



Animal Science

Study Guide

Assessment:
6101 Animal Science

career^{tech} ✓
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**OKLAHOMA
WORKS**

Aligned with the
Agriculture, Food and
Natural Resources (AFNR)

Overview

This study guide is designed to help students prepare for the Animal Science assessment. It not only includes information about the assessments, but also the skills standards upon which the assessments are based and test taking strategies. The assessment measures a student's ability to apply knowledge of the skills necessary for success in the animal science field.

Each of the four sections in this guide provides useful information for students preparing for the Animal Science assessment.

- CareerTech and Competency-Based Education: A Winning Combination
- Animal Science assessment
 - ▶ Assessment Information
 - ▶ Standards and Test Content
 - ▶ Sample Questions
 - ▶ Abbreviations, Symbols, and Acronyms
- Strategies for Test Taking Success
- Notes

The standards for these assessments are aligned with the Agriculture, Food and Natural Resources (AFNR) standards. AFNR standards were developed by the National Council for Agricultural Education (The Council). The Council's vision is to be the premier leadership organization for shaping and strengthening school-based agricultural education (SBAE) at all levels in the United States. Its mission is to proactively identify current and emerging issues of national concern, provide innovative solutions in response to current and emerging issues, coordinate the efforts of appropriate entities in strengthening programs, and serve as a national advocate for school-based agricultural education.

For more information about the AFNR standards, go to:

www.ffa.org/thecouncil/Documents/finalafnrstandardsv324609withisbn_000.pdf

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CareerTech and Competency-Based Education: A Winning Combination

Competency-based education uses learning outcomes that emphasize both the application and creation of knowledge and the mastery of skills critical for success. In a competency-based education system, students advance upon mastery of competencies, which are measurable, transferable outcomes that empower students.

Career and technology education uses industry professionals and certification standards to identify the knowledge and skills needed to master an occupation. This input provides the foundation for development of curriculum, assessments and other instructional materials needed to prepare students for wealth-generating occupations and produce comprehensively trained, highly skilled employees demanded by the work force.

Tools for Success

CareerTech education relies on three basic instructional components to deliver competency-based instruction: skills standards, curriculum materials, and competency assessments.

Skills standards provide the foundation for competency-based instruction and outline the knowledge and skills that must be mastered in order to perform related jobs within an industry. Skills standards are aligned with national skills standards and/or industry certification requirements; therefore, a student trained to the skills standards is equally employable in local, state and national job markets.

Curriculum materials and textbooks contain information and activities that teach students the knowledge and skills outlined in the skills standards. In addition to complementing classroom instruction, curriculum resources include supplemental activities that enhance learning by providing opportunities to apply knowledge and demonstrate skills.

Certification Assessments test the student over material outlined in the skills standards and taught using the curriculum materials and textbooks. When used with classroom performance evaluations, certification assessments provide a means of measuring occupational readiness.

Each of these components satisfies a unique purpose in competency-based education and reinforces the knowledge and skills students need to gain employment and succeed on the job.

Measuring Success

Evaluation is an important component of competency-based education. Pre-training assessments measure the student's existing knowledge prior to receiving instruction and ensure the student's training builds upon this knowledge base. Formative assessments administered throughout the training process provide a means of continuously monitoring the student's progress towards mastery.

Certification assessments provide a means of evaluating the student's mastery of knowledge and skills. Coaching reports communicate assessment scores to students and provide a breakdown of assessment results by standard area. The coaching report also shows how well the student has mastered skills needed to perform major job functions and identifies areas of job responsibility that may require additional instruction and/or training.

Animal Science Assessment Information

What is the Animal Science assessment?

The Animal Production assessment is an end-of-course assessment for students in Animal Science programs. The assessments provide an indication of student mastery of basic knowledge and concepts necessary for success in careers in this area.

How was the assessment developed?

The assessments were developed by the CareerTech Testing Center. The assessments and standards align with those of the Agriculture, Food and Natural Resources (AFNR) Career Cluster Content Standards. Items were developed and reviewed by a committee of subject matter experts.

What does the assessment cover?

Specifically, the test includes multiple-choice test items over the following areas:

Animal Science (75 questions)

Agribusiness Systems	5%
Animal Systems	72%
Biotechnology Systems	3%
Food Products and Processing Systems	20%

What is the benefit of using this assessment?

Students receive a certificate for each assessment that he/she passes. This certificate may be included in his/her portfolio and used to communicate the student's mastery of the subject matter to potential employers.

When should the assessment be taken?

The CareerTech Testing Center recommends that students take the assessments as soon as possible after receiving all standards-related instruction, rather than waiting until the end of the school year.

Is the assessment timed?

No. However, most students finish the assessment within one hour.

What resources can students use on these assessments?

Students are allowed to use calculators and scratch paper on CTTC assessments; however, these items must be provided by the testing proctor and returned to the proctor before the student's exam is submitted for scoring. Calculator apps on cell phones and other devices may not be used on these assessments.

What accommodations can be made for students with Individualized Education Plans (IEPs)?

Accommodations are allowed for students with an Individualized Education Plan. Examples of allowable accommodations include:

- Extended time — This assessment is not timed; therefore, students may take as much time as needed to finish. The assessment must be completed in one testing session.
- Readers — A reader may be used to read the assessment to a student who has been identified as needing this accommodation.
- Enlarged text — Students needing this accommodation can activate this feature by clicking the **AA** icon in the upper right corner of the screen.

What can students expect on Test Day?

All CTTC assessments are web-based and delivered exclusively by a proctor in the school's assessment center. The proctor **cannot** be an instructor or anyone who was involved with the student during instruction.

Assessments are delivered in a question-by-question format. When a question is presented, the student can select a response or leave the question unanswered and advance to the next question. Students may also flag questions to revisit before the test is scored. All questions must be answered before the test can be submitted for scoring.

After the assessment is scored, the student will receive a score report that not only shows the student's score on the assessment, but also how the student performed in each standard area.

Can students retake the test?

Students may retake the test unless their school or state testing policies prohibit retesting. Students who can retake must wait at least three days between test attempts.



Standards and Test Content

Animal Science

Agribusiness Systems (4 questions)

1. Name and explain the impact of external economic factors on an AFNR business.
2. Recognize how changes in prices of inputs and/or outputs influence the financial statements of an AFNR business.
3. Investigate the meaning and methods of marketing in AFNR as related to agricultural commodities, products and services ant to agricultural goods in domestic and international markets.
4. Described functions in agricultural marketing.

Animal Systems (55 questions)

Fundamentals

1. Identify major animal species by common and scientific names.
2. Identify basic characteristics of animal cells, tissues, organs and body systems.
3. Diagram a typical animal cell and identify the organelles.
4. Describe the basic functions of animal cells in growth and reproduction.
5. Detail the processes of meiosis and mitosis in animal growth, development, health and reproduction.
6. Describe the functions of the animal body systems and system components.



Health

7. Compare and contrast body systems and system adaptations between animal species.
8. Explain methods of determining animal health and disorders.
9. Perform simple health-check evaluations on animals.
10. Identify common diseases, parasites and physiological disorders that affect animals.
11. Diagnose illnesses and disorders of animal based on symptoms and problems caused by diseases, parasites and physiological disorders.
12. Explain characteristics of causative agents and vectors of diseases and disorders in animals.
13. Evaluate preventative measures for controlling and limiting the spread of diseases, parasites and disorders among animals.
14. Explain the clinical significance of common consideration in veterinary treatments, such as aseptic techniques.

15. Prepare animals, facilities and equipment for surgical and nonsurgical veterinary treatments and procedures.
16. Identify and describe zoonotic diseases.

Nutrition

17. Compare and contrast common types of feedstuffs and the roles they play in the diets of animals.
18. Explain the importance of a balanced ration for animals.
19. Appraise the adequacy of feed rations using data from the analysis of feed stuffs, animal requirements and performance.
20. Explain the purpose and benefits of feed additives and growth promotants in animal production.
21. Discuss how feed additives and growth promotants are administered and the precautions that should be taken.

Reproductive

22. Explain the male and female reproductive organs of the major animal species.
23. Describe the functions of major organs in the male and female reproductive systems.
24. Explain how age, size, life cycle, maturity level and health status affect the reproductive efficiency of male and female animals.
25. Discuss the importance of efficient and economic reproduction in animals.
26. Explain genetic inheritance in agricultural animals.
27. Explain the advantages of using genetically superior animals in the production of animals and animal products.
28. Define natural and artificial breeding methods.
29. Explain the processes of natural and artificial breeding methods.
30. Explain the use of quantitative breeding values (e.g. EPDs) in the selection of genetically superior breeding stock.
31. Compare and contrast quantitative breeding value differences between genetically superior animals and animals of average genetic value.
32. Explain the advantages of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer.
33. Explain the processes of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer.
34. Discuss the uses and advantages and disadvantages of natural breeding and artificial insemination.
35. Explain the materials, methods and processes of artificial insemination.

Safety and Welfare

36. Discuss the dangers involved in working with animals.
37. Outline safety procedures for working with animals by species.
38. Explain the implications of animal welfare and animal rights for animal agriculture.
39. Identify facilities needed to house and produce each animal species safely and efficiently.
40. Explain how modern equipment and handling facilities enhance the safe and economic production of animals.

Biotechnology Systems (1 question)

1. Explain the functions of hormones in animals.

Food Products and Processing (15 questions)

1. Identify quality and yield grades of food products.
2. Discuss factors that affect quality and yield grades of food products.



Sample Questions

- _____ 1. A SubQ vaccine should be administered:
- by pouring it on the animal.
 - in the muscle.
 - intranasally.
 - under the skin.
- _____ 2. During castration, an emasculator is used to:
- apply a small rubber ring around the scrotum.
 - crush and cut the spermatic cord.
 - open the scrotum.
 - restrain the animal.
- _____ 3. What is the most appropriate management practice to avoid the spread of disease within a herd?
- Control outside disease pathogens.
 - Cull animals frequently.
 - Rotate pastures frequently.
 - Maintain vaccinations.
- _____ 4. A sow is having difficulty farrowing. What is the recommended course of action?
- Give the sow a shot of antibiotic.
 - Give the sow a shot of oxytocin.
 - Let nature take care of the situation.
 - Call a veterinarian for assistance.
- _____ 5. Which nutrient supplies amino acids needed to build body tissue?
- carbohydrates
 - protein
 - vitamins
 - water
- _____ 6. What two types of genes pass on inherited traits?
- carrier and recessive
 - dominant and recessive
 - incomplete and dominant
 - maternal and paternal

- _____ 7. A female animal's highest daily water requirement is during:
- a. breeding.
 - b. lactation.
 - c. the growing stage.
 - d. the last stage of pregnancy.
- _____ 8. Swine ear notch 3-5 indicates:
- a. litter 3, pig 5.
 - b. pig 3, litter 5.
 - c. pig born March 5.
 - d. third pig out of 5 born.
- _____ 9. What method of thawing semen is used when semen is taken straight from the nitrogen tank and inseminated in the female?
- a. ampule, ice bath
 - b. ampule, hot bath
 - c. straw, ice bath
 - d. straw, no thaw
- _____ 10. The biggest problem of feed contamination by rodents is caused by:
- a. destruction of facility.
 - b. consumption of feed.
 - c. migrating through feed.
 - d. urine and feces.



Sample Questions — Key

1. A SubQ vaccine should be administered:

- a. by pouring it on the animal. **Incorrect**
- b. in the muscle. **Incorrect**
- c. intranasally. **Incorrect**
- d. under the skin. **Correct**

2. During castration, an emasculator is used to:

- a. apply a small rubber ring around the scrotum. **Incorrect**
- b. crush and cut the spermatic cord. **Correct**
- c. open the scrotum. **Incorrect**
- d. restrain the animal. **Incorrect**

3. What is the most appropriate management practice to avoid the spread of disease within a herd?

- a. Control outside disease pathogens. **Incorrect**
- b. Cull animals frequently. **Incorrect**
- c. Rotate pastures frequently. **Incorrect**
- d. Maintain vaccinations. **Correct**

4. A sow is having difficulty farrowing. What is the recommended course of action?

- a. Give the sow a shot of antibiotic. **Incorrect**
- b. Give the sow a shot of oxytocin. **Correct**
- c. Let nature take care of the situation. **Incorrect**
- d. Call a veterinarian for assistance. **Incorrect**

5. Which nutrient supplies amino acids needed to build body tissue?

- a. carbohydrates **Incorrect**
- b. protein **Correct**
- c. vitamins **Incorrect**
- d. water **Incorrect**

6. What two types of genes pass on inherited traits?

- a. carrier and recessive **Incorrect**
- b. dominant and recessive **Correct**
- c. incomplete and dominant **Incorrect**
- d. maternal and paternal **Incorrect**

7. A female animal's highest daily water requirement is during:

- a. breeding. Incorrect
- b. lactation. Correct
- c. the growing stage. Incorrect
- d. the last stage of pregnancy. Incorrect

8. Swine ear notch 3-5 indicates:

- a. litter 3, pig 5. Correct
- b. pig 3, litter 5. Incorrect
- c. pig born March 5. Incorrect
- d. third pig out of 5 born. Incorrect

9. What method of thawing semen is used when semen is taken straight from the nitrogen tank and inseminated in the female?

- a. ampule, ice bath Incorrect
- b. ampule, hot bath Incorrect
- c. straw, ice bath Incorrect
- d. straw, no thaw Correct

10. The biggest problem of feed contamination by rodents is caused by:

- a. destruction of facility. Incorrect
- b. consumption of feed. Incorrect
- c. migrating through feed. Incorrect
- d. urine and feces. Correct

Abbreviations, Symbols and Acronyms

The following is a list of abbreviations, symbols, and acronyms used in the Animal Science study guide and on the Animal Science assessment.

%	Percent
'	Foot/feet
/	Slash
ft ²	Square feet
"	Inch/inches
AFNR	Agriculture, Food and Natural Resources
BLM	Bureau of Land Management
EPA	Environmental Protection Agency
EPD	Expected Progeny Differences
FDA	Food and Drug Administration
IEP	Individualized Education Plan
KPH	Kidney, pelvic, heart fat
SBAE	School-Based Agricultural Education
SubQ	Subcutaneous
The Council	National Council for Agricultural Education
USDA	United States Department of Agriculture

Test Taking Strategies

This section of the study guide contains valuable information for testing success and provides a common-sense approach for preparing for and performing well on any test.

General Testing Advice

1. Get a good night's rest the night before the test — eight hours of sleep is recommended.
2. Avoid junk food and “eat right” several days before the test.
3. Do not drink a lot or eat a large meal prior to testing.
4. Be confident in your knowledge and skills!
5. Relax and try to ignore distractions during the test.
6. Focus on the task at hand — taking the test and doing your best!
7. Listen carefully to the instructions provided by the exam proctor. If the instructions are not clear, ask for clarification.

Testing Tips

1. Read the entire question before attempting to answer it.
2. Try to answer the question before reading the choices. Then, read the choices to determine if one matches, or is similar, to your answer.
3. Do not change your answer unless you misread the question or are certain that your first answer is in.
4. Answer questions you know first, so you can spend additional time on the more difficult questions.
5. Check to make sure you have answered every question before you submit the assessment for scoring — unanswered questions are marked in.



