



TEST BANK

Brum/McKane/Karp

SECOND EDITION

Biology
Exploring Life

Mark Mandell

Gary Wisehart

Test Bank

Mark Mandell

Gary Wisehart

San Diego City College

to accompany

Biology: Exploring Life

SECOND EDITION

Gil Brum

California State Polytechnic University, Pomona

Larry McKane

California State Polytechnic University, Pomona

Gerry Karp

Formerly of the University of Florida, Gainesville



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Chapter 1

Biology: Exploring Life

Matching Questions

Write the letter of the phrase that best matches the numbered term on the left. Use each only once.

- | | | | |
|-------|-------|---------------------------------|--|
| p. 11 | _____ | 1. ecosystem (g) | a. populations of organisms living together in the same environment |
| p. 11 | _____ | 2. molecule (j) | b. individual composed of many specialized cells |
| p. 11 | _____ | 3. cell (h) | c. components from which cells are constructed |
| p. 11 | _____ | 4. community (a) | d. smallest unit of a substance that retains the properties of that substance |
| p. 11 | _____ | 5. population (f) | e. entire surface of the earth and its organisms |
| p. 7 | _____ | 6. multicellular organism (b) | f. group of organisms of the same species |
| p. 11 | _____ | 7. atom (d) | g. dynamic system of organisms interacting with each other and the inanimate environment |
| p. 11 | _____ | 8. organelles and cytoplasm (c) | h. the smallest unit that is alive |
| p. 11 | _____ | 9. biosphere (e) | i. protons, neutrons, and electrons |
| p. 11 | _____ | 10. subatomic particles (i) | j. two or more atoms bonded together |

Fill in the Blank Questions

- p. 11 11. The science of (taxonomy) provides the biologist with a unique name for for each type of organism, a genealogy for each organism, and a set of characteristics used to identify each type of organism.
- p. 6 12. To build and maintain their tissues and fuel their activities, living organisms require an input of (energy).
- p. 6 13. In order for a population to survive, individuals within the population must (reproduce).
- p. 10 14. Offspring resemble their parents because they inherit, as part of the process of reproduction, a set of (genetic) instructions.
- p. 10 15. The sum total of all the chemical reactions occurring within an organism is known as (metabolism).
- p. 7 16. The maintenance of constant internal conditions is called (homeostasis).
- p. 10 17. (Development) is a change in an organism's form and function over the course of its lifespan.
- p. 10 18. Looking for food when you are hungry is a response to a (stimulus).

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- p. 13 19. A (genus) may contain several closely related species.
- p. 18 20. All organisms use (DNA) to store and transmit genetic information.

Multiple Choice Questions

- p. 11 21. The component parts of organisms are fundamentally the same. Atoms and molecules are assembled into organelles, organelles into cells, and so on. If all living things are assembled from the same components, how is it that there are so many different kinds of living things?
- The components are not alike, so there is great variety in the types of organisms produced from different components.
 - All of the components are not used in one organism, so uniquely different combinations of components produce the variety of different living things.
 - The same components arranged in a variety of different organizational relationships produce the great number of unique living things. *
 - The number of components varies between individual organisms, and this is what makes each type of living thing unique.
 - Living organisms simply are not variable in form.
- p. 18 22. In order to survive, an organism must be able to acquire needed resources and cope with the harshness of the physical environment. A characteristic which gives an organism the ability to do these things is called
- reproduction.
 - photosynthesis.
 - an adaptation. *
 - a stimulus.
 - a developmental adaptation.
- p. 12 23. What is the lowest organizational level at which the evolution of living organisms generally occurs?
- molecules
 - organelles
 - the cell
 - single organism
 - population *
- p. 10 24. An example of development would be
- a fly laying an egg.
 - a starfish (sea star) becoming sexually mature. *
 - an elephant feeding on peanuts.
 - a cut on your arm healing.
 - a caterpillar eating large quantities of food.
- p. 15 25. Beginning with the broadest (highest level) category, select the answer with taxa in the proper order.
- kingdom, phylum, order, class, family, genus, species
 - kingdom, phylum, class, order, family, genus, species *
 - kingdom, phylum, family, class, order, genus, species
 - kingdom, phylum, genus, class, order, family, species
 - kingdom, phylum, class, order, family, species, genus.
- p. 24 26. The essence of the evolutionary process is
- change in genetic composition from generation to generation. *
 - variability within a population.
 - successful reproduction.
 - the survival instinct.
 - population size.

- p. 13 27. *Aplysia californica* (a common sea slug along the coast of California) and *Lysmata californica* (a common shrimp along the coast of California) are abundant in the rocky intertidal area. They are members of
- the same species.
 - the same genus.
 - different genera and different species. *
 - different genera and the same species.
 - different species.
- p. 13 28. *Chamaedorea elegans* (a palm native to tropical America) and *Echeveria elegans* (a succulent native to the Americas) are popular house plants. They are members of
- the same species.
 - the same genus.
 - different genera and different species. *
 - different genera and the same species.
 - different species.
- p. 13 29. *Drosophila texana* and *Drosophila littoralis* are fruit flies, a small fly with disproportionately large red eyes. *D. texana* is an American species and *D. littoralis* a European species. They are
- the same species.
 - the same genus. *
 - different genera and different species.
 - different genera and the same species.
 - the same genus and the same species.
- p. 18 30. The genetic instructions of a human being and those of a mushroom are written in the same universal DNA code. This is an example of
- variability within a population.
 - biological unity, or the common ancestry of all species. *
 - homeostasis.
 - development.
 - reproduction.
- p. 18 31. Which is an anatomic adaptation?
- eyesight
 - ability to taste
 - an eyelid that protects the eye *
 - hearing
 - automatic blinking reflex
- p. 18 32. Which is a physiologic adaptation?
- eyesight *
 - a hand that grasps
 - automatic blinking reflex
 - automatic breathing reflex
 - a foot that can balance the weight of the entire body
- p. 18 33. Which is a behavioral adaptation?
- eyesight
 - ability to taste
 - hearing
 - automatic blinking reflex *
 - a hand that grasps

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- p. 21 34. The main contention of Charles Lyell's book, *Principles of Geology*, was that
- the earth was created by God in a single day.
 - the earth was unchanged since its creation.
 - the earth was much older than previously believed. *
 - the species that exist today came about as a result of natural selection.
 - the fossil record is unrelated to the age of the earth.
- p. 21 35. Charles Darwin discovered fossil seashells embedded in a limestone cliff 15 meters above the shoreline. He found the same type of shells--but unfossilized--along the beach. What conclusion did he draw from this?
- Lyell's ideas about geology were all wrong.
 - The sea bed had been lifted upward to form part of the cliff. *
 - The shells on the beach had fallen from the cliffs.
 - The species that exist today came about as a result of natural selection.
 - The earth was created by God in a single day.
- p. 21 36. In Argentina, Darwin found the fossilized remains of a giant sloth, a hippopotamus-like animal, and a giant armadillo. The anatomical similarities between these extinct ancient creatures and modern animals led him to the conclusion that
- the ancient creatures had drowned when released from Noah's ark during the Great Flood.
 - the ancient creatures were "the strangest animals ever discovered."
 - the ancient creatures had been driven to extinction by other animals that had invaded South America over a landbridge to North America.
 - the species that exist today came about as a result of natural selection.
 - the ancient and modern creatures are related by ancestry. *
- p. 21 37. Darwin explained the disappearance of the giant sloth and giant armadillo from modern Argentina by proposing
- the ancient creatures had been driven to extinction by other animals that had invaded South America over a landbridge to North America. *
 - the ancient creatures had drowned when released from Noah's ark during the Great Flood.
 - the Theory of Natural Selection.
 - the ancient and modern creatures were not related.
 - a sudden catastrophic event, such as a volcanic eruption, had killed off all the ancient creatures.
- p. 21 38. During his long ocean journey Darwin visited many volcanic islands, off the coasts of both Africa and South America. His comparisons of the plants and animals living on these islands and the mainland showed that
- plants and animals on African and South American islands and nearby mainlands were all similar.
 - the plants and animals on the African and South American islands and nearby mainlands were all different.
 - the plants and animals on the islands were similar, but different from those on the mainlands.
 - the plants and animals on the islands tended to be similar to those on the nearby mainlands, regardless of differences in climate and geography. *
 - the plants and animals on the islands tended to be similar to those on the nearby mainlands when the mainlands had similar climate and geography.
- p. 23 39. Natural selection is equivalent to
- adaptation.
 - survival.
 - population variability.
 - extinction.
 - differential reproduction. *

- p. 21 40. On the Galapagos Islands off South America, Darwin observed 13 species of finch, all very similar in overall body form, but each with a different beak shape and feeding habit. From this he concluded that
- all the finch species had descended from one of the mainland species of ground finch that had drifted or been blown several hundred kilometers to the islands. *
 - once created, a species cannot change over time.
 - the island had once been connected to the mainland by a landbridge.
 - the mainland and island finches were not related.
 - since the islands had no competing species when the first finches arrived, they had to adapt.
- p. 23 41. The work of the Reverend Thomas Malthus gave Darwin an important clue to the mechanism of evolution by showing that
- a single pair of humans couldn't possibly produce billions of offspring in a relatively small number of generations.
 - God created Adam and Eve.
 - if a population was no longer subject to mortality, its numbers would remain the same.
 - war, famine, and disease actually increased the size of human populations.
 - the size of a human population was held in check only by the mortality brought on by famine, war, and disease. *
- p. 23 42. Despite the fact that any species of animal has the ability to completely cover the earth with its offspring, Darwin observed that populations remain relatively constant. What did he conclude from this?
- Predation, disease, and environmental extremes must be the only factors limiting population size.
 - Only a small percentage of those conceived actually lived to maturity. *
 - Only a small percentage of those conceived were sexually fertile.
 - The stronger individuals fought the weaker individuals for scarce resources.
 - Individual members of a population are essentially identical.
- p. 23 43. Variability within a population means that
- every individual has the same chance of reaching maturity.
 - only the intelligent survive.
 - individual members of a population differ in anatomic, physiologic, and behavioral characteristics. *
 - predation, disease, and environmental extremes impact individual members of a population by chance.
 - only the physically strong survive.
- p. 24 44. Since adaptations are inheritable
- they may affect the internal environment of an organism.
 - they are determined by genes. *
 - they generally have a negative effect on the survival of an organism.
 - they are of inherent value.
 - they develop in individuals as a response to environmental conditions.
- p. 23 45. In natural selection the choice as to which individuals survive and reproduce is made by
- humankind.
 - the laws of chance.
 - differential reproduction.
 - the environment. *
 - DNA.

- p. 23 46. Artificial selection produces individuals with desired characteristics by
- letting the environment select which individuals will breed and which will not.
 - interbreeding individuals with the desired characteristic with those that lack it.
 - preventing individuals lacking the desired characteristic from breeding. *
 - breeding populations with the widest possible variability.
 - killing off individuals lacking the desired characteristic after they have successfully reproduced.
- p. 24 47. The gradual accumulation of small genetic differences among individuals can radically transform a species' characteristics, given sufficient
- population size.
 - population variability.
 - interbreeding.
 - time. *
 - available habitat.

Critical Thinking Questions

The following information applies to Questions 48 and 49:

Adaptations are inheritable; that is, they are determined by genes. Prior to 1973, an individual organism's genetic potential was limited by the sum of the DNA of its biological parents. Now the technology exists to snip DNA from one unrelated individual or species and splice it to another.

48. What might this mean to variability within populations? Give four possible results and defend each.
49. What might the new biotechnology mean to the process of evolution? Give four possible outcomes and justify each.

The following information applies to Questions 50, 51, and 52:

Recent improvements in more traditional areas of medical science have also had an obvious impact on the process of natural selection. Individuals who would never have survived to reproduce are now looking forward to full lives.

50. Defend the position that this is something positive, using what you have learned about Darwin's theories. Provide specific examples.
51. Defend the position that the impact of medical science is something negative, using what you have learned about Darwin's theories. Provide specific examples.
52. Which position, the positive or the negative, do you think comes closest to describing the real long-term impact of medical science on natural selection? Explain your answer.

Chapter 2

The Process of Science

Matching Questions

Write the letter of the phrase that best matches the numbered term on the left. Use each only once.

- | | | | |
|-------|-------|---------------------------|---|
| p. 32 | _____ | 1. experiment (g) | a. a tentative explanation of a natural phenomenon |
| p. 32 | _____ | 2. hypothesis (a) | b. a group of organisms receiving the variable being tested |
| p. 35 | _____ | 3. theory (c) | c. a combination of related hypotheses |
| p. 32 | _____ | 4. observation (j) | d. a test in which none of the subjects know if they are receiving the experimental variable |
| p. 32 | _____ | 5. variable (i) | e. part of an experiment identical in every way to another except for the factor being tested |
| p. 33 | _____ | 6. control (e) | f. an experiment in which neither the subjects nor the experimenter know which subjects are receiving the experimental variable |
| p. 33 | _____ | 7. control group (h) | g. a test of a hypothesis |
| p. 33 | _____ | 8. experimental group (b) | h. a group of test subjects identical in every way to the experimental group, except for the factor being tested |
| p. 39 | _____ | 9. blind test (d) | i. a condition subject to change |
| p. 39 | _____ | 10. double-blind test (f) | j. often the starting point of the process of science |

Fill in the Blank Questions

- p. 31 11. Science is concerned with the (causes) of observed effects.
- p. 31 12. Modern science investigates (how) things happen.
- p. 37 13. (Penicillin) was the first antibiotic to be discovered.
- p. 32 14. The notion that most living organisms arose directly from inanimate materials is known as (spontaneous generation).
- p. 33 15. A hypothesis that is consistent with all known observations is considered (valid).
- p. 32 16. For an accurate determination of cause and effect, experimental and control groups must differ by only one (variable).
- p. 35 17. Louis Pasteur's experiments on the origin of microorganisms succeeded because his experimental design reduced the number of variables to (one).

- p. 33 18. From the results of experiments demonstrating that maggots came from eggs deposited by flies, Franco Redi proposed a (hypothesis) about the nonspontaneous origin of all living things.
- p. 35 19. The extra variable in the case of the origin of microorganisms was the presence or absence of (air).
- p. 35 20. A scientific theory can never be proven, only (disproven).

Multiple Choice Questions

- p. 33 21. Franco Redi's experiments on the origin of flies proved
- that spontaneous generation never happens.
 - that all living things come from "seeds of the plants or animals themselves."
 - that spontaneous generation does not cause the origin of flies. *
 - that all insects come from eggs.
 - that all insects have both an egg and a larval (maggot) stage.
- p. 35 22. In Pasteur's experiment on the origin of microorganisms, heating the flask containing the nutrient broth served to
- stimulate any microorganisms living in it.
 - draw air into the flask.
 - spontaneously generate microorganisms.
 - remove air from the s-curved tube.
 - kill any microorganisms living in it. *
- p. 35 23. The s-curved tube in Pasteur's experiment
- kept air from reaching the nutrient broth.
 - allowed air to reach the broth, but kept out airborne organisms. *
 - destroyed the "vital principle" of bacterial growth.
 - kept heat from reaching the nutrient broth.
 - allowed airborne organisms access to the broth.
- p. 35 24. By tilting the flask so as to bring the broth in contact with the contents of the s-curve tube, Pasteur
- innoculated the sterile broth with the contents of the trap. *
 - allowed air to reach the sterile broth.
 - killed any microorganisms caught in the trap.
 - proved that spontaneous generation never happens.
 - proved that air spontaneously generates bacterial growth.
- p. 32 25. In science, a hypothesis is
- a statement of cause and effect relationships. *
 - a statement of faith.
 - a question which a scientist attempts to answer.
 - a statement of fact.
 - a statement of truth.
- p. 35 26. In science, a theory
- cannot be invalidated by a single piece of contradictory evidence.
 - is proven fact.
 - is accepted on faith.
 - is used to make further predictions, which are then tested. *
 - is guesswork.

- p. 36 27. Sir Alexander Fleming's discovery of penicillin came about
- as a direct result of his work on inorganic antiseptics.
 - by accident, while he was working on inorganic antiseptics. *
 - after years of studying the properties of various molds.
 - because of the ground-breaking work of his predecessors on the healing properties of various molds.
 - because of his understanding of the life cycle of mold.
- p. 37 28. Ultimately, Fleming's species of *Penicillium* was discarded and replaced by another because
- it was held under a British patent.
 - it only grew in England.
 - it didn't yield enough antibiotic to be cost effective. *
 - it was too difficult to culture.
 - it didn't work on all types of infections.
- p. 37 29. Penicillin kills bacteria by interfering with the formation of their surrounding cell walls. It is not dangerous to (most) humans because
- humans are much larger.
 - humans have immune systems.
 - human cells are larger.
 - human cells do not have cell walls. *
 - human cells are more numerous.
- p. 37 30. In the study on the cancer risk of red dye #2, the control group of rats received
- food without red dye #2. *
 - more light than the experimental group.
 - more water than the experimental group.
 - less heat than the experimental group.
 - food containing red dye #2.
- p. 39 31. The Mayo Clinic study on vitamin C showed it had no value as a therapeutic agent against cancer. These results contradicted the previously published findings of Linus Pauling. The Pauling study is not considered definitive by the scientific community because
- there were too many variables.
 - there was no control group.
 - placebos were not used.
 - it was not a double-blind study.
 - its results have not been verified by other experimenters. *
- p. 40 32. The Mayo study is not considered definitive by the scientific community because
- there was no control group.
 - it did not duplicate the conditions of the original experiment. *
 - it was not a blind study.
 - it was not a double-blind study.
 - placebos were not used.

The following information applies to Questions 33, 34, 35, and 36:

In the late 1970s, research was conducted to establish the mechanism of alcohol intoxication. It was not clear if alcohol itself or one of its metabolites, such as acetaldehyde, was the instrument of intoxication. In one study, 29 rats received acetaldehyde in doses approximating what would be present in an inebriated animal. The animals' brain waves were then compared to 30 "sober" rats.

- p. 32 33. What hypothesis can be tested using this experimental design?
- Acetaldehyde changes brain wave patterns to the form seen in inebriated rats.
 - Acetaldehyde does not change brain wave patterns in inebriated rats.
 - Acetaldehyde changes brain wave patterns to a form not seen in "sober" or inebriated rats.
 - "Sober" rats' brain wave patterns are the same as those of inebriated rats.
 - Acetaldehyde changes brain wave patterns compared to those seen in "sober" rats. *
- p. 33 34. As it turned out, the brain waves of the rats receiving acetaldehyde were very different from the brain waves of a "sober" rat. From this you may conclude that
- acetaldehyde causes intoxication in rats.
 - the 30 "sober" rats were an appropriate control group for this study.
 - the study is definitive.
 - the hypothesis is supported and acetaldhyde does change brain wave patterns. *
 - acetaldehyde does not cause intoxication in rats.
- p. 33 35. Which description provides an adequate control with which to compare brain waves of acetaldehyde treated rats?
- a group of drug intoxicated rats
 - a group of inebriated rats *
 - a group of rats that had never consumed alcohol
 - a group of rats that had been on an alcohol-only diet
 - a group of rats that had been treated with acetaldehyde
- p. 33 36. On the basis of the data, it was concluded that blocking the effect of acetaldehyde will prevent intoxication. Which is the best statement concerning this conclusion?
- This conclusion is appropriate to the data presented.
 - The experimental design described is inappropriate for establishing a relationship between acetaldehyde and intoxication. *
 - This conclusion is a logical extension of the data presented.
 - Further tests with drug-intoxicated rats are needed before this conclusion is supported.
 - The experimental design establishes a clear relationship between acetaldehyde and intoxication.

The following information applies to Questions 37, 38, 39, and 40:

A researcher would like to know if there is a relationship between the sex of a sea lion and the length of time it spends sunning itself on shore. In the wild, sea lions are often located in difficult to reach areas isolated from human population centers. So, the researcher decides to study captive seal lions in a marine park. Some of the sea lions are permanent residents of the park, while others remain there only long enough to recover from an injury or infection (the marine park runs an injured animal program). Large numbers of animals are available for the researcher to observe. The enclosure provides an environment resembling the natural habitat, and the animals are free to enter and leave the water as they choose. They are fed often, and their health is monitored with regular blood tests and examinations by a staff veterinarian. The researcher spends many hours measuring the length of time males and females spend lying on shore in the sun.

- p. 32 37. Which hypothesis can be tested using this approach?
- In the wild, male sea lions spend more time sunning than do female sea lions.
 - In the enclosure, male sea lions spend less time sunning than do female sea lions. *
 - Since a control was not used, no hypothesis can be tested by this approach.
 - In the wild, male sea lions spend more time out of the water than do female sea lions.
 - In the wild, the time sea lions spend in or out of the water is not related to gender.

- p. 37 38. The researcher collects data which shows that 51 different females spent an average of six hours per day sunning themselves, while 64 different males spent an average of five and one half hours sunning themselves. On the basis of her data, the researcher concludes, in the wild there is no difference between males and females. Both sexes spend approximately equal time each day lying in the sun. Which statement is an accurate evaluation of the researcher's approach to this problem?
- Though a control was not used, the conclusion is valid.
 - The sample was inappropriate for drawing a conclusion about wild sea lions. *
 - The sample was appropriate and the conclusion sound.
 - A control was not used. Therefore, the conclusion drawn is not valid.
 - The data was gathered over too short a time period to draw a conclusion about wild sea lions.
- p. 33 39. Which statement is accurate with regard to this experimental design?
- This experiment can directly determine the cause and effect relationship between hours spent in the sun and the sex of the sea lion.
 - This experiment can establish a relationship between gender and the length of time spent lying in the sun. *
 - This experiment requires the introduction of an experimental variable.
 - This experiment cannot establish a relationship between gender and the length of time spent lying in the sun.
 - This experiment can directly determine the cause and effect relationship between hours spent out of the water and the sex of the sea lion.
- p. 32 40. Besides gender, are there other variables that can affect the outcome of this experiment?
- No. The researcher has eliminated all variables except gender.
 - No. Other variables introduced by the artificial enclosure would not be present in the wild, so they have little to do with a conclusion drawn about wild animals.
 - Yes. The poor health of some of the animals, the regular administration of blood tests and physical examinations, and factors associated with the artificial environment could all affect the outcome and its applicability to wild populations. *
 - Yes. The poor health of some of the animals, the regular administration of blood tests and physical examinations, and factors associated with the artificial environment could all affect the outcome, but do not affect the applicability of the outcome to wild populations.
 - It is not possible to tell from the description given.

The following information applies to Questions 41, 42, 43, and 44:

Vietnam veterans who participated in a defoliation program were exposed to large amounts of a substance known as Agent Orange. This material was contaminated with a known toxin called TCDD (one of the most toxic forms of dioxin). To measure veterans' levels of TCDD, blood tests were conducted. It was found that 150 tested Vietnam veterans had average blood levels of TCDD 10 times higher than the average of 50 service men who had served in Southeast Asia during World War II. (Agent Orange was not used during World War II.) Five Vietnam veterans had blood levels 40 to 60 times higher than the World War II veterans.

- p. 33 41. From this you may conclude that
- exposure to Agent Orange significantly increased the amount of TCDD in the bodies of Vietnam veterans.
 - the 50 service men who served in Southeast Asia during World War II were an appropriate control group for comparing with the Vietnam veterans.
 - the study is definitive.
 - an adequate control was not provided by this sampling design, since Agent Orange was not used during World War II.
 - an adequate control was not provided by this sampling design since World War II veterans were much older than the Vietnam veterans. *

- p. 33 42. Which description provides an adequate control with which to compare veterans' TCDD levels?
- military personnel serving in Europe
 - military personnel serving in areas of Southeast Asia where Agent Orange was not used and who have been matched to the Vietnam veterans for age, weight, and smoking and drinking habits *
 - civilians in the United States using Agent Orange and who have been matched to the Vietnam veterans for age, weight, and smoking and drinking habits
 - civilians in the United States manufacturing Agent Orange
 - civilians in the United States with no known exposure to Agent Orange
- p. 33 43. Assuming an adequate control has been used, what hypothesis can be tested using the experimental design described?
- Exposure to Agent Orange increases the risk of birth defects in the children of Vietnam veterans.
 - Exposure to Agent Orange causes birth defects in the children of Vietnam veterans.
 - Exposure to Agent Orange increases the concentration of TCDD in the blood. *
 - Exposure to Agent Orange causes cancer in Vietnam veterans.
 - Exposure to Agent Orange increases the risk of cancer in Vietnam veterans.
- p. 33 44. On the basis of the data reported, researchers conclude that exposure to Agent Orange has produced birth defects in the children of Vietnam veterans. Which is the best statement concerning this conclusion?
- This conclusion is a logical extension of the data presented.
 - This conclusion is appropriate to the data presented.
 - The data supports a cause and effect relationship between Agent Orange and cancer in exposed individuals, not subsequent birth defects.
 - The experimental design described is appropriate for establishing a relationship between Agent Orange exposure and cancer.
 - The experimental design described is inappropriate for establishing a relationship between Agent Orange exposure and birth defects. *

The following information applies to Questions 45, 46, 47, and 48:

Anorexia nervosa is a condition that results when patients starve themselves by eating too little, by expelling consumed food through vomiting, or by the use of laxatives. The American Psychiatric Association reports that anorexia nervosa may affect as many as 1 out of every 250 young women between the ages of 12 and 18 years. The effect of this condition on bone mass was studied. The bone mass of 18, 25-year-old female anorectics was measured and recorded. The bone mass of 20 normal, 25-year-old men was also measured and recorded.

- p. 32 45. Which hypothesis can be tested using this experimental design?
- Anorexia nervosa increases bone mass in young men.
 - Anorexia nervosa does not affect bone mass in young women. *
 - Anorexia nervosa is age related.
 - Anorexia nervosa is gender related.
 - Anorexia nervosa is age and gender related.
- p. 33 46. The bone mass of the 20 normal males was shown to be significantly greater than that of the anorectics. From this you may conclude that
- poor diet resulting from anorexia nervosa results in no bone mass loss.
 - the 25-year-old men were an appropriate control group for this study.
 - an adequate control was not provided by this sampling design, since only young men were used in the control group.
 - an adequate control was not provided by this sampling design, since the control used men instead of women. *
 - an adequate control was not provided by this sampling design, since more men participated in the study than women.