



Student Name _____

Class _____

1.1 Examining Diversity

1. **Biotic** and **abiotic** things interact within the same environment. An example of an abiotic part of an environment is ...
 - A. grass
 - B. flowers
 - C. water
 - D. insects
2. Although the same species may have the same basic structure, variations exist within the same species. The **variations** among the members of a population is referred to as ...
 - A. genetic diversity
 - B. biotic diversity
 - C. species diversity
 - D. living diversity
3. The **five-kingdom classification system** used by scientists includes: ...
 - A. Animalia, Plantae, Fungi, Protista, Bacteria
 - B. Animalia, Plantae, Fungi, Virus, Bacteria
 - C. Animalia, Plantae, Fungi, Monera, Carnivore
 - D. Animalia, Plantae, Fungi, Protista, Monera
4. The system that is used to classify individual organisms is ordered from general classification to very specific identification. The correct order of this classification system is ...
 - A. phyla, class, order, kingdom, genus, species, family
 - B. family, order, phyla, genus, class, kingdom, species
 - C. kingdom, phyla, class, order, family, genus, species
 - D. species, class, family, order, kingdom, genus, phyla

1.2 Interdependence

5. Interdependence of species occurs because no species can survive by itself. Each species is dependent on many other species in its environment. One of the most obvious examples of this interdependence is the relationship known as ...
 - A. scavengers
 - B. predator-prey
 - C. herbivores
 - D. forage-food
6. Another type of interdependence is called **symbiosis**. There are several types of symbiosis. The differences between each type are determined by how beneficial or harmful the relationship is. When both species in the relationship benefit, it is called ...
 - A. mutualism
 - B. colonialism
 - C. parasitism
 - D. commensalism



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7. Each organism in an ecosystem has a role. It includes what it eats, what food it provides for other organisms, its habitat, and its effect on the other organisms it shares space in the environment with. This role is called a ...
- A. mycorrhizae
 - B. partition
 - C. niche
 - D. forager
8. **Barnacles** are organisms that attach themselves to whales to move throughout the different parts of the ocean. They benefit from their relationship with the whales, but the whales are not harmed, nor do they benefit. This type of symbiotic relationship is called ...
- A. mutualism
 - B. mycorrhizae
 - C. parasitism
 - D. commensalism

1.3 Variation Within Species

9. Not every member of every species is exactly the same. There are differences, called **variations**, which make the individuals within a species unique. This variation within a species is called ...
- A. commonality
 - B. variability
 - C. selectivity
 - D. genetics
10. Charles Darwin observed a large orchid on the island of Madagascar and predicted the existence of an organism that could feed on the nectar of this plant (located at the base, 20-30 cm from the top). The moth, which feeds on the nectar of this orchid, was discovered 40 years later. It had adapted to the unusual location of nectar by ...
- A. poking the bottom with it's proboscis
 - B. having a long proboscis
 - C. tipping the orchid upside-down
 - D. relying on a caterpillar to puncture the nectar tube
11. Over time, some deadly organisms become resistant to antibiotics, that are designed to kill them. Scientists think this resistance is due to ...
- A. species specialization
 - B. over prescription of antibiotics
 - C. resource partitioning
 - D. frequency specialization
12. **Adaptation** is best defined as the ...
- A. stages of development throughout an organism's normal growth and life cycle
 - B. differences and/or variations found among a group of organisms living within the same habitat
 - C. arrangement of organisms in various groups or classes and identified by their structural differences
 - D. features that increase an organism's chances of surviving and reproducing in a particular environment



2.1 A Closer Look At Variation

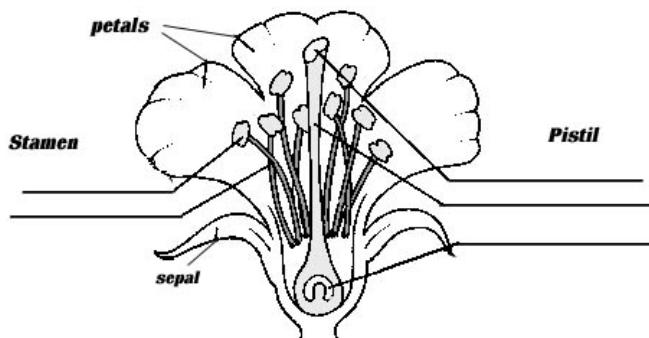
13. To better understand variation; scientists explore the characteristics, which are passed on from generation to generation within a species. Those characteristics that are passed on from generation to generation are ...
A. genetic
B. inherited
C. non-inherited
D. non-genetic
14. Those characteristics or variations that have a wide range of forms are ...
A. obnoxious
B. discrete
C. overbearing
D. continuous
15. Variations caused by interactions with the environment are not heritable. Plants that are grown in dim lighting conditions would turn out to be ...
A. identical to their parents in all aspects
B. much like their parents
C. very different from their parents
D. similar to parent plants that were grown in dim light
16. In a class activity students recorded the results of Left Thumb on top vs Right Thumb on top. The data they collected indicated that '*hand-clasping preference*' was ...
A. unrelated
B. discrete
C. isolated
D. continuous

2.2 Asexual and Sexual Reproduction

17. There are different forms of reproduction in organisms. **Asexual reproduction** involves only one parent. A hydra reproduces asexually when it produces a smaller version of itself by ...
A. budding
B. binary fission
C. spore production
D. vegetative reproduction
18. **Parthenogenesis**, meaning 'virgin birth' in Greek, is the term used to describe the process that transforms unfertilized eggs into mature organisms. Bees are a good example, where unfertilized eggs become ...
A. queen bees
B. male workers
C. female workers
D. male drones
19. The most likely alien form of reproduction would be these because they can be dormant for long periods of time and can survive in space ...
A. seeds
B. spores
C. buds
D. tubers



20. This diagram illustrates the *parts of a flower*.



The **pistil** is made up of the following parts ...

- A. ovary, filament, stigma
- B. stamen, stigma, ovary
- C. anther, ovary, stigma
- D. stigma, style, ovary

3.1 DNA – Transmitter of Genetic Code

21. Scientists exploring genetic research on many different kinds of organisms, take the eggs of females who have certain desirable traits and fertilize them with the sperm of males, from the same species. A major disadvantage that may sometimes occur is ...
- A. desirable characteristics will not always be present in the offspring
 - B. undesirable traits can also be inherited
 - C. mutations will not occur
 - D. offspring will be sterile
22. Scientists researched and studied the genetic code that is passed on from parent to offspring from generation to generation. By knowing what makes up this genetic code, scientists are able to be more selective in what is passed on from parent to offspring during the breeding process. The **genetic code** is the ...
- A. blueprint
 - B. species-plan
 - C. illustration
 - D. specification
23. DNA was first identified in 1969. In 1944 Canadian scientist Oswald Avery confirmed that the DNA was the material of ...
- A. inheritance
 - B. variation
 - C. restructure
 - D. character
24. To solve the structural questions that DNA posed, two scientists revealed that the same chemical building blocks could carry a wide range of instructions needed for diversity. The scientists were ...
- A. Emery and Avery
 - B. Avery and Crick
 - C. Watson and Holmes
 - D. Crick and Watson



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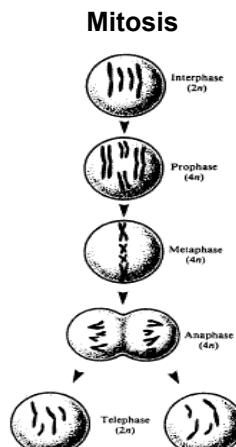
25. Paired chemicals make up the '*rungs*' of the '*spiral ladder*' that represents the model of **DNA**. The four chemicals that are paired in different combinations, making up the 'rungs', are ...
- A. cytosine, adenine, thymine, guanine
 - B. cryptosine, adenine, thalamine, guanine
 - C. cytosine, adonine, thalamine, quanine
 - D. cryptosine, adonine, thymine, quanine
26. Offspring inherit genes from both parents. Most genes in most species exist in an array of possible forms known as ...
- A. alleles
 - B. genomes
 - C. traits
 - D. chromosomes

3.2 Cell Division

27. The process that produces two new cells with the same number of chromosomes is called ...
- A. meiosis
 - B. mitosis
 - C. pollination
 - D. fertilization
28. Use the illustration to help you answer this question

Mitosis produces two offspring cells with the same number of chromosomes as the parent cell. Meiosis is associated with ...

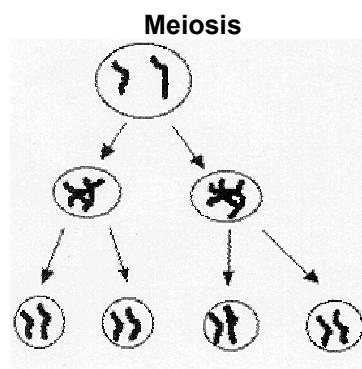
- A. pollination
- B. photosynthesis
- C. sexual reproduction
- D. asexual reproduction



29. Use the illustration to help you answer this question

Meiosis produces four sex cells that have half the number of chromosomes of the parent cell. Meiosis is different from mitosis because it involves ...

- A. only one cell dividing into two
- B. two cell divisions, instead of one
- C. unique chromosomes
- D. duplication – making an exact copy





3.3 Patterns of Inheritance

30. A breeder who wishes to produce a certain breed of animal that displays the characteristics that are desired should choose only ...
A. hybrid offspring
B. hybrid parents
C. purebred parents
D. purebred offspring
31. A trait that will always be visible in the offspring of purebred parents despite the apparent difference in the parents is called a ...
A. hybrid trait
B. recessive trait
C. observable trait
D. dominant trait
32. Other patterns of inheritance include examples like when a purebred plant bearing one color of flower is crossed with another purebred with a different color flower, all the offspring have an intermediate color which is known as ...
A. offspring unlike either parent
B. incomplete dominance
C. environmental factors
D. hybrid recessive traits

4.1 Reduction of Biological Diversity

33. The reduction of biological diversity is due to degradation of ecosystems, the extinction of some species and the decrease in other species populations. Strategies to preserve important habitats and the species that depend on them include ...
A. nature preserves and national parks
B. amusement parks and zoos
C. wild animal farms and animal shelters
D. nature trails and off-road recreation areas
34. Scientists think the extinction of the dinosaurs occurred because of a catastrophic event. Other species also became extinct because of catastrophic events. One such event, the **Pleistocene epoch** is the last major event to occur, nearly 1.8 billion years ago. It is commonly referred to as ...
A. Doomsday
B. The Ice Age
C. Armageddon
D. A Meteor Impact
35. The **Alberta Department of Environmental Protection** is working with wildlife conservation groups around the world to save species at-risk. Alberta Environmental Protection is working with this group to reintroduce the swift fox to Canada ...
A. World Wildlife Fund
B. Swift Fox Conservation Group
C. Environmental Protection Agency
D. World Wildlife Conservation Association



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36. Sometimes organisms have adaptations that suit them only to a very specific set of environmental conditions. Biologists call this natural cause of extinction ...

- A. inter-specialization
- B. overspecialization
- C. super-specialization
- D. adaptive specialization

4.2 Selecting Desirable Traits

37. When humans intervene in the reproduction of specific individuals of a species by selecting and breeding specific desirable characteristics the process is called ...
- A. artificial selection
 - B. natural selection
 - C. survival of the strongest
 - D. inter-species genetics
38. Biotechnology is the process of selecting specific traits and enabling those traits to develop in future generations. There are many different biotechnologies that have worked successfully thus far. The technology, which uses a single cell of an organism to reproduce an identical organism in the laboratory, is called ...
- A. cloning
 - B. insemination
 - C. in vitro fertilization
 - D. genetic engineering

39. A specific side effect (drawback) in using these types of reproductive technologies is the decrease in genetic variation that is occurring. There are other risks associated with cloning and genetic engineering. Some researchers have speculated that the reason there are so many abnormalities in the resulting offspring is because the ...
- A. technique is too delicate and mistakes have been made
 - B. removal of the nucleus from the donor egg is to blame
 - C. reproductive technologies are not proven yet
 - D. abnormal characteristics are hidden within donor eggs

40. Rice normally does not contain a particular vitamin. Researchers have genetically engineered a strain of rice that contains this vitamin – which is ...

- A. Vitamin A
- B. Vitamin B₁₂
- C. Vitamin C
- D. Vitamin E

4.3 Reducing Our Impact on Biological Diversity

41. International recognition of biological diversity was achieved at the Earth Summit in Rio de Janeiro in 1992. **The United Nations Convention on Biological Diversity** outlined the importance of preserving diversity on a global scale. This document is a ...
- A. law
 - B. treaty
 - C. arrangement
 - D. proclamation



42. Conservation of biological diversity around the world requires the elimination or reduction of adverse impacts to biological diversity resulting from human activity. ***The Canadian Biodiversity Strategy*** focus on ...
A. ex-situ and out-situ management
B. in-situ and out-situ conservation
C. in-situ and ex-situ conservation
D. ex-situ and insitu management
43. ***The Nature Conservancy of Canada*** acquires land or raises money to ensure the continued protection of natural area, by working with local conservation groups, private citizens and corporations. ***The Nature Conservancy of Canada*** - dedicated to preserving ecologically significant areas is a ...
A. provincial association
B. government agency
C. municipal committee
D. not-for-profit charity
44. “**Purge the Spurge**” refers to a volunteer activity that occurs every year in July at **Fish Creek Park**. Volunteers gather to pull a non-native noxious weed that threatens to take over the park and destroy wildlife habitat. The weed is called ...
A. thistle purge
B. leafy spurge
C. weedy purge
D. thorny spurge
45. The identification of **species-at-risk** in Canada is made by ...
A. WVE
B. WWF
C. ESCC
D. COSEWIC
46. The conservation of genetic material began with seed banks, between farmers. It has grown to world wide preservation banks of genetic material that is administered by a group of scientists known as the ...
A. Biodiversity Conservation Genetic Bank
B. International Seed Bank Conservation Group
C. International Plant Genetics Resources Institute
D. World Seed and Genetic Material Institute of Conservation

To View Biological Diversity in Calgary - Visit Online



<http://www.calgaryzoo.org/>



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NUMERICAL RESPONSE Questions

47. Sandy worked at the **Enterprise Animal Research Center**, where there are many scientific concepts that must be fully comprehended. She developed a system to learn these concepts by making observations for each of the concepts. These are his observations:

Observation 1	Butterflies match colors for protection.
Observation 2	Some organisms can only be found in one particular type of habitat
Observation 3	Some invertebrates have specialized structures, which help them exist in fast-flowing streams
Observation 4	Some organisms exist only because of their unique relationship with another organism

Sandy's observations match with the scientific concepts she was studying, as follows:

- 4 symbiosis
3 food-source dependence
2 environmental adaptation
1 mimicry

4	3	2	1
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

48. As a result of **Natural Selection**, species develop adaptations that suit their habitat. Sandy observed organisms high on the mountainside near the Research Center and recorded some of the adaptations she observed:



padded paws
1.



thick fur
2.



quick reflexes
3.



.acute hearing
4.

Match the number of the adaptation observed by Peter with the corresponding condition within the natural habit of these organisms.

- 2 cold climate
1 rocky terrain
3 sparse vegetation
4 landscape enhances echoes

2	1	3	4
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9



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49. Interdependence of species within the environment is necessary for survival. **Symbiosis** is an association between members of different species.

- 1- one organism benefits the other doesn't
- 2- one organism benefits, the other is harmed
- 3- one organism appears to be like another organism
- 4- both organisms benefit

___1___
commensalism

___4___
mutualism

___2___
parasitism

___3___
mimicry

1	4	2	3
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

50. The reduction of diversity has resulted in species being listed on **Protection Lists**. Match the threat to a species population with the term it describes

1. none in a local area
2. none in the world
3. few left in a local area
4. numbers are being reduced

___2___
Endangered

___1___
Extirpated

___4___
Threatened

___3___
Declining

2	1	4	3
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0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
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8	8	8	8
9	9	9	9