Standard 1 Objective 3 Describe how interactions among organisms and their environment help shape ecosystems

37 Question(s)
Test ID: 2142483947

Name:_____ Date:_____

1) What happens when human populations increase?

A. species diversity has decreased
B. ecosystem habitat has been lost
C. non-native species have been introduced
D. ecosystems have become simplified
E. all of these have occurred

2) A theory differs from a hypothesis in that a theory is

A. A guess that can be tested by experiments
B. A generalization that unifies many scientific observations
C. An experiment designed to provide evidence for a prediction
D. A scientific fact that needs no supporting evidence

3) A student observed that the lawn at the school is beginning to grow yellow patches. Which of the following should be done before writing a hypothesis that can test for the cause of the problem?

A. Write an evaluation as to why the lawn is yellow
B. Make a graph illustrating student use of the lawn during PE and lunch
C. Collect information about watering procedures and check for insects
D. Write your conclusion as to why the lawn is yellow

4) Which of the following is an environmental factor that causes alteration in genes and chromosomes?

A. alcohol abuse
B. electrophoresis
C. radiation
D. direct injection
E. plasmids

5) The purpose of including a control in a scientific investigation is to provide

A. A basis for comparison
B. A correction for experimental errors
C. A preliminary trial of the methods
D. An opportunity for repetition of the experiment

6) Two scientists decided to study the reproduction of swallowtail butterflies.

Scientist #1 collected one female and placed her in a cage with its larval food plant. He observed it lay several eggs which hatched, grew, molted, eventually pupating and emerging into adult butterflies. He recorded his observations each day including measuring the size of the larva by weight and length. From this information, he wrote a description of the life cycle of the swallowtail butterfly.

Scientist #2 collected several females and mated some to members of their own population, some to members of a neighboring population, and some to a different but closely related species. She wrote the following hypothesis: "The closer the relationship the greater number of viable and fertile offspring will be produced." She carried out the experiment, recorded and analyzed her results and wrote her conclusions.

Which of the following statements is correct?

A. Only scientist #2 followed proper scientific procedures
B. Only scientist #1 followed proper scientific procedures
C. Neither scientist followed proper scientific procedures
D. Both scientists followed proper scientific procedures

7) You have been asked to take soil samples in a farmer's field to test the pH level. You measure a pH level of 4.5 at the stables, 5.6 one hundred yards away from the stables, and 6.8 at the stream 1000 yards away from the stables. The pH level is roughly the same running in the other direction from the stables. From this information, what can you infer?

A. the cause of the acidic soil comes from the stables

B. it is doubtful that any fish are alive in the stream
C. the cause of the acidic soil comes from the stream
D. it is not likely that the farmer will be able to grow crops in the field
E. the farmer has kept only horses in the stable

8) A pond contains some bluegill fish, which prey upon the minnow *Gambusia*. So far as we know, *Gambusia* is the only species of minnow in that water. If the bluegill population suddenly disappeared, what would likely happen to the population of *Gambusia* within the next year?

A. it would increase
B. it would decrease
C. it would remain the same
D. it would disappear

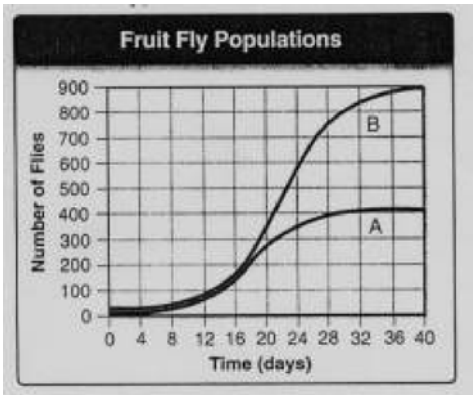
9) If a pond is totally drained for one summer, which trophic or feeding level will be the first to reappear in the newly filled body of water?

A. second carnivore
B. first carnivore
C. herbivore
D. producer

10) A pond is overgrown with algae. One possible method of controlling the algae calls for the introduction of a herbicide into the water. But the herbicide is known to accumulate without breaking down in fatty tissues of animals. What will be the effect of this chemical on the food chain as it enters the producer level and then moves upward through the consumer levels?

A. it would decrease in concentration
B. it would increase in concentration
C. it would remain the same in concentration
D. it would have no effect on the consumer levels

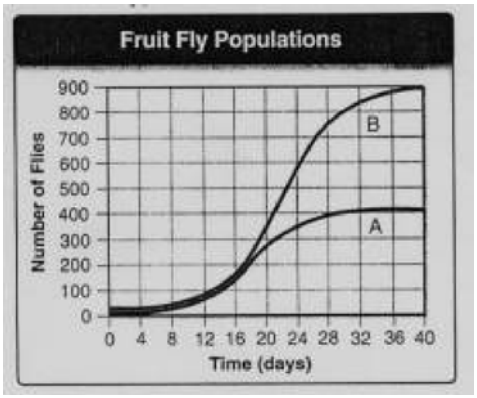
11) A researcher investigated two groups of fruit flies. Population A was kept in a 0.5-L container. Population B was kept in a 1.0-L container. Below is a graph showing the growth of these two populations.



Which of the following is a logical inference based on the contents of the graph?

A. The flies in Group B were healthier than those in Group A
B. A fly population with more available space will grow larger than a population with less space
C. If Group B were observed for 40 more days, the size of the population would double
D. In 40 days, the sizes of both populations would decrease at the same rate

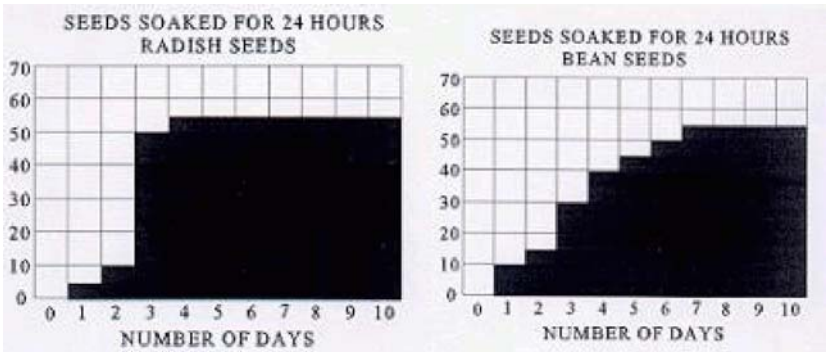
12) A researcher investigated two groups of fruit flies. Population A was kept in a 0.5-L container. Population B was kept in a 1.0-L container. Below is a graph showing the growth of these two populations.



What is the manipulated variable?

A. The number of flies
B. The time in days
C. The number of groups studied
D. The size of the containers

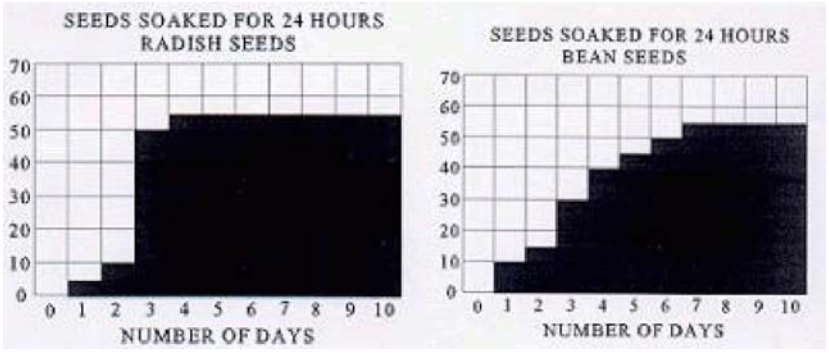
13) An experiment was done on the germination of seeds. Using the data graphed below, answer the questions that follow.



If you were to advise someone about when to expect most soaked radish seeds of this variety to germinate, you should say:

A. at least 5 days after planting
B. 3 days after planting
C. 2 days after planting
D. 1 day after planting

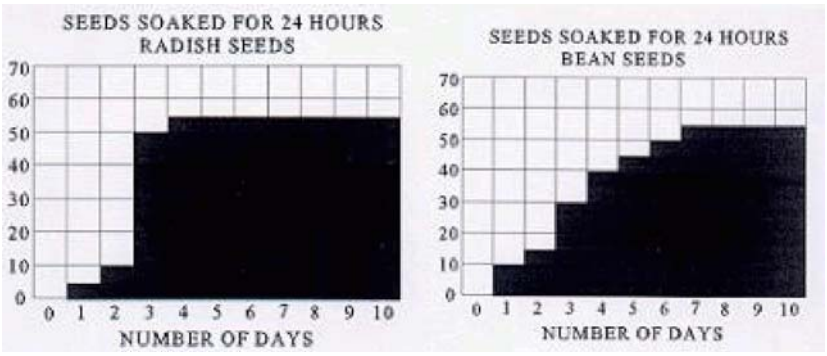
14) An experiment was done on the germination of seeds. Using the data graphed below, answer the questions that follow.



A generalization that can be made about the data is that:

A. 24 hours is the best soaking period for radish and bean seed
B. Radish seeds germinate more rapidly than bean seeds
C. The bean seeds had a steady rate of germination
D. Most bean seeds of this kind require 6 days to germinate

15) An experiment was done on the germination of seeds. Using the data graphed below, answer the questions that follow.



If you wished to test the hypothesis that atomic radiation slows down the rate of radish seed germination, which of the following experimental designs would be best to use?

A. Use 25 radish seeds and 25 bean seeds and compare results
B. Plant 50 irradiated seeds and note the effects of the radiation
C. Plant 25 irradiated seeds and 25 normal seeds at the same time and compare results
D. Plant 25 normal seeds, note results; then plant 25 irradiated seeds, compare results

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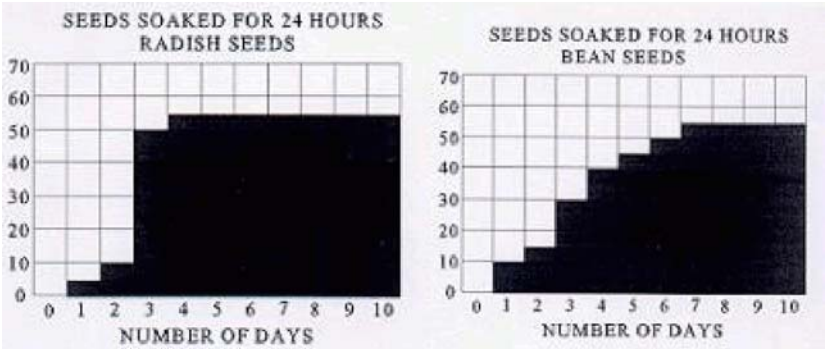

Which factor is the variable in this experiment?

A. The period of the soaking
B. The dishes that the seeds were planted in
C. The rate of germination
D. The kind of seed used

17) Your class assignment is to learn about the interactions of biotic factors in an ecosystem by conducting an experiment.

On the first day, you created two miniature ecosystems in two jars:

Jar 1 -- 20 seedlings in soil, 40 aphids (seedling eating bugs), water as needed
Jar 2 -- 20 seedlings in soil, 40 aphids, 3 ladybugs, water as needed

The daily aphid count was as follows:

Day 2	Jar 1	40	Jar 2	34
Day 3	Jar 1	39	Jar 2	28
Day 4	Jar 1	39	Jar 2	23
Day 5	Jar 1	37	Jar 2	18

What would be a good hypothesis for this experiment?

A. If I use an aphid predator like ladybugs, then the number of aphids in the jar will decrease.
B. If I put the seedlings into fertilized soil, then they will grow two inches each week
C. If I use ladybugs in the jar, the number of seedlings will increase tenfold
D. If I use aphids in the jar, the seedlings will die

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Why is an experiment with a control used in testing the hypothesis?

A. It increases the risk of trial and error methods
B. It tests many variables at one time
C. It reduces the chances your design methods will be copied
D. It helps insure results can be compared to a standard

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What is the control?

A. Jar 1
B. Jar 2
C. Aphids
D. Seedlings

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What kind of graph would best summarize the data?

A. line graph
B. bar graph
C. scatter plot
D. pie chart

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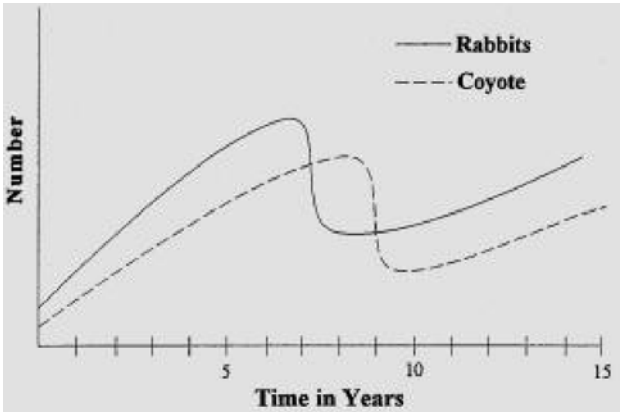
What is the dependent variable?

A. time
B. number of seedlings
C. number of ladybugs
D. number of aphids

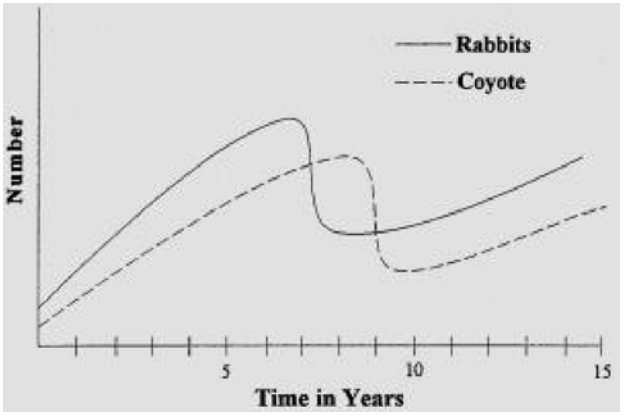
22) Use this graph to answer the following question.



What influences the population of the coyotes?

A. the number of rabbits
B. the number of offspring
C. the coldness of the winter
D. the number of hawks

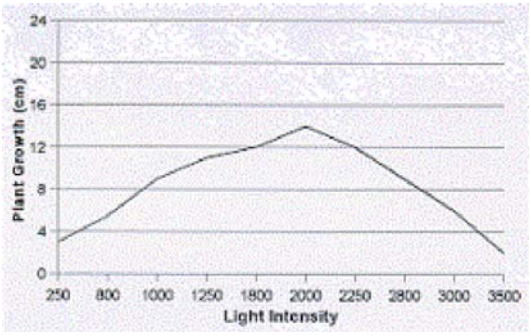
23) Use this graph to answer the following question.



What relationship do the rabbit and coyote populations have?

A. they do not appear to be related
B. when one goes up the other goes up also
C. the coyote population follows the rabbit population
D. the rabbit population follows the coyote population

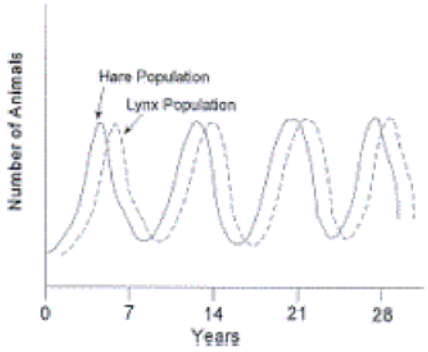
24) The following graph shows the relationship of plant growth to light intensity.



The relationship between light intensity and plant growth can be stated:

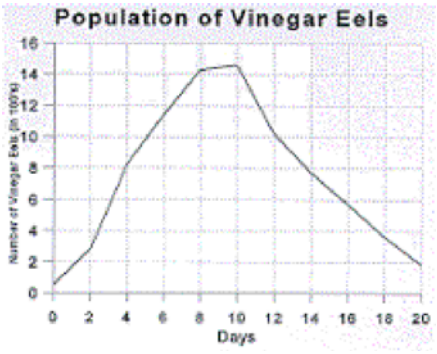
A. As light intensity increases, plant growth increases
B. As plant growth increases, light intensity increases to a point, then decreases
C. As light intensity increases, plant growth increases to a point, then decreases
D. As plant growth increases, light intensity increases

25) Study the above graph. Then assume that the research problem focuses on what factors are affecting the population of lynx. Which hypothesis below best fits the problem?



A. A reduction in the hare population results in a reduction in the lynx population
B. A reduction in the lynx population will result in an eventual reduction of hare population
C. The hare population is not affected by the lynx population
D. Lynx enemies are a more important determiner of lynx population

26) Here is a graph showing the population of vinegar eels over a twenty day period. The graph was plotted from one of the tables of data shown below the graph. Select the data table that was used to plot the graph of vinegar eels.



A.

Table A											
Time in days	0	1	2	3	4	5	6	7	8	9	10
Population of Vinegar Eels	0.5	1	2.8	6	8.2	9.8	11.4	13	14.3	14.8	14.6

B.

Table B											
Time in days	0	2	4	6	8	10	12	14	16	18	20
Population of Vinegar Eels	50	280	820	1140	1430	1460	1020	770	570	360	180

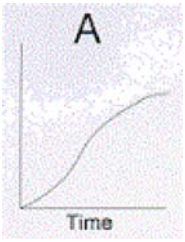
C.

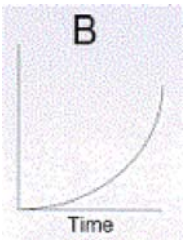
Table C											
Time in days	0	1	2	3	4	15	16	14	18	19	20
Population of Vinegar Eels	5	10	28	60	82	67	57	47	36	26	18

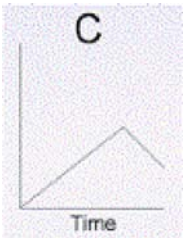
D.

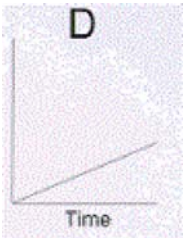
Table D											
Time in days	0	2	4	6	8	10	12	14	16	18	20
Population of Vinegar Eels	5	28	82	114	143	146	102	77	57	36	18

27) Which of the following graphs shows a steady rate of increase?

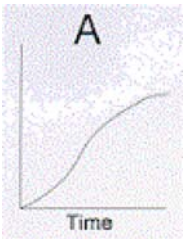
A. 

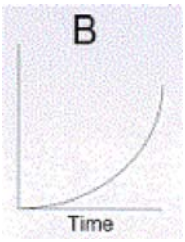
B. 

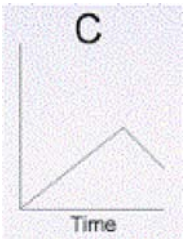
C. 

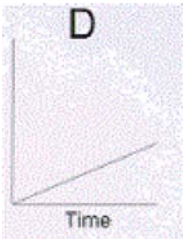
D. 

28) Which of the following graphs shows a population growth that is slow at first and then increases rapidly?

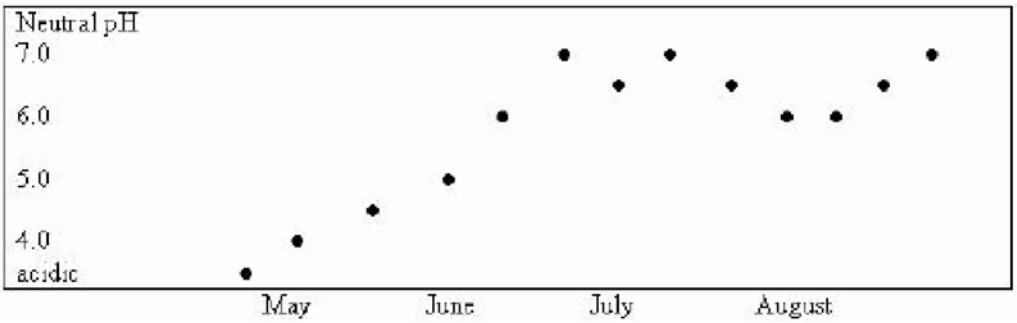
A. 

B. 

C. 

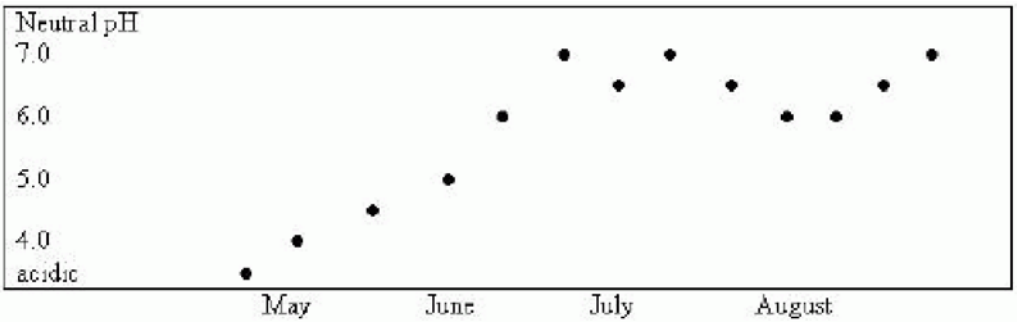
D. 

29) The high mountain Colorado salamander seems to be disappearing. Scientists did research to determine the cause. It is known that salamanders absorb many chemicals through their moist skin. Salamander eggs generally develop between late May and mid-June and prefer a slightly acidic to slightly basic environment to grow. It is known that many chemicals from Arizona factories and California smog are blown to Colorado by the wind. The graph shows water samples taken from Colorado ponds.What conclusion can be made from the evidence provided?



A. The temperature of the water is too cold for the salamander eggs to develop because of the snow runoff.
B. The temperature of the water is too warm for the salamander eggs to develop because of the high altitude and hot sun.
C. The pH of the water is probably too acidic in May for the salamander eggs to develop.
D. The pH of the water is probably too basic in May for the salamander eggs to develop.

30) The high mountain Colorado salamander seems to be disappearing. Scientists did research to determine the cause. It is known that salamanders absorb many chemicals through their moist skin. Salamander eggs generally develop between late May and mid-June and prefer a slightly acidic to slightly basic environment to grow. It is also known that many chemical compounds from Arizona factories and California smog are blown to Colorado by the wind. The graph shows data from water samples taken from Colorado ponds.Why can scientists conclude that chemicals in the air are responsible for the conditions in the water?



A. The low pH readings of the water during the early part of the summer.
B. The high pH readings of the water during the early part of the summer.
C. The neutral pH reading of the water during the early part of the summer.
D. The actual count of the salamander eggs seem to be responsible for changing the temperature of the water.

31) The high mountain Colorado salamander seems to be disappearing. Scientists did research to determine the cause. It is known that salamanders absorb many chemicals through their moist skin. Salamander eggs generally develop between late May and mid-June and prefer a slightly acidic to slightly basic environment to grow. It is known that many chemicals from Arizona factories and California smog are blown to Colorado by the wind. The graph shows data from water samples taken from Colorado ponds.Which statement is the best inference as to what occurred in the water?

A. The amount of UV radiation increased in the atmosphere which decreased the water temperature.
B. The number of microorganisms living in the water increased and killed the eggs by infecting them.
C. The salamander eggs were eaten by larger predators found in the water and simply became part of the food chain.
D. Wind carried pollution from the western states which in turn caused the acid rain and the acidic water.

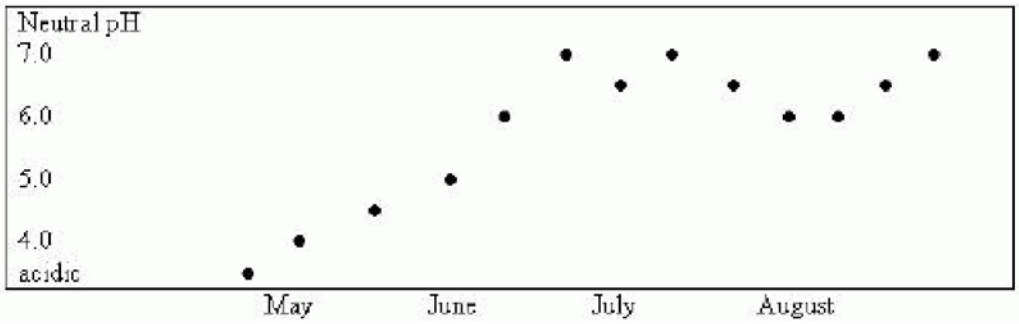
32) Ozone is a layer of gas in the upper atmosphere which acts as a protective shield for Earth and its inhabitants. Scientists estimate for every one percent drop in the concentration of ozone, in the upper atmosphere, there will be a six percent increase in the incidence of skin cancer. How does this scientific knowledge impact human life?

A. There is no impact on human life since humans don’t have to worry about skin cancer until the ozone is completely gone.
B. People are encouraged to limit exposure to the sun and use sunscreens with high protective numbers to reduce their risk of skin cancer.
C. Harmful bacteria will be destroyed from the ultraviolet light, this will reduce the amount of disease in humans and animals.
D. Scientists can tell people which drugs to take to reduce the risk of skin cancer.

33) Kudzu, a plant from Asia, is currently despised for its aggressive growth in the southeastern part of the United States. It was brought to this country for its beautiful flowers and ability to grow quickly and prevent soil erosion and provide feed for animals. Kudzu's rapid growth also means it strangles native plants as it fills open spaces and forests. In the 1970s, the U.S. Department of Agriculture listed Kudzu as a weed and implemented programs to destroy it. Why has science changed its view of Kudzu?

A. Decisions change. In the past, the best data available to scientists supported the use of Kudzu but today new data supports treating it as a weed.
B. The current theory of plant classification has proven that Kudzu should have been treated like a weed from the very beginning.
C. There is no evidence that the introduction of non-native plants will have any significant impact on native plants and kudzu should not be viewed as a weed.
D. Our political ties with Asia have changed. Now, all plants not grown traditionally and natively in this country will be viewed as weeds.

34) The high mountain Colorado salamander seems to be disappearing. Scientists did research to determine the cause. It is known that salamanders absorb many chemicals through their moist skin. Salamander eggs generally develop between late May and mid-June and prefer a slightly acidic to slightly basic environment to grow. It is known that many chemicals from Arizona factories and California smog are blown to Colorado by the wind. The graph shows data from water samples taken from Colorado ponds.What data provides evidence that air pollution is partly responsible for the declining salamander population?



A. High winds from the southwest and factory emissions.
B. The dip in pH during the month of August.
C. The neutral pH found in June and July.
D. Weak winds from the southeast and factor emissions.

35) Kudzu, a plant from Asia, is currently disliked for its aggressive growth in the southeastern part of the United States. It was first brought to this country for its beautiful flowers and ability to grow quickly to prevent soil erosion and to provide feed for animals. However, Kudzu's rapid growth allows it to strangle native plants as it fills open spaces and forests. In the 1970s, the U.S. Department of Agriculture listed Kudzu as a weed and implemented programs to destroy it. Why have people changed their view of Kudzu?

A. In the past, the best data available to people supported the use of Kudzu but today new data on the environmental effect supports treating it as a weed.
B. The current plant classification has proven Kudzu should have been treated as a weed from the very beginning.
C. There is no evidence that the introduction of non-native plants will have a significant impact on native plants and kudzu should not be treated as a weed.
D. Our political ties with Asia have changed. Now, many plants arriving from out of the country will be viewed as weeds.

36) Ozone, a layer of gas in the upper atmosphere, acts as a protective shield for the earth and its inhabitants. Scientists have been able to detect a hole in the ozone layer over the Arctic. How has technology influenced our ability to study the ozone?

A. It verifies plant species in an area allowing scientists to determine the amount of light filtering through the ozone.
B. Composition accumulation allows scientists to predict trends in global warming.
C. Satellite imaging from space has allowed scientists to visualize the ozone and its amounts from space.
D. People who view planets and stars in space with a telescope can tell that the ozone layer is getting thinner since they can see more stars.

37) A protective layer of gas called ozone, positioned in the upper atmosphere, acts as a protective shield for the earth and its inhabitants. Scientists estimate for every one percent drop in the concentration of the ozone in the upper atmosphere, there will be a six percent increase in the incidence of skin cancer in humans. How does this scientific knowledge impact human life?

A. There is no impact on human life since humans don't have to worry about skin cancer until the ozone is completely gone.

B. Humans are encouraged to limit exposure to the sun and use sunscreens with high protective numbers to reduce their risk.
C. Harmful bacteria will be destroyed from the ultraviolet light, this will reduce the amount of skin cancer in humans.
D. Good bacteria will be destroyed from the ultraviolet light, this will increase the amount of skin cancer in humans.