B

51. Question1 points

Crossing over brings about:

1. A. Recombinant genes

2. B. New traits in species

3. C. Genetic recombination

4. D. New species

correct

Answer: B

52. Question1 points

A trait determines by a gene on the X chromosome is said to be:

1. A. Pseudoautosomal

2. B. Sex linked

3. C. Both A & B

4. D. None of the above

Correct

Answer: B

53. Question1 points

Haemophilia B is due to abnormality of factor?

1. A. VIII

2. B. X

3. C. IX

4. D. XI

Correct

Answer: C

54. Question1 points

When a hemophilia carrier woman marries a normal man, who among her offspring may be affected?

1. A. All her children

2. B. Half of her daughters

3. C. All her daughters

4. D. Half of her sons

Correct

Answer: D

55. Question1 points

Which traits can pass from father to all of his sons?

1. A. Sex-linked recessive

2. B. Autosomal

3. C. Y linked

4. D. None of theses

Correct

Answer: C

56. Question1 points

Traits passed form maternal grandfather to grandson:

1. A. X-linked dominant
2. B. Y-linked
3. C. Autosomal
4. D. X-linked recessive

correct

Answer: A

57. Question1 points

XXY represent …… in human

1. A. Sterile male
2. B. Fertile male
3. C. Both of them
4. D. None of them

Correct

Answer: A

58. Question1 points

Sex limited trait is found in

1. A. Both male and females
2. B. Male only
3. C. Female only
4. D. In one gender only

Correct

Answer: D

_____

Completed

		Father's Blood Type			
		A	B	AB	O
Mother's Blood Type	A	A or O	A, B, AB or O	A, B, or AB	A or O
	B	A, B, AB or O	B or O	A, B or AB	B or O
	AB	A, B or AB	A, B or AB	A, B, or AB	A or B
	O	A or O	B or O	A or B	O