

BREEDING AND GENETICS EXAM 2 PRACTICE (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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- 1. What is the level of heritability for loin eye area in sheep?**
 - A. High
 - B. Moderate
 - C. Low
 - D. Very high
- 2. Marbling in beef cattle is known to have what level of heritability?**
 - A. High
 - B. Moderate
 - C. Low
 - D. Very Low
- 3. What is the typical temperament level found in horses?**
 - A. High
 - B. Low
 - C. Very High
 - D. Moderate
- 4. Which concept is defined as the difference between the mean selection criterion of selected individuals and that of the entire population?**
 - A. Selection Differential
 - B. Genetic Variation
 - C. Generation Interval
 - D. Genetic Trend
- 5. Which characteristic is associated with the efficiency of feed conversion in swine?**
 - A. High
 - B. Low
 - C. Moderate
 - D. Highly variable

- 6. Which type of correlation describes the influence of environmental factors on two different traits?**
- A. Genetic Correlation
 - B. Environmental Correlation
 - C. Correlated Response to Selection
 - D. Pleiotropy
- 7. What is meant by independent gene effects in animal breeding?**
- A. Effects that apply to a population
 - B. Effects that apply to an individual
 - C. Effects that combine environmental factors
 - D. Effects based only on alleles
- 8. When making mating decisions in a breeding program, what aspect do you focus on?**
- A. Breeding value
 - B. Genetic diversity
 - C. Gene combination value
 - D. Environmental adaptability
- 9. What term describes the minimum standards set for multiple traits in breeding?**
- A. Independent Culling Levels
 - B. Culling Standards
 - C. Minimum Trait Guidelines
 - D. Multi-Trait Thresholds
- 10. What is the term for a mating specifically designed to reveal a parent's genotype at specific loci?**
- A. Controlled Breeding
 - B. Test Mating
 - C. Genetic Testing
 - D. Cross Breeding

Answers

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

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Explanations

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1. What is the level of heritability for loin eye area in sheep?

- A. High
- B. Moderate
- C. Low
- D. Very high

The heritability of a trait refers to the proportion of phenotypic variance that can be attributed to genetic variance within a specific population. In the context of loin eye area in sheep, the trait is known to demonstrate a high level of heritability. This means that genetics plays a significant role in determining the size of the loin eye area, which can be useful for breeders looking to enhance this trait through selection. High heritability suggests that the selected traits can be effectively passed on from parents to offspring, allowing breeders to make significant genetic progress in improving loin eye area through targeted breeding strategies. Therefore, understanding the high heritability of this trait is critical for sheep breeding programs that aim to improve meat quality and yield. Conversely, traits with low or moderate heritability would indicate that environmental factors or non-genetic influences play a larger role, making selection for improvement less effective. This distinction highlights the importance of heritability in guiding breeding decisions.

2. Marbling in beef cattle is known to have what level of heritability?

- A. High
- B. Moderate
- C. Low
- D. Very Low

Marbling in beef cattle refers to the intramuscular fat that contributes to the quality and flavor of the meat. The heritability of a trait indicates the extent to which it can be passed on from parents to offspring through genetics. For marbling, research has demonstrated that it has a high level of heritability, meaning that genetics plays a significant role in determining the extent of marbling in cattle. This is particularly important for beef producers and breeders, as selecting for higher-marbling traits can lead to improved meat quality and profitability. Breeding programs can effectively utilize this heritability to enhance quality traits within herds, providing a tangible target for genetic selection. The acknowledgment of marbling's heritability also helps in understanding variability within cattle populations and in formulating breeding strategies aimed at optimizing meat production.

3. What is the typical temperament level found in horses?

- A. High
- B. Low
- C. Very High
- D. Moderate

The typical temperament level found in horses is classified as moderate. This refers to the general disposition of horses, which can vary significantly among individual animals and across different breeds. A moderate temperament indicates that horses are generally responsive and can handle various situations without being overly aggressive or excessively timid. A moderate temperament allows horses to perform well in a variety of settings, from competitive events to leisurely riding experiences. It reflects a balance that enables horses to exhibit both calmness and engagement, essential for their interactions with humans and other animals. This temperamental balance is crucial for training and handling, as it helps maintain a safe and conducive environment for learning and activities. It's also important to note that while individual horses may show variations based on their genetics, upbringing, and environment, the general expectation across many breeds aligns with a moderate temperament. This understanding plays a vital role for owners, trainers, and riders in working effectively with horses.

4. Which concept is defined as the difference between the mean selection criterion of selected individuals and that of the entire population?

A. Selection Differential

B. Genetic Variation

C. Generation Interval

D. Genetic Trend

The selection differential is indeed defined as the difference between the mean selection criterion of selected individuals and that of the entire population. This concept is crucial in breeding and genetics because it quantifies the effectiveness of the selection process. When a breeder selects individuals based on specific traits (for example, size, yield, or disease resistance), the mean value of these selected individuals often differs from the mean of the entire population from which they were chosen. The selection differential measures this difference, providing insight into the strength of selection. A larger selection differential indicates that the selected individuals are more favorable than the general population, which can lead to more significant improvements in subsequent generations. Understanding the selection differential helps breeders to estimate progress in traits and assess how effectively their selection practices are influencing genetic selection within a breeding program. This measure is foundational for predicting genetic gain and shaping future breeding strategies.

5. Which characteristic is associated with the efficiency of feed conversion in swine?

A. High

B. Low

C. Moderate

D. Highly variable

The characteristic associated with the efficiency of feed conversion in swine is best described as moderate. This concept refers to the feed conversion ratio (FCR), which measures the amount of feed required for a unit of weight gain. In swine production, this ratio tends to have a moderate efficiency due to several factors including genetics, diet composition, and management practices. Moderate efficiency indicates that while swine can convert feed into body mass effectively, there is still a balance that must be struck; it is neither maximally efficient (which would suggest very high feed conversion) nor poorly efficient (which would imply high feed costs relative to weight gain). Breeders aim for improvements in this area, but biological limits and environmental factors can impact the overall efficiency of feed conversion, resulting in a consistent yet moderate level of efficiency across different breeds and conditions. Utilizing genetic selection strategies can help improve this trait, as certain genetic lines may display superior feed conversion efficiency, but variability exists due to multiple interacting factors. This understanding allows for practical expectations in swine production concerning growth performance and feed utilization.

6. Which type of correlation describes the influence of environmental factors on two different traits?

- A. Genetic Correlation
- B. Environmental Correlation**
- C. Correlated Response to Selection
- D. Pleiotropy

The correct answer is that environmental correlation specifically addresses how environmental factors can influence two different traits. This type of correlation recognizes that the traits in question may not be genetically linked but can still be related through shared environmental influences. For example, if two traits are affected by similar environmental conditions, a change in that environment could alter both traits simultaneously, indicating a correlation due to these shared influences. This concept emphasizes the impact that external factors, such as climate, diet, or habitat, can have on the expression of traits, separate from genetic inheritance. Understanding environmental correlation is crucial for researchers and breeders as it allows them to differentiate between changes in traits that are caused by genetic factors and those influenced by environmental conditions.

7. What is meant by independent gene effects in animal breeding?

- A. Effects that apply to a population
- B. Effects that apply to an individual**
- C. Effects that combine environmental factors
- D. Effects based only on alleles

Independent gene effects refer to the impact of individual genes on an organism's traits without the influence of other genes or external factors. This concept is essential in animal breeding because it highlights how certain traits can be traced back to specific alleles present in an individual. When examining traits, independent gene effects allow breeders to isolate the influence of particular genes, making it easier to understand inheritance patterns and how different genetic combinations can lead to desired traits in offspring. This understanding helps in selecting animals for breeding programs focused on improving specific traits based solely on their genetic makeup, leading to more predictable outcomes in the next generation.

8. When making mating decisions in a breeding program, what aspect do you focus on?

- A. Breeding value
- B. Genetic diversity
- C. Gene combination value**
- D. Environmental adaptability

The focus on gene combination value during mating decisions in a breeding program is pivotal because it refers to the unique genetic makeup that results from the combination of genes from both parents. This aspect highlights the potential performance of offspring based on the specific alleles inherited from each parent and how they interact. By prioritizing gene combination value, breeders can strategically select pairs that are likely to produce offspring with enhanced traits, such as higher yield, disease resistance, or improved quality. This is crucial for achieving the specific goals of the breeding program, whether they aim to enhance productivity, adaptability, or other desirable characteristics. In contrast, while breeding value is significant as it represents the genetic potential of an individual based on its own performance and the performance of its relatives, it does not alone account for how different genes work together in the progeny. Genetic diversity, though essential for maintaining a healthy gene pool, might not directly influence the traits being targeted in a specific breeding situation. Environmental adaptability is also important, but it typically involves the response of the organism to external conditions rather than the genetic construction influencing the actual offspring traits. Therefore, gene combination value is the most critical aspect to focus on when making mating decisions in breeding programs.

9. What term describes the minimum standards set for multiple traits in breeding?

- A. Independent Culling Levels**
- B. Culling Standards
- C. Minimum Trait Guidelines
- D. Multi-Trait Thresholds

The term that describes the minimum standards set for multiple traits in breeding is known as independent culling levels. This concept is fundamental in selective breeding, where individual animals are assessed against specific criteria for several traits. Each trait has its own culling level, which is the minimum standard that needs to be met for an animal to be considered suitable for breeding. By applying independent culling levels, breeders ensure that animals not only meet the standards for one desirable trait but also for the others, ultimately resulting in improved overall quality of the stock. This approach allows breeders to maintain genetic diversity while promoting multiple desired characteristics in breeding programs. Hence, the focus on multiple traits ensures a more comprehensive evaluation of potential breeding candidates.

10. What is the term for a mating specifically designed to reveal a parent's genotype at specific loci?

A. Controlled Breeding

B. Test Mating

C. Genetic Testing

D. Cross Breeding

The term that best describes a mating specifically designed to reveal a parent's genotype at specific loci is "Test Mating." This method involves mating individuals where the genotype of one or both parents is uncertain, with the aim of determining the genetic contributions from each parent based on the phenotypes of their offspring. This approach is particularly useful in breeding programs, allowing breeders to infer the genotypes of the parents by observing the traits expressed in their progeny and employing this information for future breeding decisions. Controlled breeding refers to the practice of carefully managing the mating process to achieve certain outcomes, but it does not specifically focus on revealing genotypes. Genetic testing typically involves analysis outside of breeding to identify specific alleles or genetic traits using molecular methods, rather than through traditional mating techniques. Cross breeding refers to the mating of individuals from different genetic backgrounds or breeds, aimed more at enhancing genetic diversity than specifically determining parent genotypes. Thus, Test Mating stands out as the precise answer to the query about revealing genotypes through mating practices.

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Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://breedinggenetics2.examzify.com>

We wish you the very best on your exam journey. You've got this!

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