**Lecture 1**

1. What is the main purpose of the lecture?
2. To illustrate patterns of animal behavior
3. To explain why reductionism has replaced holism as a scientific method
4. To explain the origins and development of holism
5. To explain the difference between holism and reductionism

2. According to the professor, what assumption might a reductionist make when analyzing ant colonies?

1. Each ant colony as a single entity acts in its own interest
2. The colony's behavior can be understood by analyzing individual ants' behavior
3. Small ant colonies are more efficient than large ones
4. Individual ants know how much food the colony needs

3. What does the professor say about the way the ant communicates the location of food to one another?

1. lt is an example of how reductionists predict group behavior.
2. lt is a type of behavior that reductionists tend to ignore.
3. lt is an example of a behavior that supports only the holistic approach.
4. lt is a behavior that scientists have not observed in other insect species.

4. What does the professor imply about collective intelligence?

1. lt is an important factor in the reductionist analysis of ant colonies
2. lt is an important factor in ant survival.
3. lt is a phenomenon that occurs in few animal species.
4. lt is a phenomenon that is well understood with regard to ant colonies.

5. What misconception about ants does the professor believe the students might have?

1. Ants must live in a colony to survive.
2. Ants have no way to communicate with one another.
3. The queen is the leader of the colony.
4. The task performed by an ant does not vary during its lifetime.

6. What ant behavior does the professor mention that supports the holistic approach?

1. Ants from one colony find food in a different colony.
2. Ants imitate the behavior of the leader in the colony.
3. Ants switch from taking care of the nest to food-gathering.
4. Ants work together to protect the queen.

**LECTURE 2**

1. What is the main purpose of the lecture?

1. To illustrate a concept in architectural sociology
2. To explain the original uses of front porches in the United States
3. To describe the relationship between technology and architectural sociology
4. To show that a sociological term can have more than one definition

2. According to the lecture, what is true about push and pull forces?

1. They refer only to front porches.
2. They help explain the decline of the front porch's popularity.
3. Their combined effects often balance each other out.
4. They were terms originally used only in architecture.

3. According to the lecture, what were two effects of the automobile's increased popularity?

Click on 2 answers.

1. Many houses were built without a front porch.
2. People traveled more on the weekends.
3. The amount of time people had to socialize with neighbors was reduced.
4. The time spent sitting on the front porch became less pleasing.

4. What does the professor imply about backyards in the United States?

1. They can be seen as a pull force.
2. They are a better place to socialize with neighbors than the front porch.
3. Their reputation as being safer than front porches is unfounded.
4. They have always been as popular as front porches.

5. What is the professor's attitude toward the comeback of the front porch?

1. She believes the attraction of front porches will overcome both push and pull forces.
2. She is confident that front porches will be used to create strong communities.
3. She doubts front porches will be used as often as they were in the past.
4. She is afraid the trend will affect the popularity of backyards.

6. What does the professor imply when she says this:

1. She wants the student to continue with his explanation.
2. She is surprised that the student is familiar with the two terms.
3. The student is incorrect about pull forces.
4. The student does not fully understand the concept of push forces.

**Reading 1**

**Water Management in Early Agriculture**

Paragraph 1

As the first cities formed in Mesopotamia in the Middle East, probably around 3000 B.C., it became necessarily to provide food for larger populations, and thus to find ways of increasing agricultural production. This, in turn, led to the problem of obtaining sufficient water.

Paragraph 2

Irrigation must have started on a small scale with rather simple constructions, but as its value became apparent, more effort was invested in new construction to divert more water into the canals and to extend the canal system to reach greater areas of potential farmland. Because of changing water levels and clogging by waterborne particles, canals and their intakes required additional labor to maintain, besides the normal labor required to guide water from field to field. Beyond this, some personnel had to be devoted to making decisions about the allocation of available water among the users and ensuring that these directions were carried out. With irrigation water also came potential problems, the most obvious being the susceptibility of low-lying farmlands to disastrous flooding and the longer-term problem of salinization (elevated levels of salt in the soil). To combat flooding from rivers, people from early historic times until today have constructed protective levees (raised barriers of earth) between the river and the settlement or fields to be protected. This, of course, is effective up to a certain level of flooding but changes the basic water patterns of the area and can multiply the damage when the flood level exceeds the height of the levee.

1. All of the following are mentioned in paragraph 2 as operations involved in the Mesopotamian irrigation system EXCEPT

A. determining how much irrigation water should be distributed to various farmers

1. widening existing canals so they could hold more water
2. removing undesirable materials from the intakes of irrigation canals
3. building new canals so irrigation water could be transported to distant areas

2. According to paragraph 2, protective levees can have which of the following disadvantages?

A. They can greatly increase the destruction caused by floodwaters when floodwaters are higher than the levee.

B. They can fail even when the flood level remains below the height of the levee.

C. They can lead over time to a serious salinization problem.

D. They can cause damaging floods to occur more frequently by changing basic water patterns.

3. Paragraph 2 suggests that irrigation increased the likelihood of destructive floods because

A. irrigated fields were often in locations that tended to flood naturally

1. the canal intakes for irrigation water often did not work
2. most irrigation canals were too narrow and thus overflowed
3. levees built to protect irrigation systems required maintenance

4. The word “potential” in the passage is closet in meaning to

A. serious

B. basic

C. new

D. possible

Paragraph 3

Salinization is caused by an accumulation of salt in the soil near its surface. This salt is carried by river water from the sedimentary rocks in the mountains and deposited on the Mesopotamian fields during natural flooding or purposeful irrigation. Evaporation of water sitting on the surface in hot climates is rapid, concentrating the salts in the remaining water that then descends through the soil to the underlying water table. In southern Mesopotamia, for example, the natural water table comes to within roughly six feet of the surface. Conditions of excessive irrigation bring the water table to eighteen inches, and water can rise further to the root zone, where the high concentration of salts would kill most plants.

5. The word “accumulation” in the passage is closet in meaning to

A. distribution

1. mixture
2. buildup
3. exchange

6. According to paragraph 3, excessive irrigation can destroy crops by

A. raising salty water to the level of the roots

1. forcing the roots of plants to grow close to the surface
2. taking the place of some natural flooding
3. creating salt deposits on the surface of the soil

Paragraph 4

Solutions for salinization were not as straightforward as for flooding, but even in ancient times it was understood that the deleterious effects of salinization could be minimized by removing harmful elements through leaching the fields with additional fresh water, digging deep wells to lower the water table, or instituting a system of leaving fields uncultivated. The first two cures would have required considerable labor, and the third solution would have led to diminished productivity, not often viewed as a likely decision in periods of growing population. An effective irrigation system laid the foundation for many of the world’s early civilizations, but it also required a great deal of labor input.

7. The word “straightforward” in the passage is closet in meaning to

A. successful

1. simple
2. common
3. complex

8. According to paragraph 4, which of the following is true of the more-likely-used solutions to the problem of salinization?

A. They resulted in a decrease in the amount of food that was produced.

1. They succeeded only on areas where the natural water table was especially low.
2. They often demanded much time and effort on the part of their users.
3. They often led to other technological advances.

Paragraph 5

Growing agrarian societies often tried to meet their food-producing needs by farming less-desirable hill slopes surrounding the favored low-lying valley bottoms. Since bringing irrigation water to a hill slope is usually impractical, the key is effective utilization of rainfall. Rainfall either soaks into the soil or runs off of it due to gravity. A soil that is deep, well-structured, and covered by protective vegetation and much will normally absorb almost all of the rain that falls on it, provided that the slope is not too steep. However, soils that have lost their vegetative cover and surface mulch will absorb much less, with almost half the water being carried away by runoff in more extreme conditions. This runoff carries with it topsoil particles, nutrients, and humus (decayed vegetable matter) that are concentrated in the topsoil. The loss of this material reduces the thickness of the rooting zone and its capacity to absorb moisture for crop needs.

9. According to paragraph 5, which of the following was the main challenge faced by early agricultural societies that wanted to grow crops on hill slopes?

A. Getting enough irrigation water to the hill slope

1. Growing crops without disturbing the natural vegetative cover
2. Retaining rainwater and thus preventing excessive runoff
3. Identifying crops that do not need a thick rooting zone

10. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

A. However, soils that are unable to absorb much water experience massive runoff during heavy rains.

1. However, where neither protective vegetation nor mulch covers the soil, much rainwater can be lost to runoff.
2. However, on extremely steep slopes there is no vegetative cover or mulch to prevent runoff.
3. However, in more extreme conditions water that runs off can carry away the vegetative cover and the surface mulch

11. The word “impractical” in the passage is closet in meaning to

A. unnecessary

1. unsafe
2. unrealistic
3. unpredictable

Paragraph 6

The most direct solution to this problem of slope runoff was to lay lines of stones along the contours of the slope and hence, perpendicular to the probable flow of water and sediment. These stones could then act as small dams, slowing the downhill flow of water and allowing more water to infiltrate and soil particles to collect behind the dam. This provided a buildup of sediments for plants and improved the landscape’s water-retention properties.

12. Which of the following best describes how paragraph 6 relates to paragraph 5?

A. Paragraph 6 describes how the solution to a problem identified in paragraph 5 created unexpected benefits.

1. Paragraph 6 compares two possible solutions to a problem described in paragraph 5.
2. Paragraph 6 explains how the attempt to solve a problem introduced in paragraph 5 led to more difficult problems.
3. Paragraph 6 explains one way in which a difficulty described in paragraph 5 was resolved.

Paragraph 3

Salinization is caused by an accumulation of salt in the soil near its surface. ■This salt is carried by river water from the sedimentary rocks in the mountains and deposited on the Mesopotamian fields during natural flooding or purposeful irrigation. Evaporation of water sitting on the surface in hot climates is rapid, concentrating the salts in the remaining water that then descends through the soil to the underlying water table. ■In southern Mesopotamia, for example, the natural water table comes to within roughly six feet of the surface. ■Conditions of excessive irrigation bring the water table to eighteen inches, and water can rise further to the root zone, where the high concentration of salts would kill most plants.■

1. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**Natural flooding, however, does not raise the water table nearly as much and thus does not have these sorts of consequences.**

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.



Drag your choices to the spaces where they belong. To review the passage, click on **View Text**.

|  |
| --- |
| As cities emerged and populations grew in Mesopotamia, more water had to be provided to increase agricultural production.  ●  ●  ● |

1. Early on, irrigation was recognized as a valuable practice, even though it was labor-intensive and brought with it problems of salinization and damaging floods.
2. Levees were the major means of protection against flooding, while leaching with added water and lowering the water table helped to control salinization.
3. Because of the enormous amount of labor involved in irrigating fields, farming was increasingly moved to hill slopes, where irrigation systems required less labor.
4. The mountain water that was used to irrigate farmland in Mesopotamia was exceptionally high in salt, causing rapid salinization of the soil.
5. The practice of leaving fields uncultivated periodically was used primarily by societies lacking a large labor force.
6. As cultivation was extended to hill slopes, methods were developed to better retain water from rainfall for crops growing on hillsides.

**Reading 2**

### Pest Control

Paragraph 1

Many pest species that are native to North America, such as white-footed mice and ground moles, are more nuisance pests and are usually regulated by native predators and parasites. This situation is not true for nonindigenous pests in North America, such as brown rats and cockroaches. After centuries, it is evident that these pests cannot be eradicated. The best that can be done is to introduce pest control measures that will control their numbers.

1. The word ”evident” in the passage is closet in meaning to

A. surprising

1. obvious
2. believed
3. frustrating

2. What can be inferred from paragraph 1 about nonindigenous pests such as brown rats and cockroaches?

A. Attempts limit the size of their populations have been unsuccessful.

1. They have inhabited North America longer than white-footed mice and ground moles.
2. Their numbers cannot usually be controlled by native predators and parasites.
3. They do not pose as many problems for humans as do white-footed mice and ground moles. Paragraph1 is marked with an arrow [→]

Paragraph 2

And ancient and popular means of pest control is chemical. For example, the Sumerians used sulfur to combat crop pests, and by the early 1800s such chemicals as arsenic were used to combat insect and fungal pests.

Paragraph 3

However, chemical control has its dark side. Chemical pesticides have many unintended consequences through their effects not just on the target species but on a wide array of nontarget species as well, often eliminating them and thereby upsetting the existing food webs, especially through the suppression of native predator species. The surviving pests then rebound in greater numbers than ever.

Paragraph 4

Perhaps more insidious is that a pesticide loses its effectiveness because the target species evolves resistance to it. As one pesticide replaces another, the pests acquire a resistance to them all. Some species, notably certain mosquitoes, have overcome the toxic effects of every pesticide to which they have been exposed. Insect pests need not only about five years to evolve pesticide resistance, their predators do so much more slowly. So after the pest develops resistance, pest outbreaks become even more disastrous.

3. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

A. Chemical pesticides often eliminate species other than the intended target and thereby upset food webs, especially by suppressing native predator species.

1. Native predator species are often eliminated by chemical pesticides that are intended to have consequences for other pests.
2. Chemical pesticides upset existing food webs by eliminating native species and by increasing the number of nonnative predators.
3. The effects of chemical pesticides on a wide array of food webs and native predators are often unintended.

Paragraph 5

Farmer long ago observed that enemies of pests act as controls. As early as 300 C.E., the Chinese were introducing predatory ants into their citrus orchards to control leaf-eating caterpillars. Insect pests have their own array of enemies in their native habitats. When an animal or plant is introduced, intentionally or unintentionally, into a new habitat outside of its natural range, it may adapt to the new environment and leave its enemies behind. Freed from predation and finding and abundance of resources, the species quickly becomes a pest or a weed. This fact had led to the search for natural enemies to introduce into populations of pests to reduce their populations.

4. In paragraph 5, the author mentions the Chinese use of predatory ants to control pests in order to

A. support the claim that using pests’ natural enemies is a pest control technique that has been known for a long time

1. show that pests’ enemies introduced unintentionally have proved more dangerous than those introduced intentionally
2. help explain that when pests’ enemies find enough resources, they can become pests themselves
3. argue that a pest insect in its native habitat always has a predator in that habitat

5. According to paragraph 5, why is a species likely to become a pest when it is introduced into a new habitat?

A. The species becomes more effective at escaping from its enemies.

1. The species has no natural predators in its new habitat.
2. The species adapts to habitats outside its natural range.
3. The species does not have to compete for resources with other plants and animals.

Paragraph 6

Because the serious pest is usually a nonnative species, biological control involves the introduction of a nonindigenous predator or parasite to control the pest. The introduction of the cactus-eating moth, a native of Argentina, into Australia effectively reduced and controlled the rapidly spreading prickly pear, which had been introduced into Australia in 1901.

Paragraph 7

But biological control, like chemical control, can backfire. The success of the cactus-feeding moth in controlling prickly pear in Australia encouraged its introduction to several West Indies islands to control prickly pear there. In time the moth made its way to Florida, where it now threatens the existence of several native prickly pear species. The moral is that although using nonindigenous predators as biological controls can be effective, these species possess their own inherent dangers that must be assessed before they are released. They, too, can become alien invaders.

6. The word ”assessed” in the passage is closet in meaning to

1. minimized
2. identified
3. evaluated
4. dealt with

7. The word ”moral” in the passage is closet in meaning to

1. situation
2. argument
3. fact
4. lesson

Paragraph 6

Because the serious pest is usually a nonnative species, biological control involves the introduction of a nonindigenous predator or parasite to control the pest. The introduction of the cactus-eating moth, a native of Argentina, into Australia effectively reduced and controlled the rapidly spreading prickly pear, which had been introduced into Australia in 1901.

8. In paragraph 6, the discussion of the cactus-eating moth and the prickly pear in Australia illustrates which of the following about biological control?

1. Nonnative pests cannot be controlled through biological means once they have begun to spread rapidly.
2. A nonnative pest can sometimes be controlled by the introduction of a nonnative predator.
3. A nonindigenous pest can be controlled only by a predator that comes from the same original habitat as the pest.
4. A native pest can be controlled by either a native or a nonnative predator.

Paragraph 7

But biological control, like chemical control, can backfire. The success of the cactus-feeding moth in controlling prickly pear in Australia encouraged its introduction to several West Indies islands to control prickly pear there. In time the moth made its way to Florida, where it now threatens the existence of several native prickly pear species. The moral is that although using nonindigenous predators as biological controls can be effective, these species possess their own inherent dangers that must be assessed before they are released. They, too, can become alien invaders.

9. The author discusses the cactus-feeding moth in Florida in order to

1. explain why the prickly pear species that are native to Florida have no indigenous predators
2. show how a predator spreads more rapidly in alien environments than it does in its native environment
3. indicate that a single nonindigenous predator species can be effective against a wide array of nonindigenous pest species
4. argue that controlling pests with nonindigenous predators can have unintended consequences

Paragraph 8

Because chemical, biological, and other methods used individually are obviously not the solution to pest control, entomologists have developed a holistic approach to pest control, called integrated pest management (IPM). IPM considers the biological, ecological, economic, social, and even aesthetic aspects of pest control and employs a variety of techniques. The objective of IPM is to control the pest not at the time a major outbreak but at an earlier time, when the size of the population is easier to control. The approach is to rely first on natural mortality caused by weather and natural enemies, with as little disruption of the natural system as possible, and to use other methods only if they are needed to hold the pest below the economic injury level.

10. According to paragraph 8, each of the following is a principle of integrated pest management EXCEPT

1. to control pest populations before a major outbreak occurs
2. to first determine if weather and natural enemies are able to control a pest
3. to increase the populations of the pest’s natural enemies during certain seasons of the year
4. to use artificial methods of pest control only when pests begin to cause economic injury Paragraph8 is marked with an arrow [→]

Paragraph 9

Successful IPM requires the knowledge of the population ecology of each pest and its associated species and the dynamics of the host species. It involves considerable field work monitoring the pest species and its natural enemies by such techniques as egg counts and the trapping of adults to acquire information to determine the necessity, timing, and intensity of control measures. These control measures must be adjusted to the situation, which may vary from one location to another. The intensity of control or no control is based on the degree of pest damage that can be tolerated, the costs of control, and the benefits to be derived.

11. The word ”considerable” in the passage is closet in meaning to

1. tiring
2. a large amount of
3. complicated
4. carefully planned

12. According to paragraph 9, each of the following helps to determine how intensely to apply pest control measures EXCEPT

1. how much pest damage can be tolerated
2. the cost of pest control measures
3. what can be gained through pest control measures
4. whether pest control measures have been used before

Paragraph9 is marked with an arrow [→]

Paragraph 4

Perhaps more insidious is that a pesticide loses its effectiveness because the target species evolves resistance to it. As one pesticide replaces another, the pests acquire a resistance to them all. ■Some species, notably certain mosquitoes, have overcome the toxic effects of every pesticide to which they have been exposed. ■Insect pests need not only about five years to evolve pesticide resistance, their predators do so much more slowly. ■So after the pest develops resistance, pest outbreaks become even more disastrous.■

1. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**And the damage will continue until a new pesticide is developed, at which time the cycle will begin anew.**

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.



Drag your choices to the spaces where they belong. To review the passage, click on **View Text**.

**Pest control measures vary in their approach and overall degree of success.**

●

●

●

**Answer Choices**

1. Biological methods of pest control were introduced by the ancient Sumerians, and chemical control was first used in ancient China.

B. Biological control, for example, the use of natural enemies of pests, has been effective at regulating nonnative pests, though it can also threaten the existence of native species.

C. Integrated pest management is a holistic approach that has been successful at controlling major pest outbreaks in locations where chemical and biological control have already failed.

D. Pesticides are limited in their usefulness because pests quickly become resistant to them, and because they can harm species for which they were not intended.

E. The success of biological and chemical approaches to pest control has been difficult to measure because situations vary significantly from one location to another.

F. Integrated pest management, an approach that consider biological, ecological, economic, and aesthetic aspects of pest control, uses a variety of techniques adjusted to specific situations.