

Chapter 2—It's Alive!! Or Is It?

MULTIPLE CHOICE

1. Which of the following is NOT a characteristic that all organisms share?

a.	ability to taste and smell	c.	ability to grow and develop
b.	ability to use energy	d.	ability to sense and respond to change

ANS: A

2. What molecules form much of the cell membrane?

a.	nucleic acids	c.	ATP molecules
b.	amino acids	d.	phospholipids

ANS: D

3. What molecule is the major energy carrier in the cell?

a.	nucleic acid	c.	phospholipid
b.	ATP	d.	lipid

ANS: B

4. What type of molecule is DNA?

a.	an amino acid	c.	a lipid
b.	a protein	d.	a nucleic acid

ANS: D

5. Which of the following reproduce through asexual reproduction?

a.	humans	c.	fish
b.	hydra	d.	birds

ANS: B

6. What do gravity, sounds, and light have in common?

a.	They are necessary for survival.
b.	They are characteristics of life.
c.	They are experiences all organisms share.
d.	They are examples of stimuli.

ANS: D

7. Maintaining stable internal conditions is called

a.	shivering.	c.	homeostasis.
b.	sweating.	d.	heredity.

ANS: C

8. Approximately how much of the human body is water?

a.	10%	c.	50%
b.	33 1/3%	d.	70%

ANS: D

9. What happens when organisms reproduce?

a.	They grow and develop.
b.	They sense change in their environment.
c.	They maintain a stable internal environment.
d.	They make organisms similar to themselves.

ANS: D

10. What is passing genetic traits from parents to offspring called?

a.	homeostasis	c.	heredity
b.	sexual reproduction	d.	metabolism

ANS: C

11. Which of the following is NOT a basic need of most organisms?

a.	food	c.	air
b.	plants	d.	water

ANS: B

12. What do most of the chemical reactions involved in metabolism require?

a.	water	c.	phospholipids
b.	carbohydrates	d.	carbon dioxide

ANS: A

13. What is a complex carbohydrate manufactured by plants?

a.	starch	c.	protein
b.	oil	d.	hemoglobin

ANS: A

14. When a duck dives under water, its inner eyelids automatically raise to cover the duck's eyes. In this case, water acts as

a.	homeostasis.	c.	a reaction.
b.	a stimulus.	d.	an enzyme.

ANS: B

15. The molecule that provides energy for cellular processes is			
a.	ATP.	c.	DNA.
b.	RNA.	d.	protein.

ANS: A

16. The subunits of proteins are			
a.	sugar molecules.	c.	enzymes.
b.	amino acids.	d.	nucleotides.

ANS: B

17. Which of the following are NOT used by cells for energy storage?			
a.	fats	c.	carbohydrates
b.	oils	d.	nucleic acids

ANS: D

18. Which of the following is NOT true of proteins?			
a.	They are a component of spider webs.		
b.	They are obtained from food.		
c.	They are the main source of energy for cells.		
d.	They supply the building blocks needed to repair tissues.		

ANS: C

19. What are all living things made of?			
a.	one cell	c.	several hundred cells
b.	one or more cells	d.	trillions of cells

ANS: B

20. What are food, water, air, and a place to live?			
a.	characteristics of living things	c.	examples of living things
b.	basic needs of most living things	d.	stimuli

ANS: B

21. How much of the human body is water?			
a.	about 10%	c.	about 70%
b.	about 50%	d.	about 99%

ANS: C

22. What are hunger, sounds, and light?			
a.	examples of stimuli	c.	necessities of life
b.	characteristics of life	d.	experiences all living things share

ANS: A

23. What is DNA?			
a.	a carbohydrate	c.	a lipid
b.	a protein	d.	a nucleic acid

ANS: D

24. What is one thing all living things do?			
a.	They grow and develop.	c.	They shrink as they get older.
b.	They stay the same.	d.	They go through five stages.

ANS: A

25. What is one characteristic that all living things share?			
a.	Their cells have DNA.	c.	They can move.
b.	They can smell and taste.	d.	They have two or more cells.

ANS: A

26. How do people warm up their bodies when they are cold?			
a.	sweat	c.	move to a shady area
b.	shiver	d.	stay still

ANS: B

27. What is the passing of traits from parent to offspring called?			
a.	sexual reproduction	c.	heredity
b.	homeostasis	d.	DNA

ANS: C

COMPLETION

1. Organisms maintain internal stability despite threats by external stimuli through _____.

ANS: homeostasis

2. A man's son, grandfather, and brother all look like him because of _____.

ANS: heredity

3. An organism produced through _____ reproduction looks identical to its parent because they both have identical DNA.

ANS: asexual

4. An organism that was cloned was produced through _____ reproduction.

ANS: asexual

5. Thousands of nucleotides can form one _____.

ANS: nucleic acid

6. A book titled *Responding to External Changes* is probably about _____.

ANS: stimuli

7. A book titled *Passing Traits* to offspring is probably about _____.

ANS: heredity

8. A doctor who studies _____ in red blood cells is very knowledgeable about hemoglobin.

ANS: protein

9. Hemoglobin is a _____.

ANS: protein

10. A plant cell turns sunlight into sugar through _____.

ANS: photosynthesis

11. Every organism must have at least one _____.

ANS: cell

12. Molecules that make up part of cell membranes are _____.

ANS: phospholipids

Use the terms from the following list to complete the sentences below.

nucleic acids	heredity
ATP	metabolism
protein	asexual
phospholipid	homeostasis
sexual	

13. In the cell membrane, _____ molecules form two layers.

ANS: phospholipid

14. When a planarian worm is cut in half, each half develops into a whole worm. This is an example of _____ reproduction.

ANS: asexual

15. Molecules that are sometimes called the blueprints of life are _____.

ANS: nucleic acids

16. The passing of traits from one generation to the next is called _____.

ANS: heredity

17. All of the chemical activities that an organism's cells perform are called _____.

ANS: metabolism

Use the terms from the following list to complete the sentences below.

producer	decomposer
asexual	consumer

18. A single-celled living thing reproduces through _____ reproduction.

ANS: asexual

19. A living thing that makes its own food is a(n) _____.

ANS: producer

20. A living thing that eats other organisms is a(n) _____.

ANS: consumer

21. A living thing that breaks down the nutrients of dead organisms is a(n) _____.

ANS: decomposer

SHORT ANSWER

1. What six characteristics do all living things have in common?

ANS:

Answers may vary. Sample answer: All living things are composed of one or more cells. They all sense change in their environment and have the ability to respond to change. All living things reproduce organisms similar to themselves. All living things have DNA. They all use energy. They all grow and develop during periods of their lives.

2. Explain the difference between simple and complex carbohydrates.

ANS:

Answers may vary. Sample answer: Simple carbohydrates are made of one or a few sugar molecules linked together. Complex carbohydrates are linkages of many simple sugar molecules.

3. Give an example of a food source that contains simple carbohydrates and an example of one that contains complex carbohydrates.

ANS:

Answers may vary. Sample answer: The sugar found in fruit is a simple carbohydrate. The starch found in potatoes is a complex carbohydrate.

5. What would make an animal become extinct? Examine possible causes in terms of the basic necessities of life.

ANS:

Answers may vary. Sample answer: An animal becomes extinct when it can no longer survive. The loss of any of the basic necessities of life, such as loss of habitat or food supply or polluted air or water supply, would endanger it.

6. Hypothesize which of the basic necessities of life was responsible for making dinosaurs extinct.

ANS:

Answers may vary. Sample answer: A large glacier may have covered the Earth, causing the dinosaurs to lose a place to live and the ability to get food and water.

7. What would be the advantage of asexual reproduction to plant specialists?

ANS:

Answers may vary. Sample answer: Plant specialists could breed plants through asexual reproduction to reproduce the most beneficial characteristics of the plant.

9. What do proteins, carbohydrates, lipids, ATP, and nucleic acids all have in common?

ANS:

Answers may vary. Sample answer: They are building blocks of cells. They perform

functions in the cell that help it to break down food, store energy, and use energy for cellular processes such as making proteins.

10. What organisms use photosynthesis to produce food and oxygen?

ANS:

green plants, algae, and some bacteria

11. How do organisms living in water get oxygen?

ANS:

Answers may vary. Sample answer: They either get dissolved oxygen from the water or come to the water's surface to get oxygen from the air.

12. How does a dolphin get oxygen?

ANS:

It comes to the surface of the water to get oxygen from the air.

13. What are three organisms that need carbon dioxide gas in addition to oxygen?

ANS:

Answers may vary. Sample answer: green plants, algae, and some bacteria

14. Who has the greatest percentage of water in their cells: a buffalo, an ant, or a human?

ANS:

Answers may vary. Sample answer: They all have approximately the same amount of water in their cells: 70%.

15. What molecules store energy, and what molecules release energy?

ANS:

Answers may vary. Sample answer: Proteins and some carbohydrates release energy. Carbohydrates and some lipids store energy. ATP receives energy from carbohydrates and lipids and then makes it available for cellular activities.

16. Explain how you can tell that an apple tree is a living thing.

ANS:

Apple trees have the six characteristics of living things: they have cells, they sense and respond to change, they have DNA, they can reproduce, they use energy, and they grow.

17. What is the difference between growth and development?

ANS:

Growth is an increase in size. Development is a change in the form of an organism that happens as it grows.

18. Name three activities of an organism that require energy.

ANS:

Sample answer: Organisms need energy to break down food, to move materials into and out of cells, and to build cell parts.

19. Give an example of a producer, consumer, and decomposer.

ANS:

Sample answer: producer: plants; consumer: animals; decomposer: fungi

20. Name two functions of lipids.

ANS:

Some lipids store energy, and others form the cell membrane.

21. How are proteins used by an organism?

ANS:

An organism breaks down proteins and uses their amino acids to build other proteins. These other proteins are used to carry out chemical reactions in cells, transport materials, and protect the cell.

MATCHING

Match each item with the correct statement below.

a.	cell	e.	stimulus
b.	homeostasis	f.	asexual reproduction
c.	heredity	g.	sexual reproduction
d.	metabolism		

1. a change that affects the activity of the organism
2. reproduction in which the sex cells from two parents unite, producing offspring that share traits from both parents
3. reproduction that does not involve the union of sex cells and in which one parent produces offspring identical to itself
4. the passing of traits from one generation to the next
5. the total of all of the chemical activities that the organism performs
6. the smallest unit that can perform all life processes
7. the maintenance of a stable internal environment

1. ANS: E
2. ANS: G
3. ANS: F
4. ANS: C
5. ANS: D
6. ANS: A
7. ANS: B

Match each item with the correct statement below.

a.	ATP	f.	consumer
b.	carbohydrate	g.	producer
c.	lipid	h.	nucleic acid
d.	protein	i.	decomposer
e.	phospholipid		

8. an organism that makes its own food
9. an organism that eats other organisms or organic matter
10. an organism that breaks down the remains of dead organisms or animal waste to get energy
11. the major energy-carrying molecule in the cell
12. a molecule made of sugars
13. a molecule that is sometimes called the blueprint of life
14. a large molecule made up of smaller molecules called amino acids
15. a molecule that forms much of the cell membrane
16. an energy-storing compound that cannot mix with water

8. ANS: G
9. ANS: F
10. ANS: I
11. ANS: A
12. ANS: B
13. ANS: H
14. ANS: D
15. ANS: E
16. ANS: C

Match each item with the correct statement below.

a.	consumers	e.	producers
b.	asexual reproduction	f.	a complex carbohydrate
c.	decomposers	g.	sexual reproduction
d.	a simple carbohydrate		

17. table sugar
18. organisms that eat plants
19. organisms that feed on decaying organisms
20. a potato
21. organisms that make their own food
22. a kind of reproduction in which an offspring shares characteristics of two parents
23. a kind of reproduction in which an offspring is identical to its parent

17. ANS: D
18. ANS: A
19. ANS: C
20. ANS: F
21. ANS: E
22. ANS: G
23. ANS: B

Match each item with the correct statement below.

a.	lipids	d.	metabolism
b.	proteins	e.	ATP

c.	amino acids	f.	nucleic acid
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24. compounds like fats and oils that store energy
25. compound to which carbohydrates and lipids transfer their energy
26. small molecules that make up proteins
27. a molecule that contains all the information a cell needs to make protein
28. the sum of all of an organism's chemical processes
29. compounds that spider webs and hair are made from

24. ANS: A
25. ANS: E
26. ANS: C
27. ANS: F
28. ANS: D
29. ANS: B

Match each item with the correct statement below.

a.	metabolism	c.	ATP
b.	phospholipid	d.	homeostasis

30. the maintenance of a stable internal condition
31. the sum of all chemical activities a living thing performs
32. molecule that forms much of the cell membrane
33. molecule that is the major energy carrier in the cell

30. ANS: D
31. ANS: A
32. ANS: B
33. ANS: C

Match each item with the correct statement below.

a.	protein	c.	carbohydrates
b.	lipids	d.	nucleic acids

34. molecules made up of amino acids
35. molecules made of sugar
36. molecules sometimes called the blueprints of life
37. fats and oils

34. ANS: A
35. ANS: C
36. ANS: D
37. ANS: B

ESSAY

1. An organism's ability to maintain homeostasis is important to its survival. Explain why an organism that lives on land has more complex mechanisms to maintain a stable internal environment than organisms that live in water.

ANS:

Answers may vary. Sample answer: The conditions of a land environment can change from hot to cold or wet to dry in a short amount of time. An organism that lives on land must have homeostatic mechanisms to regulate its water balance and body temperature. In this way, the organism can keep its internal environment stable. Water changes temperature more slowly than air does and always provides a moist environment. Therefore, organisms living in water do not need as many homeostatic mechanisms as land-dwelling organisms do.

2. Explain why a single-celled organism produces an offspring identical to itself.

ANS:

Answers may vary. Sample answer: A single-celled organism reproduces through asexual reproduction so it passes on a copy of all of its DNA to its offspring. This differs from sexual reproduction in which two parents pass on copies of their DNA and the offspring shares traits from both parents.

3. List the five building blocks of cells, and describe one important life function each one performs.

ANS:

Answers may vary. Sample answer: The five chemical building blocks of cells are proteins, carbohydrates, lipids, ATP, and nucleic acids. Proteins supply the body with the building blocks needed to repair tissues. Carbohydrates are a source of energy and store energy. Lipids store energy and make up cell membranes. ATP is the major energy-carrying molecule in the cell. Nucleic acids have the information cells need to make proteins.