

Name: _____

Date: _____

1. If a human system fails to function properly, what is the most likely result?
 - A. a stable rate of metabolism
 - B. a disturbance in homeostasis
 - C. a change in the method of cellular respiration
 - D. a change in the function of DNA

2. What usually results when an organism fails to maintain homeostasis?
 - A. Growth rates within organs become equal.
 - B. The organism becomes ill or may die.
 - C. A constant sugar supply for the cells is produced.
 - D. The water balance in the tissues of the organism stabilizes.

3. Microbes that enter the body, causing disease, are known as

A. pathogens	B. antibodies
C. enzymes	D. hosts

4. When a person does strenuous exercise, small blood vessels (capillaries) near the surface of the skin increase in diameter. This change allows the body to be cooled. These statements best illustrate

A. synthesis	B. homeostasis
C. excretion	D. locomotion

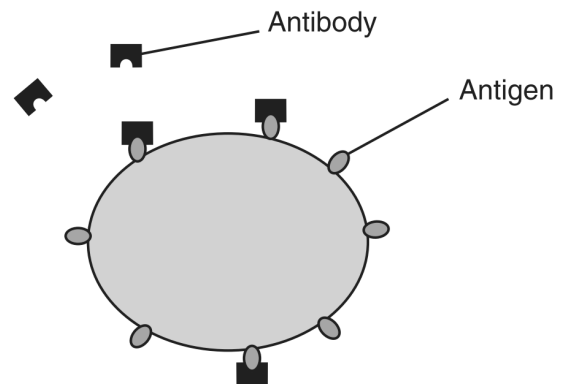
5. A person with AIDS is likely to develop infectious diseases because the virus that causes AIDS
 - A. destroy cancerous cells
 - B. damages the immune system
 - C. increases the rate of antibody production
 - D. increase the rate of microbe destruction

6. Explain why people with AIDS often develop many other infectious diseases.

7. Certain bacteria produce a chemical that makes them resistant to penicillin. Since these bacteria reproduce asexually, they usually produce offspring that
 - A. can be destroyed by penicillin
 - B. mutate into another species
 - C. are genetically different from their parents
 - D. survive exposure to penicillin

8. Many viruses infect only a certain type of cell because they bind to certain
 - A. other viruses on the surface of the cell
 - B. mitochondria in the cell
 - C. hormones in the cell
 - D. receptor sites on the surface of the cell

9. An activity that occurs in the human body is shown below.



This activity helps to

- A. provide protection against pathogens
- B. produce antibiotics to control disease
- C. eliminate harmful gene alterations
- D. regulate production of ATP by the cell

10. A 6-year-old child ate a peanut butter sandwich at snack time in school. Five minutes later, her throat became swollen and she collapsed. This allergic reaction occurred because her body
- recognized an antigen in peanut butter and produced antibiotics against it
 - digested the white blood cells that can recognize an antigen in peanut butter
 - did not recognize an antigen in peanut butter and could not produce antibodies against it
 - recognized an antigen in peanut butter and produced an immune response
11. Drugs to reduce the risk of rejection are given to organ transplant patients because the donated organ contains
- foreign antigens
 - foreign antibodies
 - DNA molecules
 - pathogenic microbes
12. Which statement describes the best procedure to determine if a vaccine for a disease in a certain bird species is effective?
- Vaccinate 100 birds and expose all 100 to the disease.
 - Vaccinate 100 birds and expose only 50 of them to the disease.
 - Vaccinate 50 birds, do not vaccinate 50 other birds, and expose all 100 to the disease.
 - Vaccinate 50 birds, do not vaccinate 50 other birds, and expose only the vaccinated birds to the disease.
13. It is recommended that people at risk for serious flu complications be vaccinated so that their bodies will produce
- antigens to fight the flu virus
 - antibodies against the flu virus
 - toxins to fight the infection caused by the flu virus
 - antibiotics to reduce symptoms caused by the flu virus

14. Base your answer(s) to the following question(s) on the diagram below and on your knowledge of biology.

Vaccines Received by Children

Patient	Measles Vaccine	Polio Vaccine
child A	✓	
child B	✓	✓
child C		✓

Identify the system that will directly respond to these vaccines, and state the specific expected response.

15. Which disease damages the human immune system, leaving the body open to certain infectious agents?
- flu
 - AIDS
 - chicken pox
 - pneumonia
16. Blood can be tested to determine the presence of the virus associated with the development of AIDS. This blood test is used directly for
- cure
 - treatment
 - diagnosis
 - prevention
17. The virus that causes AIDS is damaging to the body because it
- targets cells that fight invading microbes
 - attacks specific red blood cells
 - causes an abnormally high insulin level
 - prevents the normal transmission of nerve impulses
18. Which statement best describes an immune response?
- It always produces antibiotics.
 - It usually involves the recognition and destruction of pathogens.
 - It stimulates asexual reproduction and resistance in pathogens.
 - It releases red blood cells that destroy parasites.

19. In some individuals, the immune system attacks substances such as grass pollen that are usually harmless, resulting in
- A. an allergic reaction
 - B. a form of cancer
 - C. an insulin imbalance
 - D. a mutation

20. Allergic reactions are most closely associated with
- A. the action of circulating hormones
 - B. a low blood sugar level
 - C. immune responses to usually harmless substances
 - D. the shape of red blood cells

21. Base your answer(s) to the following question(s) on the information below and on your knowledge of biology.

Organ Transplants of the Future

While most people take good health for granted, thousands of others desperately need to replace a failing organ with one that is healthy. Most healthy organs come from people who agreed to donate them upon their death, although it is possible to remove some tissue and organs (such as kidneys and bone marrow) from living donors. Unfortunately, organs for transplant are in short supply. As of 1992, over 22,000 Americans were waiting for a transplant.

Although increasingly common, transplants are risky procedures. During the operation, veins and arteries must be blocked to prevent blood loss. This deprives parts of the body of oxygen and nutrients and may result in permanent damage. In addition, the body may recognize the transplanted organ as foreign and mount an immune response in which specialized white blood cells (T-cells) attack the transplanted organ.

Drugs called immunosuppressants are given to transplant patients to prevent their immune system from rejecting the transplanted organ. However, these drugs weaken the ability of the body to fight disease and leave the patient less able to fight infection.

Scientists are exploring new technology for producing transplant tissues and organs. Unspecialized cells called stem cells are removed from the patient and then grown in a laboratory. Treating stem cells with the appropriate chemicals causes them to differentiate into various specialized tissues. In the future, scientists hope to develop chemical treatments that will cause stem cells to grow into complete organs needed for transplants. Transplants produced by this process would not be foreign material and, therefore, would not be rejected by the immune system of the patient.

State one specific disadvantage of taking an immunosuppressant drug.

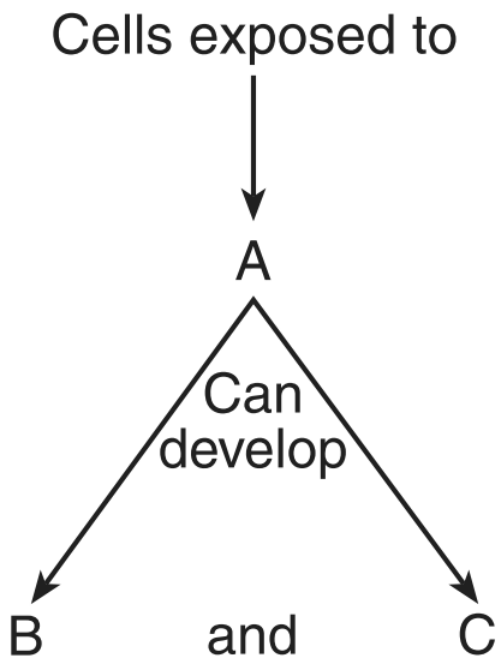
22. Melanoma is a type of cancer in which abnormal skin cells divide uncontrollably. Some chemotherapy drugs, which stop the growth of the cancer, directly interfere with the process of
- A. meiosis
 - B. coordination
 - C. mitosis
 - D. recombination

23. The accompanying chart shows information about the relationship between the age of the mother and the occurrence of Down syndrome in the child.

Age of Mother	Occurrence of Down Syndrome per 1000 Births
25	0.8
30	1.0
35	3.0
40	10.0
45	30.0
50	80.0

State *one* conclusion that can be drawn from the chart concerning the relationship between the age of the mother and the chance of her having a child with Down syndrome.

24. The diagram below can be used to illustrate cellular changes.



Which row of terms in the chart below best completes the diagram?

Row	A	B	C
(1)	atmospheric oxygen	mutations	increased mitochondria
(2)	radiation	cancer	mutations
(3)	salt water	more cytoplasm	two nuclei
(4)	less sunlight	extra genes	decreased mutations

- A. (1) B. (2) C. (3) D. (4)

25. What will most likely result if a diabetic injects an overdose of insulin?
- A. a serious infection in the pancreas
 B. an increase in the production of pancreatic enzymes
 C. an accumulation of wastes in the bloodstream
 D. a dangerous drop in blood sugar levels

26. Some diseases and their causes are listed below.
- A. Flu—influenza virus
 B. Lung cancer—smoking
 C. Cystic fibrosis—genes
 D. Dysentery—parasitic ameba

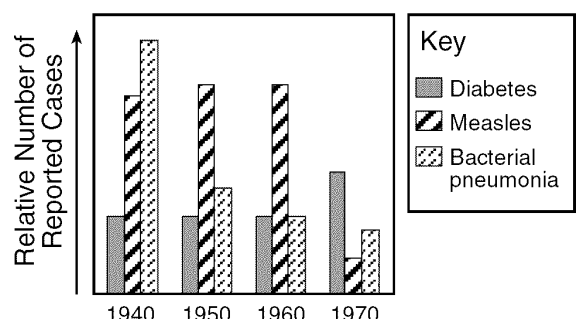
Which disease would individuals have the greatest difficulty preventing in themselves?

- A. A B. B C. C D. D

27. Organisms undergo constant chemical changes as they maintain an internal balance known as
- A. interdependence B. homeostasis
 C. synthesis D. recombination

28. Base your answer(s) to the following question(s) on the graph below and on your knowledge of biology.

Incidence of Three Human Diseases in Four Different Years



The greatest difference between the incidence of measles and the incidence of bacterial pneumonia occurred in

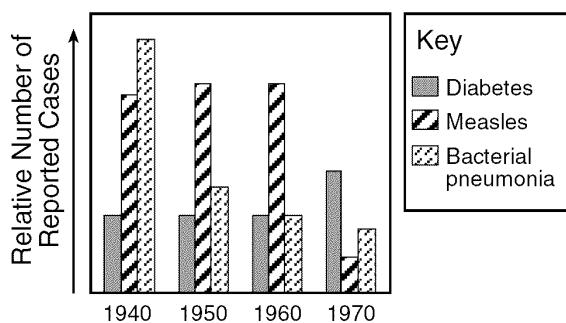
- A. 1940 B. 1950 C. 1960 D. 1970

29. Which statement best explains a change in the incidence of disease in 1970?
- Children were vaccinated against measles.
 - New drugs cured diabetes.
 - The bacteria that cause pneumonia developed a resistance to drugs.
 - New technology helped to reduce the incidence of all three diseases.

30. In order for the human body to maintain homeostasis, the breakdown of glucose to release energy must be followed by the
- production of oxygen
 - division of the cell
 - removal of wastes
 - production of receptor molecules

31. Base your answer(s) to the following question(s) on the graph below and on your knowledge of biology.

Incidence of Three Human Diseases in Four Different Years



Which statement provides the best possible reason for the decrease in number of cases of bacterial pneumonia from 1940 to 1970?

- As a result of genetic engineering, humans became immune to the bacteria.
- Antibiotics were made available for the treatment of bacterial infections.
- The bacteria did not respond to medical treatments.
- As a result of sexual reproduction, the bacteria evolved into a harmless form.

32. An increase in the level of insulin in the blood would most directly result in
- a decrease in the amount of glucose in the blood
 - a decrease in the amount of protein in the blood
 - an increase in the amount of fat in cells
 - an increase in the amount of carbon dioxide in cells

33. The interaction between guard cells and a leaf opening would *not* be involved in
- diffusion of carbon dioxide
 - maintaining homeostasis
 - heterotrophic nutrition
 - feedback mechanisms

34. The first successful transplant of insulin-producing cells from a living donor pancreas was completed in April 2000 in Japan. This enabled the body of the recipient to
- regulate fat concentration by a feedback mechanism
 - provide protection against an infectious disease
 - slow down the heart rate after a period of activity ends
 - maintain blood sugar levels throughout the day

35. Which situation is *not* an example of the maintenance of a dynamic equilibrium in an organism?

- Guard cells contribute to the regulation of water content in a geranium plant.
- Water passes into an animal cell causing it to swell.
- The release of insulin lowers the blood sugar level in a human after eating a big meal.
- A runner perspires while running a race on a hot summer day.

36. If frog eggs taken from a freshwater pond are placed in a saltwater aquarium, what will most likely happen?
- A. Water will leave the eggs.
 - B. Salt will leave the eggs.
 - C. Water will neither enter nor leave the eggs.
 - D. The eggs will burst.

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| <p>1.
Answer: B</p> <p>2.
Answer: B</p> <p>3.
Answer: A</p> <p>4.
Answer: B</p> <p>5.
Answer: B</p> <p>6.
Answer: The virus that causes AIDS interferes with the functioning of the immune system. OR The virus that causes AIDS interferes with a cell's ability to produce antibodies. OR The immune system in people with AIDS is impaired.</p> <p>7.
Answer: D</p> <p>8.
Answer: D</p> <p>9.
Answer: A</p> <p>10.
Answer: D</p> <p>11.
Answer: A</p> <p>12.
Answer: C</p> <p>13.
Answer: B</p> <p>14.
Answer: System: Immune system
Response: make antibodies; increase white blood cell production; produces cells that engulf the virus/pathogen</p> <p>15.
Answer: B</p> <p>16.
Answer: C</p> <p>17.
Answer: A</p> <p>18.
Answer: B</p> <p>19.
Answer: A</p> <p>20.
Answer: C</p> <p>21.
Answer: The drug might weaken the ability of the body to fight diseases. or The drug may leave the patient less able to fight infection.</p> <p>22.
Answer: C</p> | <p>23.
Answer: The older the mother, the greater the chance of her having a child with Down syndrome.</p> <p>24.
Answer: B</p> <p>25.
Answer: D</p> <p>26.
Answer: C</p> <p>27.
Answer: B</p> <p>28.
Answer: C</p> <p>29.
Answer: A</p> <p>30.
Answer: C</p> <p>31.
Answer: B</p> <p>32.
Answer: A</p> <p>33.
Answer: C</p> <p>34.
Answer: D</p> <p>35.
Answer: B</p> <p>36.
Answer: A</p> |
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