# iCEV Elanco Fundamentals of Animal Science Certification Practice Test (Sample)

## Study Guide


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# Questions

**1. What is lamb in meat terms?**

**A. Meat from a goat**

**B. Meat from a young cow**

**C. Meat from a sheep less than 1 year**

**D. Meat from an adult sheep**

**2. Which type of injection is given under the skin using the "tenting" method?**

**A. Intravenous**

**B. Intramuscular**

**C. Subcutaneous**

**D. Intradermal**

**3. Why is it recommended to perform dehorning when an animal is very young?**

**A. To improve growth rates**

**B. To eliminate stress and bleeding**

**C. To enhance the animal's appearance**

**D. To increase milk production**

**4. What is the gestation period for a goat?**

**A. 130 days**

**B. 150 days**

**C. 155 days**

**D. 160 days**

**5. What is the term for a complex solution of organic and inorganic components outside the cell nucleus?**

**A. cytoplasm**

**B. mitochondria**

**C. nucleoplasm**

**D. organelle**

**6. How many cycles of division does meiosis undergo?**

**A. 1**

**B. 2**

**C. 3**

**D. 4**

**7. What cellular structure is essential for cell functions and contains both nuclear sap and chromatin?**

**A. cell membrane**

**B. cytoplasm**

**C. nucleus**

**D. ribosome**

**8. What leads to the formation of a zygote?**

**A. The union of the male sperm and female ovum**

**B. Incubation of the fertilized egg**

**C. The development of the embryo**

**D. The release of multiple eggs from the ovary**

**9. How long is the typical gestation period for swine?**

**A. Two months**

**B. Three months**

**C. Four months**

**D. Five months**

**10. Proteins are primarily composed of which of the following?**

**A. Fatty acids**

**B. Sugars**

**C. Amino acids**

**D. Vitamins**

# Answers

1. C
2. C
3. B
4. B
5. A
6. B
7. C
8. A
9. B
10. C

# Explanations

## 1. What is lamb in meat terms?

**A. Meat from a goat**

**B. Meat from a young cow**

**C. Meat from a sheep less than 1 year**

**D. Meat from an adult sheep**

**Lamb refers specifically to the meat derived from a sheep that is less than one year old. This distinction is important in the culinary world and in livestock management, as the age of the sheep significantly influences the flavor, tenderness, and overall quality of the meat. Meat from younger animals, in this case, lamb, typically has a milder flavor and a more tender texture compared to meat from older sheep or other animals. In culinary terminology, lamb is often sought after for its desirable qualities and is a popular choice in various cuisines around the world. The differentiation based on age is important for producers and consumers alike, as meat quality can vary significantly depending on the age at which the animal is harvested. Meat from sheep older than one year is usually referred to as mutton, which has a stronger flavor and tougher texture.**

## 2. Which type of injection is given under the skin using the "tenting" method?

**A. Intravenous**

**B. Intramuscular**

**C. Subcutaneous**

**D. Intradermal**

**The type of injection given under the skin using the "tenting" method is subcutaneous injection. This technique involves lifting or "tensing" a fold of skin to create a small pocket between the skin and the underlying tissue. The needle is then inserted into this pocket, allowing for the medication to be administered directly into the subcutaneous layer, where it can be absorbed into the bloodstream over time. Subcutaneous injections are commonly used for vaccines and certain types of medications because they are relatively easy to administer and result in slower absorption compared to injections into muscle or veins. This slower absorption can be advantageous for medications that are intended to have a prolonged effect. The other types of injections, such as intravenous and intramuscular, utilize different administration techniques and target different tissue areas. Intravenous injections involve delivering substances directly into the bloodstream through a vein, while intramuscular injections are delivered deep into muscle tissue. Intradermal injections are placed just below the skin's surface, used mainly for allergy tests and vaccines, and typically do not involve the tenting technique used in subcutaneous injections.**

## 3. Why is it recommended to perform dehorning when an animal is very young?

**A. To improve growth rates**

**B. To eliminate stress and bleeding**

**C. To enhance the animal's appearance**

**D. To increase milk production**

**Performing dehorning at a young age is recommended primarily to eliminate stress and bleeding. Young animals, such as calves, have a less developed nervous system, which means they typically experience less pain and stress during the procedure compared to older animals. Additionally, younger animals tend to have smaller horns, making the procedure simpler and reducing the likelihood of excessive bleeding. By minimizing pain and complications, the health and welfare of the animal are prioritized. Early dehorning can also reduce the risk of injuries to other animals and handlers, as horns can pose hazards in confined spaces. This practice is crucial for improving overall management in livestock operations, contributing to a safer and more humane environment for both animals and humans.**

## 4. What is the gestation period for a goat?

**A. 130 days**

**B. 150 days**

**C. 155 days**

**D. 160 days**

**The gestation period for a goat typically lasts around 150 days. This timeframe can vary slightly depending on the breed and individual animal, but 150 days is generally recognized as the standard duration. This is an important aspect to understand in animal science, as the gestation period informs breeding schedules, care requirements, and the timing of birthing preparations for breeders and farmers. In contrast, the other options reflect periods that are either shorter or longer than the established norm for goats, which makes them less accurate in this context. Understanding the specific gestation length is crucial for optimal management of breeding programs and the health of both the mother and her offspring.**

## 5. What is the term for a complex solution of organic and inorganic components outside the cell nucleus?

**A. cytoplasm**

**B. mitochondria**

**C. nucleoplasm**

**D. organelle**

**Cytoplasm is the correct term for the complex solution of organic and inorganic components found outside the cell nucleus. It is a gel-like substance that fills the space between the cell membrane and the nuclear membrane, containing various organelles, enzymes, and cytoskeletal elements. The cytoplasm plays a critical role in cellular processes, such as providing a medium for biochemical reactions and facilitating the movement of materials around the cell. In contrast, nucleoplasm refers specifically to the substance within the nucleus, where it contains components necessary for activities such as DNA and RNA synthesis. Mitochondria are specialized organelles involved in energy production through respiration, while the term organelle describes any specialized structure within a cell that performs a specific function. Thus, while all these terms relate to cellular components, cytoplasm specifically pertains to the area outside the nucleus, making it the correct answer for this question.**

## 6. How many cycles of division does meiosis undergo?

**A. 1**

**B. 2**

**C. 3**

**D. 4**

**Meiosis undergoes two cycles of division, which is essential for the process of gametogenesis—producing haploid gametes from diploid germ cells. The first division, known as meiosis I, separates homologous chromosomes, effectively reducing the chromosome number by half. This is the pivotal moment where genetic diversity is achieved through processes such as crossing over and independent assortment. The second division, meiosis II, is similar to mitosis and separates sister chromatids. By the end of meiosis, four genetically diverse haploid cells are produced, ready to participate in fertilization. This two-phase division process ensures the proper distribution of chromosomes to the gametes and is crucial for sexual reproduction. Understanding this fundamental aspect of cellular reproduction is key in animal science, as it highlights how genetic variation is introduced in populations.**

## 7. What cellular structure is essential for cell functions and contains both nuclear sap and chromatin?

**A. cell membrane**

**B. cytoplasm**

**C. nucleus**

**D. ribosome**

**The nucleus is the cellular structure that is essential for various critical cell functions, including the regulation of gene expression and the maintenance of the cell's genetic material. It serves as the control center of the cell, housing the chromatin, which is composed of DNA and proteins and plays a vital role in the packaging of genetic material as well as in the process of transcription. Additionally, the nucleus contains nuclear sap, also known as nucleoplasm, which is a gel-like substance that fills the interior of the nucleus. This environment is crucial for the suspending components of the nucleus, allowing for processes such as the replication of DNA and the assembly of ribosomal subunits. The combination of these components within the nucleus supports its key functions in cell growth, metabolism, and reproduction, reinforcing the importance of this organelle in cellular biology.**

## 8. What leads to the formation of a zygote?

**A. The union of the male sperm and female ovum**

**B. Incubation of the fertilized egg**

**C. The development of the embryo**

**D. The release of multiple eggs from the ovary**

**The formation of a zygote occurs through the union of the male sperm and the female ovum. When a sperm cell successfully penetrates an ovum during the process of fertilization, their genetic materials combine, resulting in a single-celled entity known as a zygote. This zygote contains a complete set of chromosomes, half from the male parent (sperm) and half from the female parent (ovum), establishing the genetic blueprint for its future development. Other options describe different stages or processes related to reproduction. Incubation refers to the conditions required for the fertilized egg to develop but does not lead to zygote formation. The development of the embryo follows after the zygote forms and begins dividing, while the release of multiple eggs from the ovary is part of the female reproductive cycle but does not directly relate to zygote formation. Only the union of sperm and ovum directly results in a zygote.**

## 9. How long is the typical gestation period for swine?

**A. Two months**

**B. Three months**

**C. Four months**

**D. Five months**

**The typical gestation period for swine is about three months, which is approximately 114 days. This duration is considered standard and is essential for understanding swine production. Knowing the gestation length helps farmers and producers plan for the breeding and care of sows, ensuring that they provide proper nutrition and management during pregnancy to promote the health of both the sow and the piglets. The other options do not reflect the accurate gestation period for swine. A duration of two months, four months, or five months would either understate or overstate the time required for a sow to carry her young, demonstrating the importance of understanding specific reproductive cycles in livestock management. Understanding the correct length of gestation is crucial for effective breeding programs and overall herd management strategies in animal agriculture.**

## 10. Proteins are primarily composed of which of the following?

**A. Fatty acids**

**B. Sugars**

**C. Amino acids**

**D. Vitamins**

**Proteins are primarily composed of amino acids, which are the building blocks that link together in specific sequences to form proteins. Each protein has a unique structure and function, determined by the particular sequence and arrangement of the amino acids it contains. There are 20 different amino acids, and the combination of these amino acids can produce an immense variety of proteins that play vital roles in biological processes, including tissue building, enzyme function, and immune response. The other options do not directly pertain to the composition of proteins. Fatty acids are the building blocks of lipids, not proteins. Sugars, or carbohydrates, are also distinct macromolecules made up of different units called monosaccharides. Vitamins are organic compounds that are essential for various metabolic processes but do not serve as the building blocks for proteins. Hence, amino acids are the correct answer as they are fundamental to the structure and function of proteins.**