Comprehensive Agriculture Pathway Test Blueprint

I.	**Agribusiness Systems**
A.	Describe agribusinesses and identify global opportunities in agribusiness systems.
1.	Define the types of ownership in an agribusiness.
2.	Identify significant markets in global agribusinesses systems.
B.	Evaluate record-keeping systems to assist in financial management of agribusiness.
1.	Recognize record-keeping and accounting principles.
2.	Use data to manage effectively an agribusiness (e.g., budget, cash flow, income and expense records, and balance sheets).
C.	Understand agriculture issues and important policies and laws in agriculture.
1.	Relate how agricultural laws and policies impact practices in agriculture industry.
D.	Identify principles of agriculture economics within an agriculture business.
1.	Apply the principles of supply and demand.
E.	Demonstrate knowledge of principles of agricultural marketing within an agricultural business.
1.	Illustrate the importance of a marketing chain.
2.	Describe the process of commodity marketing.
3.	Relate the segments of the agriculture industry and their distribution channels.
F.	Demonstrate knowledge of an agribusiness plan.
1.	List the key components of an agribusiness plan.
2.	Recognize the importance of goal setting in an agribusiness.
3.	Determine tax obligations regarding an agribusiness.
II.	**Animal Systems**
A.	Comprehend structure and significance of animal agriculture production systems.
1.	Evaluate the economic and global significance of animal systems.
2.	Describe the history of the animal agriculture industry.
3.	Communicate the process and movement of products from farm to table.
4.	Identify environmental issues relating to animal production.
B.	Comprehend the use of classification and taxonomic principles in animal agriculture.
1.	Recall the historical components of taxonomy in animal agriculture.
2.	Identify the general characteristics used to determine a breed (e.g., hair color, size, ears, etc.).
3.	Organize the components of taxonomy.

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C. Recognize the processes of animal growth and development.
1. Identify key features and terms related to the process of animal growth and development.
2. Explain cell structure and function.
3. Describe the role and components of the following systems: circulatory, endocrine, digestive, muscular, nervous, respiratory, skeletal, and reproductive.
D. Interpret the role of genetics and reproductive management in animal systems.
1. Define key terms such as inbred, purebred, line-breeding, cross-breeding, etc.
2. Summarize the principles of animal reproduction.
3. Demonstrate the fundamentals of inheritance.
4. Explore the process of animal selection and the role selection plays in improving animal systems.
5. Identify current reproductive technologies in an animal breeding program.
E. Recognize the components of animal health and wellness.
1. Identify signs of diseases, parasites, and physiological disorders in animals.
2. Explain the principle of immunity in animals.
3. List common nutrients involved in animal growth.
4. Interpret basic animal behaviors.
5. Diagnose general signs of health in animals.
6. Summarize environmental conditions on animal production.
7. Analyze the need for safe, efficient, and industry-recognized standards for handling of animals.
F. Understand basic principles of meat selection.
1. Define key terms associated with meat quality and selection.
2. Differentiate between wholesale and retail cuts.
III. Food Products and Processing
A. Describe the food products and processing industry.
1. Determine the meaning and importance of food products and processing.
2. Demonstrate knowledge of the history and global significance of food systems.
3. Identify common units of measure as they relate to food processing.
B. Identify world food needs.
1. Describe nutrition and the food plate (USDA's MyPlate).
2. Analyze the relationship between diet and population health.

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C. Recognize the importance of food safety, sanitation, and quality.
1. Apply principles of food safety and sanitation, including the principles of HACCP.
2. Identify the role of regulating agencies and their responsibilities.
3. Demonstrate understanding of food system procedures as protection from bioterrorism.
4. Identify factors that affect food quality and deterioration.
5. Analyze the role of food product grading to provide consistency in food quality.
6. Analyze the role of inspection in maintaining food safety and quality.
D. Apply knowledge of the science of food products and processing.
1. Identify the role of substances (i.e., water, lipids, proteins, carbohydrates, vitamins, minerals, and food additives) in food chemistry.
2. Identify the role of substances (i.e., water, lipids, proteins, carbohydrates, and food additives) in food processing physics.
E. Identify food production procedures.
1. Describe food preservation procedures.
2. Describe storage and handling procedures.
IV. Natural Resources/Environmental Science
A. Apply the scientific principles of an ecosystem.
1. Describe the organization of life in an ecological system.
2. Differentiate between habitats and niches.
3. Illustrate cycles found in given ecosystems.
4. Identify the aspects of riparian and wetland areas.
5. Describe the effects of diseases and invasive species on ecosystems.
6. Examine the role insects play in ecosystem balance and health.
B. Recognize the importance of navigation and the variety of navigational tools.
1. Identify key terms associated with legal land descriptions.
2. Interpret topographical maps, their features, and their uses.
3. Recognize the importance of the compass and orienteering.
4. Describe the functionality of global positioning systems.
C. Recognize the components of wildlife management.
1. Relate population dynamics to wildlife management.
2. Explain wildlife animal adaptations.
3. Discuss the effects of human interaction on wildlife areas.

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4. Explain the importance of species management and ethics.
D. Identify the aspects of resource management and their importance.
1. Differentiate between renewable and nonrenewable resources.
2. Define terms associated with the management techniques of forestry, soil, land use, water, aquatic/marine resources, and air quality.
3. Identify the importance and sources of energy resources.
4. Describe the process of making resource management decisions.
E. Comprehend the role of governing agencies involved in natural resources.
1. Generalize issues and regulations related to water, air, land, and outdoor recreation.
2. Evaluate the effect of waste and pollution on resources.
3. Defend the use of natural resources for outdoor recreation.
4. Interpret guidelines established for outdoor recreation areas.
V. Plant Systems
A. Comprehend structure and significance of plant agriculture systems.
1. Determine the meaning and importance of plant systems.
2. Compare and contrast traditional and nontraditional production trends in plant systems (e.g., conventional vs. organic, GMO vs. non-GMO).
3. Identify plant production industry segments.
B. Understand plant biology and apply principles in a plant systems production setting.
1. Use plant classification systems (e.g., taxonomy, plant use, and life cycle).
2. Identify aspects of plant growth, reproduction, and development.
3. Identify the anatomy and function of plant parts, including cell structure.
4. Apply knowledge of photosynthesis, transpiration, and respiration to plant production.
C. Describe processes and techniques of plant environmental management.
1. Comprehend the effect of the plant environment on growth and development, including water, air, light, temperature, and nutrients.
2. Implement an integrated pest management plan.
3. Identify safety practices and chemical control methods.
D. Identify the principles of field crop production.
1. Identify principles of crop management (e.g., planting, harvesting, and storage).
2. Identify basic irrigation systems.

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E. Understand principles necessary to effectively manage range sites.
1. Define key terms associated with range and pasture management.
F. Understand and apply principles of greenhouse management.
1. Identify greenhouse function, design, and structure.
2. Identify and compare greenhouse-glazing materials for various applications.
G. Comprehend practices for establishing and maintaining turf and landscape areas.
1. Identify key components of landscape industry (e.g., design, installation, maintenance, and irrigation).
H. Apply management practices for soils.
1. Describe the factors of soil formation.
2. Identify physical characteristics of soil and relate them to soil management.
3. Analyze soil surveys and soil test analysis.
4. Identify causes and control methods of soil erosion.

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VI. Power, Structural, and Technical Systems
A. Explain the relationship of agricultural mechanics and technical systems to the industry of agriculture.
1. List major events in the history and advancements of agricultural and technical systems.
2. Relate the efficiency of the global agricultural industry to the advancements of agricultural technologies.
B. Abide by safety procedures in the work environment.
1. Identify and use established OSHA workplace safety standards (e.g., work environment, personal safety equipment, material safety data sheets, and labels and signs).

2. Identify and locate emergency equipment (e.g., fire extinguishers, eye wash, etc.).
C. Identify, use, and store/maintain tools and materials.
1. Identify hand, power, and specialty tools and their uses.
2. Select proper tools for the job requirement.
D. Demonstrate skills in project completion.
1. Interpret blueprints and working drawings.
2. Create a bill of materials for an agricultural mechanics project.
3. Develop a procedure list and an order of fabrication.
4. Demonstrate measuring techniques used in project construction.
E. Use construction principles in agricultural structures.
1. Define basic terms used in construction.
2. Identify appropriate construction materials used in agricultural structures (e.g., lumber, hardware, masonry, and roofing materials).
F. Discover electrical principles, circuit theory, and their applications in practical settings.
1. Comprehend electrical safety.
2. Define terms and symbols associated with electrical power.
3. Distinguish between electrical conductors and resistors.
G. Understand plumbing skills.
1. Identify tools, equipment, and materials used in plumbing processes.
H. Understand power and mechanical systems for agriculture use.
1. Identify uses of power systems in agriculture.
2. Identify safety procedures related to motorized equipment.
3. Define key terms associated with power and mechanical systems.
I. Understand the welding process and correctly demonstrate welding processes.
1. Identify appropriate welding safety protocols.
2. Compare and contrast welding processes (e.g., SMAW, GMAW, and oxy-acetylene).
3. Identify key concepts associated with the different types of welding processes.