

KPK Class 10 Biology Short Questions – Chapter 15

Inheritance

Question 1: If a man with type AB blood group marries a woman with type O blood group, what type of blood group do you expect in the offspring?

Answer:

Let's use a simple diagram to understand this:

Man (AB)		Woman (O)
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Offspring		

- The man has two alleles: A and B.
- The woman has two alleles: O and O.

When they have children, each child will inherit one allele from each parent. So, the possible combinations for their offspring are:

- **AO:** This will result in type A blood.
- **BO:** This will result in type B blood.

Therefore, the expected blood groups in their offspring are **type A** and **type B**.

Question 2: How can crossing over bring variations?

Answer:

Crossing over is a process that happens during meiosis, which is the process of cell division that produces gametes (sperm and egg cells). Here's how crossing over can bring variations:

1. **Homologous Chromosomes:** During meiosis, homologous chromosomes pair up. Homologous chromosomes are similar chromosomes, one from each parent.

2. **Crossing Over:** The homologous chromosomes can exchange sections of DNA with each other. This is called crossing over.
3. **New Combinations:** This exchange creates new combinations of genes that weren't present in either parent.
4. **Genetic Variation:** This leads to genetic variation in the offspring, making them different from both parents and from each other.

Question 3: How are DNA and proteins packed to form a chromosome?

Answer:

DNA is a long, thin molecule that contains the genetic information of an organism. Proteins help to package DNA into compact structures called chromosomes. Here's a simplified explanation:

1. **Histones:** Histones are proteins that DNA wraps around.
2. **Nucleosomes:** The DNA wrapped around histones forms structures called nucleosomes.
3. **Chromatin:** Nucleosomes coil and fold to form chromatin.
4. **Chromosomes:** Chromatin condenses further to form chromosomes.

This packaging helps to protect DNA and organize it so that it can be divided equally between daughter cells during cell division.

Question 4: How is artificial selection used for the improvement of crops?

Answer:

Artificial selection is like choosing the best players for a team! Farmers and scientists select plants with the best traits, like bigger fruits, stronger stems, or resistance to pests. They then breed these plants together to create offspring with even better traits. This process is called artificial selection and it has helped us create many delicious and nutritious crops! 🍏🍎

Question 5: Differentiate between different types of dominant relations.

Answer:

There are three main types of dominant relations:

1. **Complete Dominance:** In complete dominance, one allele (the dominant allele) is completely masks the other allele (the recessive allele). For example, if you have a dominant allele for brown eyes, you will have brown eyes, even if you also have a recessive allele for blue eyes. 👁
2. **Incomplete Dominance:** In incomplete dominance, neither allele is completely dominant over the other. Instead, the offspring's phenotype is a blend of the two parents' phenotypes. For example, if a red flower and a white flower cross, their offspring might be pink. 🌸
3. **Codominance:** In codominance, both alleles are expressed equally in the offspring. For example, if a person has blood type AB, they have both the A and B alleles, and both are expressed. □

Question 6: Write down the phenotypes of the individuals in the following table.

Answer:

Note: I'll need the actual table to provide the specific phenotypes. Please send the table, and I'll be happy to help! 📝