

## Agriculture (0700)

### Test at a Glance

Test Name	Agriculture		
Test Code	0700		
Time	2 hours		
Number of Questions	120		
Format	Multiple-choice questions		
	Content Categories	Approximate Number of Questions	Approximate Percentage of Questions
	I. Agriculture: Social and Historical Perspectives	11–13	9–11%
	II. Plant and Soil Science	18–20	15–17%
	III. Animal Science	18–20	15–17%
	IV. Agricultural Mechanization and Technology	18–20	15–17%
	V. Agricultural Business and Economics	18–20	15–17%
	VI. Natural Resources and Environment	11–13	9–11%
	VII. Program Planning and Management	18–20	15–17%

## About This Test

The Agriculture test is designed to measure the professional training of prospective teachers of agriculture in junior and senior high schools. The 120 multiple-choice questions assess both basic knowledge and the ability to apply principles to real-life situations. Test content is appropriate for examinees who have completed a bachelor's degree program in agricultural education.

The seven content areas cover agriculture: social and historical perspectives, plant and soil science, animal science, agricultural mechanization and technology, agricultural business and economics, natural resources and environment, and program planning and management.

This test may contain some questions that do not count toward your score.

## Topics Covered

Representative descriptions of topics covered in each category are provided below.

### I. Agriculture: Social and Historical Perspectives

- The economic importance of agriculture: American agriculture's economic relationships in the global market; the agricultural interests and output of regions; the impact of agriculture on a country's trade balance
- The effect of economic/political decisions on agriculture: role of agriculture in political decisions; global trade; NAFTA; WTO; the differentiation between agriculture's and society's interests
- The sociological status of agriculture: current and former image; effects of changing marketing and purchasing patterns on local agricultural communities; historical patterns related to American agriculture
- Careers in agriculture: technology; production; management; marketing; processing; career trends
- Past and present agricultural policies: acts affecting agricultural education, public policy, taxes, land use, subsidies, monitoring of agricultural practices, environmental policies
- Trends in agriculture: shifts from independent operation to cooperation; nontraditional crops; biotechnology; computerization; precision agriculture; organic production; competition for labor; environmental protection; and ethics related to those trends

### II. Plant and Soil Science

- Basic plant science: plant parts and their functions (e.g., transpiration, photosynthesis, nutrient uptake, nitrogen fixation, etc.); sexual and asexual reproduction; factors affecting growth
- Soil properties and land management: soil texture and profile; topography, depth, and structure; soil chemistry and biology; nutrient management; drainage, irrigation and erosion; tillage management; protection of water quality and wildlife/recreational areas

- Crop production and management: areas such as field crops, forage crops, specialty crops, fruit and vegetable crops, etc.; rotational grazing; cropping systems; crop rotations; nutrient sources and application; and integrated pest management (plant diseases, pests, weeds, interpretation of pesticide labels)
- Horticulture: areas such as nursery, greenhouse, floriculture, landscape design, turf management, hydroponics, ornamentals, etc.

### III. Animal Science

- General animal science relating to breed characteristics of the following industries: dairy cattle, beef cattle, swine, poultry, horses, small ruminants such as sheep and goats, and special industries such as aquaculture and companion animals
- Anatomy and physiology: basic terminology and processes (digestion, reproduction, endocrine functions, etc.)
- Management topics: nutrition and feed additives; housing and environmental conditions; diseases and parasites; interpretation of medicine and pesticide labels; production economics; animal welfare and health practices; selection; breeding and genetics; waste management
- Products and basic processing: food/fiber, milk, meat, eggs, homogenization, pasteurization

### IV. Agricultural Mechanization and Technology

- Power machinery and equipment: engines, including gasoline, diesel, 2-cycle, and 4-cycle; electric motors and controls; troubleshooting, maintenance, and repair

- Soil and water technology: surveying (differential and profile); maintenance and repair of equipment
- Agricultural construction: plans and design; electricity; plumbing; water systems; maintenance and repair; storage structures; concrete
- Mechanical principles and practices: metal welding and cutting (arc, gas, plasma); metal and woodworking; hand and power tools
- Safety management: personnel, personal protective equipment; fire; machinery; laboratory; chemicals (use and storage); air quality; waste storage and disposal

### V. Agricultural Business and Economics

- Principles of economics: supply and demand; surpluses; marginal analysis; opportunity costs; interpretation of data, such as market reports and cyclical analysis; governmental programs and regulations; subsidies
- Management issues: records; income and expense; budget and actual; profit and loss; asset and liability; cash flow; appreciation and depreciation; investments; credit; enterprise analysis; financial ratios; human resource management; risk management
- Agricultural sales and marketing topics: futures and options; grading and inspection; transportation; advertising and sales; appraisals; marketing orders; contract marketing; value-added marketing; service and customer relationships
- Business structure: business organizations, such as sole proprietorship, partnership, cooperatives, and corporations; vertical and horizontal integration and coordination (e.g., contracts)

### VI. Natural Resources and Environment

- Energy and the environment: energy flow (e.g., food web); trophic relationships; water cycle; nutrient cycling (e.g., carbon, nitrogen, phosphorous)
- Agriculture and the environment: soil erosion; biomagnification in a food chain; effects of agricultural chemicals on ground and surface water; wetlands
- Forestry: production and conservation concerns; impacts on endangered species
- Fish and wildlife ecology: stocking and re-introduction programs; population management; wildlife habitat assessment and creation

### VII. Program Planning and Management

- Student Organization and Leadership Development: program of activity; career development events (CDE's); community partnership (service organizations and elementary schools); principles of parliamentary procedure; FFA; awards and recognition
- Experiential learning: planning; implementation and management of supervised agriculture experience (SAE) program; types of SAE's (entrepreneurship, placement, directed-laboratory experience, and exploratory); record keeping; proficiency awards
- Program Planning and Evaluation: advisory committee (organization, selection, management, and roles); public relationship (budgeting and long-range goals); community needs assessment; collaboration with governmental and non-governmental agencies (Cooperative Extension Service, NRCS, FSA, Environmental Protection Agency, Food and Drug Administration, etc.)
- Foundations of Agricultural Education programs and FFA: Historical perspectives; philosophy; legislation; and educational initiatives

## Sample Test Questions

The sample questions that follow illustrate the kinds of questions in the test. They are not, however, representative of the entire scope of the test in either content or difficulty.

Answers with explanations follow the questions.

**Directions:** Each of the questions or statements below is followed by five suggested answers or completions. Select the one that is best in each case.

- Which of the following degrees can be awarded by the local chapter of the FFA?
  - Greenhand FFA Degree
  - Chapter FFA Degree
  - State FFA Degree
  - American FFA Degree
  - I only
  - II only
  - I and II only
  - II and III only
  - I, II, III, and IV
- Which of the following concepts in *Robert's Rules of Order* requires that motions be dealt with in order of importance?
  - Order of business
  - Call to order
  - Orders of the day
  - Order of precedence
  - Point of order
- Wetlands benefit people by serving all of the following functions EXCEPT
  - acting as filters to improve water quality
  - providing recreation facilities
  - providing fish and wildlife habitat
  - serving to reduce flooding
  - serving as landfill sites
- The principles of xeriscaping would be best exemplified by an Arizona homeowner who
  - installs an in-ground sprinkler system
  - lowers the cutting height on the lawnmower
  - increases the use of fertilizer on the turfgrass
  - replaces nonnative ornamentals with native shrubs
  - creates a water garden
- The loss of water in the form of vapor from plants is referred to as
  - transpiration
  - respiration
  - oxidation
  - condensation
  - reduction
- Soil structure refers to which of the following?
  - Arrangement of soil particles
  - Proportions of sand, silt, and clay
  - Organic composition
  - Profile depth
  - Thickness of the A horizon
- Which of the following is a disorder in ruminants characterized by an excessive accumulation of gas in the rumen?
  - Agalactia
  - Bloat
  - Foot-and-mouth disease
  - Bovine pleuropneumonia
  - Grass tetany
- Moderate and frequent irrigation would normally be most appropriate for a corn crop growing in a
  - dispersed alluvial fan soil
  - heavy-textured soil, such as silty clay
  - light-textured soil, such as a loamy sand
  - region of low humidity
  - region of high humidity

9. Which of the following most likely indicates the presence of water in the hydraulic system in a piece of farm machinery?
- (A) A grayish, milk-colored fluid
  - (B) Excessive fluid use
  - (C) Excessive thinning of the fluid
  - (D) A noisy relief valve
  - (E) Increased operating speed
10. Which of the following is the best power hand tool and the best position for cutting a strip 14 inches wide by 8 feet long from a 4 feet by 8 feet sheet of 3/4-inch A/C plywood?
- (A) Portable jigsaw, A side up
  - (B) Portable jigsaw, C side up
  - (C) Portable circular saw, A side up
  - (D) Portable circular saw, C side up
  - (E) Table saw, C side up
11. Which of the following is the most probable effect of import trade barriers on domestic prices and production?
- (A) Both prices and production increase.
  - (B) Both prices and production decrease.
  - (C) Prices decrease; production decreases only if prices stay low for several months.
  - (D) Prices decrease; production increases.
  - (E) Prices increase; production decreases.
12. An enterprise analysis reported an average return of \$151 for each \$100 of feed fed to hogs last year and a return of \$130 per \$100 of feed fed this year. Assuming no major death losses and stable feed costs, which of the following is the most likely explanation for the difference in returns?
- (A) Changes in physical management
  - (B) Lower feed efficiency
  - (C) Poor record keeping
  - (D) Lower market prices
  - (E) Lower purchase prices
13. Which of the following is LEAST effective for controlling soil erosion caused by wind and water?
- (A) Planting windbreaks
  - (B) Planting cover crops
  - (C) Removing crop stubble from the surface
  - (D) Using conservation tillage
  - (E) Tilling at right angle to the wind
14. It is important that farm ponds be stocked with fish that can maintain themselves in balance with the food supply and other fish. A pond stocked with bream should also be stocked with which of the following?
- (A) Bass
  - (B) Carp
  - (C) Catfish
  - (D) Crappie
  - (E) Eel
15. Which of the following is the LEAST likely reason for using tillage in seedbed preparation?
- (A) Improvement of the physical condition of the soil
  - (B) Control of diseases or pests
  - (C) Incorporation of crop and weed residues
  - (D) Elimination of weeds
  - (E) Change of the soil texture
16. The demand for which of the following products is likely to be the most elastic?
- (A) Milk
  - (B) Bread
  - (C) Salt
  - (D) Pork
  - (E) Sugar

17. Which of the following methods of reforestation has the lowest direct cost but is also the slowest method and the least reliable?
- (A) Natural seeding
  - (B) Direct seeding
  - (C) Coppice growth
  - (D) Planting seedlings
  - (E) Planting cuttings

## Answers

1. The correct answer is C. FFA degrees are, in order from lowest to highest level, Greenhand, Chapter, State, and American FFA Degree. The first two degrees are awarded by the local chapter. The third degree is given by the state association, and the American FFA Degree is given by the National FFA Organization.
2. The correct answer is D. *Robert's Rules of Order* state that motions must be taken in order of priority or precedence. Order of business is the usual agenda that an organization will follow in conducting its meetings. Call to order is made by the chairperson to begin the meeting or to restore order during the meeting. Orders of the day is a privileged motion used when the agenda is not being followed. Point of order is an incidental motion used to stop incorrect actions and to insist on the enforcement of parliamentary rules.
3. The correct answer is E. Wetlands serve a number of purposes but not as landfill sites. Wetlands used as landfill sites would allow the release of pollutants into the environment.
4. The correct answer is D. Only choice D illustrates xeriscaping, which refers to a set of landscaping practices that conserve moisture and reduce the water needs of a landscape. Typically, shrubs that are native to Arizona would require less water than nonnative plants which are likely to be better suited for wetter environments.
5. The correct answer is choice A. Transpiration is the release of water vapor from living plants.
6. The correct answer is A. Soil structure is defined as the arrangement of soil particles.
7. The correct answer is choice B. Bloat is the visible distention of the belly of ruminants due to excess buildup of gases in the rumen.
8. The correct answer is C. Water drains rapidly out of light-textured soils, leaving the root zone dry. Moderate, frequent applications of water will provide more consistent moisture in the root zone than infrequent, heavy watering.
9. The correct answer is A. A grayish, milk-colored fluid is indicative of water in the hydraulic system.
10. The correct answer is D. The portable circular saw is the best power handtool for a job requiring a straight cut. Since the blade teeth move up through the wood, the lower-quality C side of the plywood should be the upper surface in order to avoid splinter damage to the more valuable A side.
11. The correct answer is A. Import trade barriers mean that some type of restriction will be put on imported products. With fewer products on the market, buyers bid up the price of the domestic product to assure their supply. The increase in prices and the producers' profit attracts new producers into the market and encourages increased output from current producers.
12. The correct answer is D. Changes in market price have a greater influence on returns than do most other inputs.
13. The best answer is C. Crop stubble helps to hold soil in place and thus reduce erosion. The other choices are recommended practices for reducing the effects of wind on the soil.
14. The correct answer is A. Without some type of predator, a pond can quickly become overpopulated with bream. Bass feed on bream and help keep their numbers under control.
15. The correct answer is E. Tillage is used for the purposes listed in choices A, B, C, and D. It cannot affect soil texture, which is based on the sizes of the mineral particles making up the soil.
16. The best answer is D. Of the products listed, only pork has several substitutes that consumers can buy if the price of pork becomes too high.
17. The correct answer is A. Natural seeding is the least expensive because it requires the least labor and machine costs. Natural seeding occurs in all but clear-cut harvesting.



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