

Name: _____

Vocab. Review Handout

1st Semester Terms

Match the terms to the statements that follow.

- | | | |
|-------------------|---------------------|----------------|
| A. Chloroplast | E. Ribosome | I. Immunity |
| B. Photosynthesis | F. Metabolism | J. Homeostasis |
| C. Mitochondria | G. Digestion | K. Organic |
| D. Nucleus | H. Cell Respiration | L. Inorganic |

- ____ 1. Site of cellular respiration
- ____ 2. Water + Carbon Dioxide → glucose + oxygen
- ____ 3. Site of protein synthesis
- ____ 4. Site of photosynthesis in plants
- ____ 5. glucose + oxygen = carbon dioxide + water + ATP
- ____ 6. Substances containing carbon
- ____ 7. All of the chemical reactions that occur in an organism
- ____ 8. Maintaining a constant internal environment
- ____ 9. The breakdown of larger molecules into smaller ones
- ____ 10. The body's ability to fight infection
- ____ 11. Substances not usually containing carbon

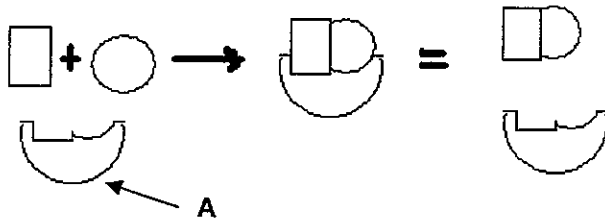
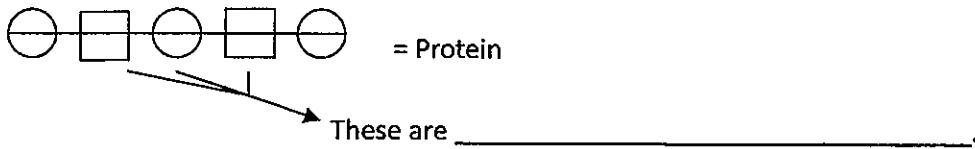
Mrs. Van Tassell wants to know which type of plant food will make her plants grow fastest. She has 4 identical plants in identical containers with identical water and light conditions. Plant #1 will get water only. Plant #2 will receive water and GRO-FAST food. Plant #3 will receive water and FAST FOLIAGE food. Plant #4 will receive water and SUPER STEMS food. Mrs. V will measure the height of the plants on the first day of the experiment and every other day after that for one month.

12. Which plant is the control? _____
13. What is the independent variable in this experiment? _____
14. What is the dependent variable in this experiment? _____
15. Write a possible hypothesis for this experiment. _____

16. If plant #3 works the best, what will Mrs. V observe at the end of 1 month? _____

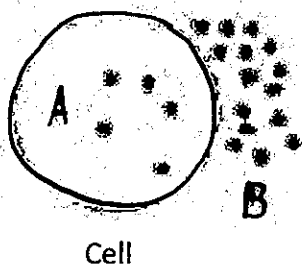
Complete the illustrations using the following terms:

active transport, diffusion, synthesis, enzyme, amino acids



This process is _____.

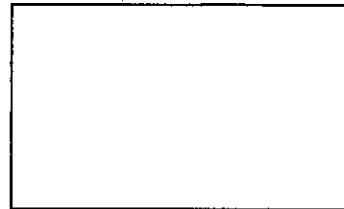
The "A" above represents an _____.



Molecules moving from A to B _____.

Molecules moving from B to A _____.

Draw and label a diagram of a cell with a receptor molecule



FILL IN THE BLANK Use these terms to complete the paragraph- STARCH, LIPIDS, NUCLEIC ACIDS, SIMPLE SUGAR, INDICATOR

Glucose is an example of a _____. Glucose molecules are small enough to diffuse through a cell membrane, but _____ is too large.

Fats are also called _____. An unknown substance may be identified using an _____ to detect its presence. Examples of _____ are DNA & RNA.

Regents Review Topic 1

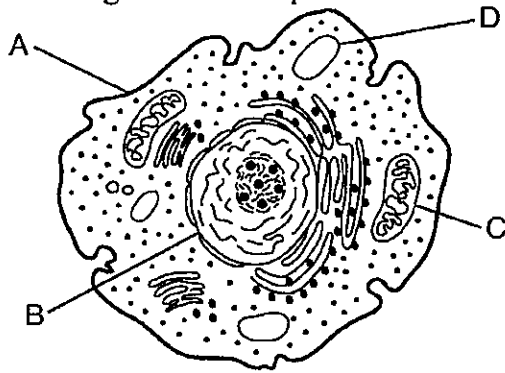
1. If the ribosomes of a cell were destroyed, what effect would this most likely have on the cell?

- A) It would stimulate mitotic cell division.
- B) The cell would be unable to synthesize proteins.
- C) Development of abnormal hereditary features would occur in the cell.
- D) Increased protein absorption would occur through the cell membrane.

2. Which structures carry out life functions within cells?

- A) tissues
- B) organ systems
- C) organelles
- D) organs

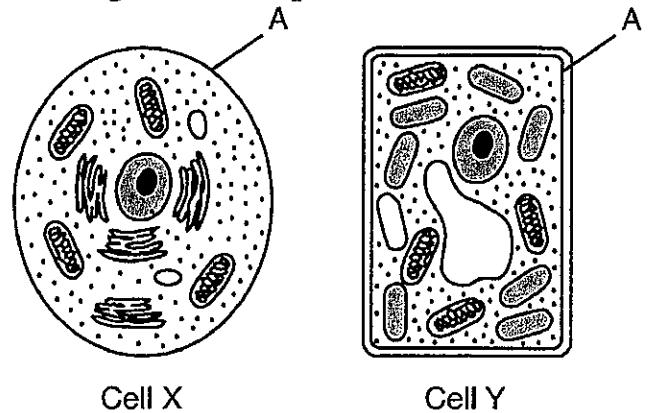
3. The diagram below represents a cell.



Which statement concerning ATP and activity within the cell is correct?

- A) The absorption of ATP occurs at structure A.
- B) The synthesis of ATP occurs within structure B.
- C) ATP is produced most efficiently by structure C.
- D) The template for ATP is found in structure D.

4. The diagram below represents two cells, X and Y.



Which statement is correct concerning the structure labeled A?

- A) It aids in the removal of metabolic wastes in both cell X and cell Y.
- B) It is involved in cell communication in cell X, but not in cell Y.
- C) It prevents the absorption of CO_2 in cell X and O_2 in cell Y.
- D) It represents the cell wall in cell X and the cell membrane in cell Y.

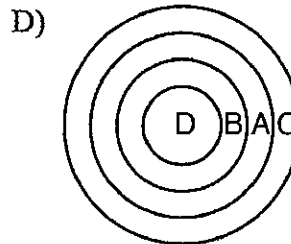
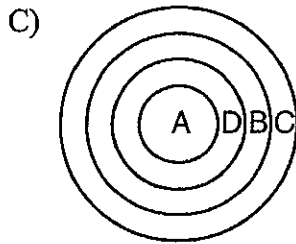
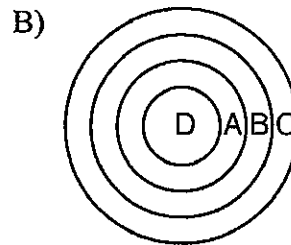
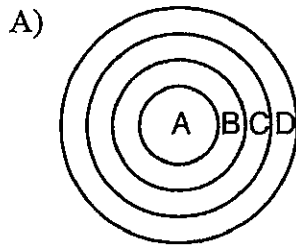
5. Which diagram best represents the relative locations of the structures in the list below?

A—chromosome

B—nucleus

C—cell

D—gene



6. Certain poisons are toxic to organisms because they interfere with the function of enzymes in mitochondria. This results directly in the inability of the cell to

- A) store information
- B) build proteins
- C) release energy from nutrients
- D) dispose of metabolic wastes

7. Hereditary information is stored inside the

- A) ribosomes, which have chromosomes that contain many genes
- B) ribosomes, which have genes that contain many chromosomes
- C) nucleus, which has chromosomes that contain many genes
- D) nucleus, which has genes that contain many chromosomes

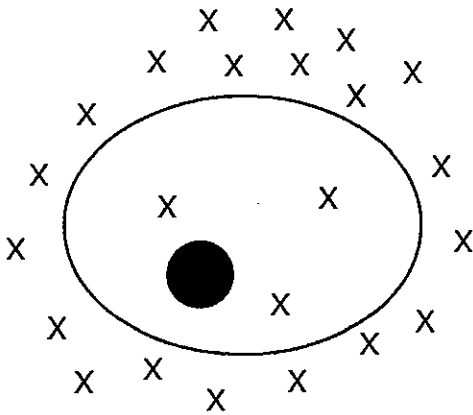
8. Which statement best explains why some cells in the reproductive system only respond to certain hormones?

- A) These cells have different DNA than the cells in other body systems.
- B) These cells have specific types of receptors on their membranes.
- C) Reproductive system cells could be harmed if they made contact with hormones from other body systems.
- D) Cells associated with the female reproductive system only respond to the hormone testosterone.

9. Which sequence shows a *decreasing* level of complexity?

- A) organs → organism → cells → tissues
- B) organism → cells → organs → tissues
- C) cells → tissues → organs → organism
- D) organism → organs → tissues → cells

10. The diagram below shows molecules represented by X both outside and inside of a cell.



A process that would result in the movement of these molecules out of the cell requires the use of

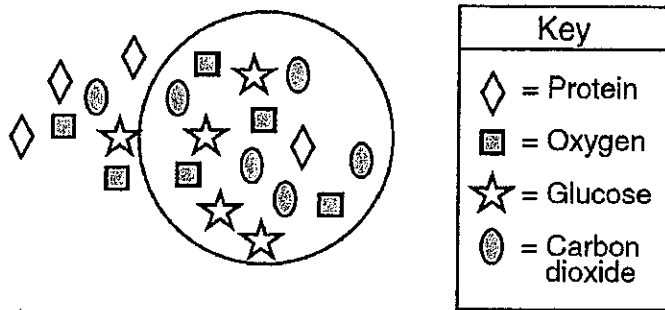
- A) DNA B) ATP
C) antigens D) antibodies
11. The diagram below represents a plant cell in tap water as seen with a compound light microscope.



Which diagram best represents the appearance of the cell after it has been placed in a 15% salt solution for two minutes?

- A) B) C) D)
- Diagram A shows a plant cell that is plasmolyzed, with the cell membrane pulled away from the cell wall. Diagram B shows a plant cell that is turgid, with the cell membrane pressed against the cell wall. Diagram C shows a plant cell that is plasmolyzed, with the cell membrane pulled away from the cell wall. Diagram D shows a plant cell that is plasmolyzed, with the cell membrane pulled away from the cell wall.

12. The diagram below shows the relative concentration of molecules inside and outside of a cell.



Which statement *best* describes the general direction of diffusion across the membrane of this cell?

- A) Glucose would diffuse into the cell.
- B) Protein would diffuse out of the cell.
- C) Carbon dioxide would diffuse out of the cell.
- D) Oxygen would diffuse into the cell.

Regents Review Topic 2

1. Which process is represented by the arrow in the diagram below?



- A) growth
B) respiration
C) regulation
D) excretion
2. In photosynthesis, chlorophyll functions in changing
- A) glucose molecules to starch
B) water and carbon dioxide to sugar
C) light energy to chemical bond energy
D) hydrogen bonds to water
3. The basic inorganic materials used during photosynthesis are
- A) H_2O AND $\text{C}_6\text{H}_{12}\text{O}_6$
B) O_2 and CO_2
C) H_2O and CO_2
D) $\text{C}_6\text{H}_{12}\text{O}_6$ and CO_2
4. Base your answer to the following question on Bromthymol blue turns to bromthymol yellow in the presence of carbon dioxide. When the carbon dioxide is removed, the solution will return to a blue color. Two green water plants were placed in separate test tubes, each containing water and bromthymol yellow. Both test tubes were corked. One tube was placed in the light, the other in the dark. After several days, the liquid in the tube exposed to the light turned blue. This demonstration illustrates that, during photosynthesis, green plants
- A) take in carbon dioxide
B) need bromthymol blue
C) give off oxygen gas
D) form ATP molecules
5. Most of the oxygen in the atmosphere results from the process of
- A) fermentation
B) photosynthesis
C) regulation
D) respiration

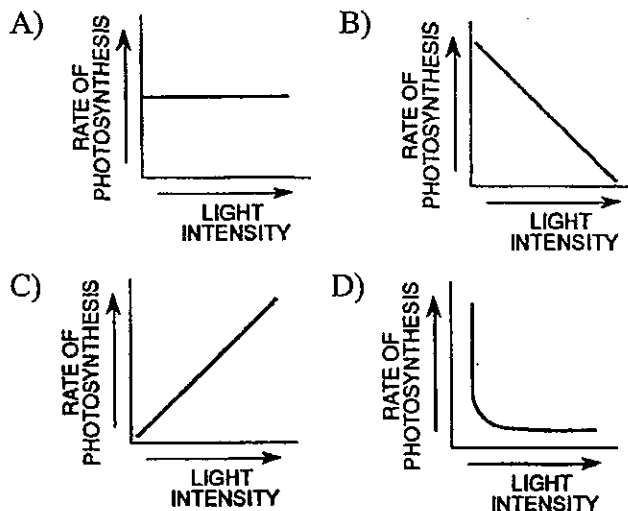
6. Most of the food and oxygen in the environment is produced by the action of

A) saprophytic bacteria
B) heterotrophic organisms
C) aerobic protozoans
D) autotrophic organisms

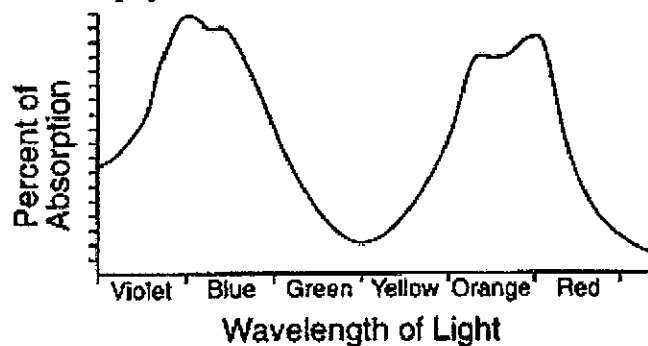
7. Photosynthesis transforms molecules of water and carbon dioxide into molecules of

A) carbohydrate and oxygen
B) carbohydrate and nitrogen
C) polypeptide and oxygen
D) polypeptide and nitrogen

8. If the leaves of a geranium plant receive an adequate supply of raw materials, which graph shows how the rate of photosynthesis is related to increasing light intensity received by the plant?



9. The graph below represents the absorption spectrum of chlorophyll.



The graph indicates that the energy used in photosynthesis is most likely obtained from which regions of the spectrum?

- A) yellow and orange red
 - B) violet blue and green
 - C) orange red and violet blue
 - D) green and yellow
10. Anaerobic respiration is considered to be less efficient than aerobic respiration because
- A) less lactic acid is formed during anaerobic respiration than aerobic respiration
 - B) anaerobic respiration requires more oxygen than aerobic respiration
 - C) the net gain of ATP molecules is less in anaerobic respiration than in aerobic respiration
 - D) less energy is required during anaerobic respiration than aerobic respiration
11. Which word equation represents a type of fermentation?
- A) $\text{glucose} \rightarrow \text{lactic acid} + \text{energy}$
 - B) $\text{glucose} + \text{oxygen} \rightarrow \text{carbon dioxide} + \text{water} + \text{energy}$
 - C) $\text{starch} + \text{water} \rightarrow \text{simple sugars}$
 - D) $\text{carbon dioxide} + \text{water} \rightarrow \text{glucose} + \text{oxygen} + \text{water}$
12. The products produced by yeast cells as a result of anaerobic respiration include ATP and
- A) alcohol and oxygen
 - B) alcohol and carbon dioxide
 - C) water and oxygen
 - D) water and carbon dioxide

13. In a green plant cell, oxygen is used primarily for the process of

- A) dehydration synthesis
- B) photosynthesis
- C) respiration
- D) capillary action

14. In animals, the organelles in which aerobic cellular respiration occurs are known as

- A) ribosomes
- B) chloroplasts
- C) nuclear membranes
- D) mitochondria

15. Base your answer to the following question on Which substance is represented by X in the word equation below?

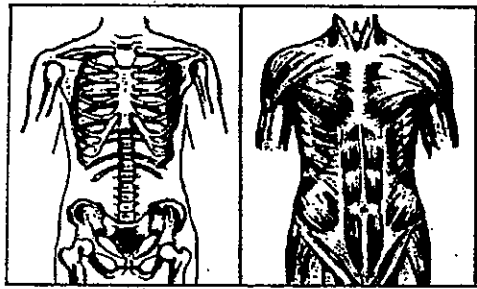
$\text{glucose} + X \xrightarrow{\text{enzymes}} \text{water} + \text{carbon dioxide} + \text{ATP}$

- A) alcohol
- B) chlorophyll
- C) oxygen
- D) lactic acid

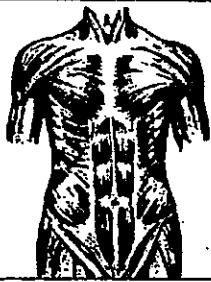
16. In humans, what happens when the breathing rate increases?

- A) Additional oxygen will diffuse into the blood as carbon dioxide diffuses out of the blood in the lungs.
- B) Additional carbon dioxide will diffuse into the blood as oxygen diffuses out of the blood in the lungs.
- C) Oxygen from body cells will diffuse more rapidly into red blood cells.
- D) Increased oxygen dissolved in the blood will stimulate the cerebrum to slow the breathing rate.

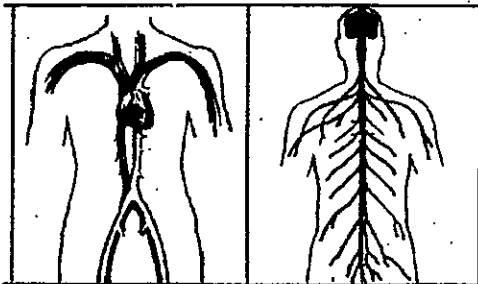
Base your answers to questions 17 through 20 on the diagrams below of organ systems and on your knowledge of biology.



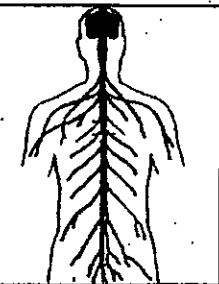
A



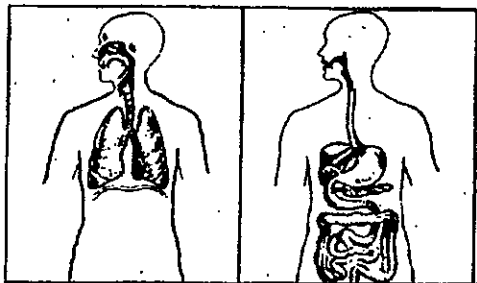
B



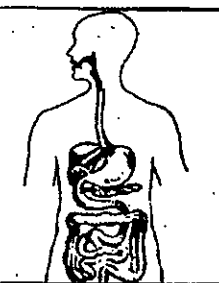
C



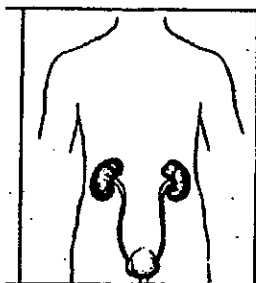
D



E



F



G

17. Which disorder would most directly involve an organ in system *F*?

- A) anemia
- B) constipation
- C) bronchitis
- D) meningitis

18. Tendonitis is a condition that would most directly involve which two systems?

- A) *A* and *B*
- B) *C* and *D*
- C) *E* and *F*
- D) *A* and *G*

19. Cardiovascular diseases interfere most directly with the normal functioning of system

- A) *E*
- B) *G*
- C) *C*
- D) *D*

20. Polio is a disease caused by a virus that directly destroys cells in system

- A) *A*
- B) *B*
- C) *C*
- D) *D*

-
21. Base your answer to the following question on the reading passage below and on your knowledge of biology.

Polio Vaccines

Polio is a disease that results in the destruction of nerve cells. The first vaccine against polio was developed by Jonas Salk and was made from polio viruses that were killed using the chemical formalin. In 1953, Salk tested the vaccine on himself, his wife, and his three sons. The vaccine was found to be safe and seemed to work. In 1954, more than 1.8 million schoolchildren were part of a trial to test the vaccine, and in April 1955, the vaccine was declared to be safe and effective.

Albert Sabin also developed a vaccine against polio. The vaccine developed by Sabin was made from weakened polio viruses. While the Salk vaccine had to be injected, the Sabin vaccine was administered orally on a cube of sugar.

Both vaccines were found to be effective in protecting people against polio because these vaccines stimulate immune responses involving antibody production. However, the Sabin vaccine is effective over a longer period of time and is easier to administer. Together, these vaccines have nearly eliminated polio in many parts of the world.

Which statement about the Salk vaccine is correct?

- A) Dead viruses are injected. B) Antibodies are injected.
C) Antibodies are administered orally. D) Sugar cubes are administered orally.

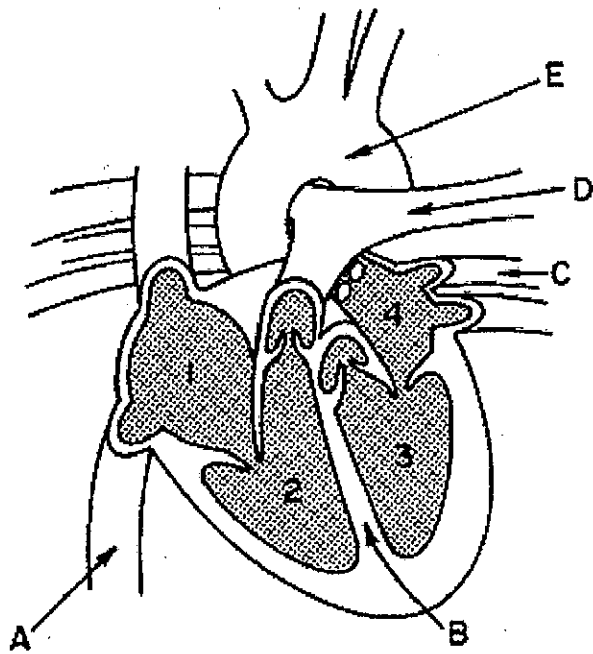
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22. People who receive organ transplants sometimes produce antibodies in response to foreign proteins present in the organ of the donor. This reaction is an example of

- A) regeneration B) clotting
C) rejection D) deamination

23. An individual who has had chicken pox rarely gets this disease again. This situation is an example of

- A) biological control B) negative feedback
C) active immunity D) passive immunity
-

Base your answers to questions 24 through 26 on the diagram of the human heart below and on your knowledge of biology.



24. Oxygenated blood from the left lung is returned to the heart through a structure labeled

- A) A B) E C) C D) D

25. Which sequence correctly represents the flow of blood through the heart?

- A) 4 → 3 and 2 → 1 B) 2 → 1 and 3 → 4
C) 1 → 2 and 3 → 4 D) 1 → 2 and 4 → 3

26. In the ventricles, deoxygenated blood is prevented from mixing with oxygenated blood by the structure labeled

- A) A B) B C) C D) D

27. Which statement best describes enzymes?

- A) They slow down the rate of breathing.
B) They are the building blocks of polymers.
C) They speed up the conduction of impulses along a nerve cell.
D) They influence the rate of chemical reactions.

28. A similarity between the nervous system and the endocrine system in humans is that they both

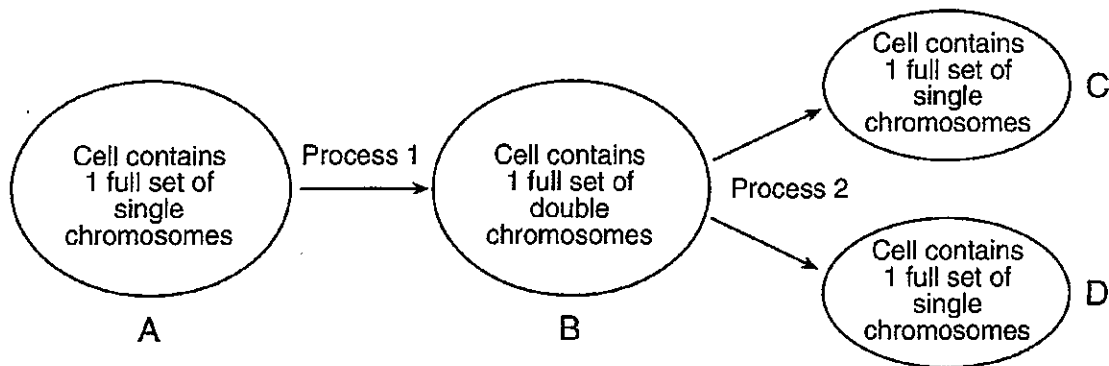
- A) are composed of neurons
B) are composed of glands
C) maintain homeostasis
D) secrete chemicals across synapses

29. Some pituitary hormones cause the ovaries to secrete hormones. These ovarian hormones then influence the production of the pituitary hormones. This type of control mechanism is known as

- A) ovulation B) negative feedback
C) gametogenesis D) a menstrual cycle

Regents Review Topic 4

Base your answers to questions 1 through 4 on the diagram below and on your knowledge of biology. The diagram represents a single-celled organism, such as an amoeba, undergoing the changes shown.



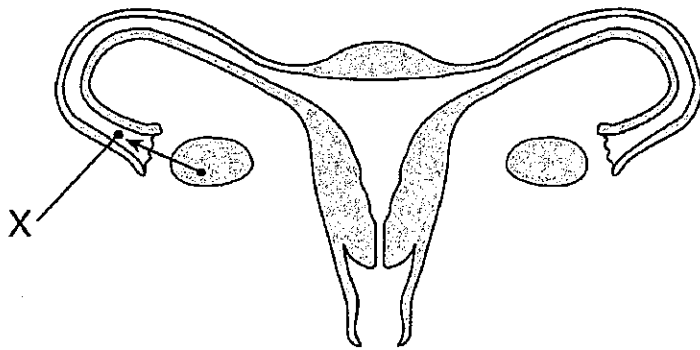
- As a result of these processes, the single-celled organism accomplishes
 - gamete production
 - energy production
 - sexual reproduction
 - asexual reproduction
 - Process 1 is known as
 - replication
 - meiosis
 - differentiation
 - digestion
 - Process 1 and process 2 are directly involved in
 - meiotic cell division
 - mitotic cell division
 - fertilization
 - recombination
 - The genetic content of *C* is usually identical to the genetic content of
 - B* but not *D*
 - both *B* and *D*
 - D* but not *A*
 - both *A* and *D*
-
5. The diagram below shows two different cells undergoing mitotic cell division.



Which statement best describes these cells?

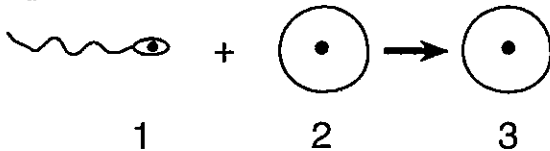
- A and B are different types of animal cells.
- A and B are different types of plant cells.
- A is a plant cell and B is an animal cell.
- A is an animal cell and B is a plant cell.

6. The diagram below represents structures found in a human female.



Which process results in the formation of structure X?

- A) mitosis B) meiosis
C) recombination D) cloning
7. Some cells involved in the process of reproduction are represented in the diagram below



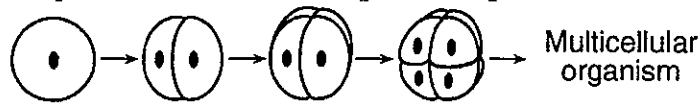
The process of meiosis formed

- A) cell 1, only B) cells 1 and 2
C) cell 3, only D) cells 2 and 3
8. A dogfish shark contains 24 chromosomes in each of its muscle cells. How many chromosomes are normally found in each of its sex cells?
- A) 6 B) 12 C) 24 D) 48
9. In an environment that undergoes frequent change, species that reproduce sexually may have an advantage over species that reproduce asexually because the sexually reproducing species produce
- A) more offspring in each generation.
B) identical offspring.
C) offspring with more variety.
D) new species of offspring in each generation.

10. Which statement is true of both mitosis and meiosis?

- A) Both are involved in asexual reproduction.
B) Both occur only in reproductive cells.
C) The number of chromosomes is reduced by half.
D) DNA replication occurs before the division of the nucleus.
11. The greatest degree of genetic variation would be found in offspring that result from
- A) binary fission B) fertilization
C) regeneration D) grafting

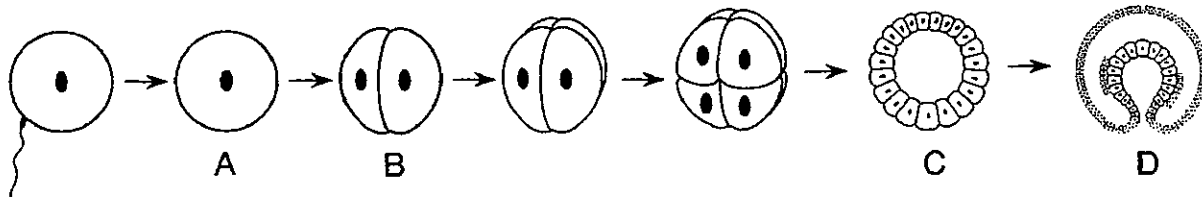
12. Which phrase *best* describes a process represented in the diagram below?



Fertilized egg

- A) a zygote dividing by mitosis
 B) a zygote dividing by meiosis
 C) a gamete dividing by mitosis
 D) a gamete dividing by meiosis

Base your answers to questions 13 and 14 on the diagram below, which represents some stages in the development of an embryo, and on your knowledge of biology.



13. Which stage represents a zygote?

- A) A B) B C) C D) D

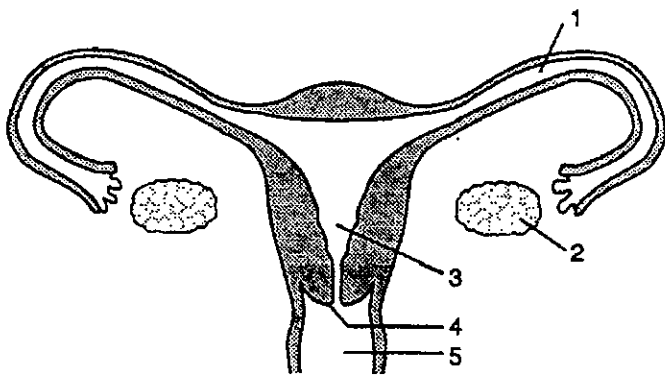
14. Which stage represents a blastula?

- A) A B) B C) C D) D

15. Which characteristic of sexual reproduction has specifically favored the survival of animals that live on land?

- A) fusion of gametes in the outside environment
 B) male gametes that may be carried by the wind
 C) fertilization within the body of the female
 D) female gametes that develop within ovaries

16. Base your answer to the following question on the diagram below. Select the part of the human female reproductive tract that is best described by that statement.



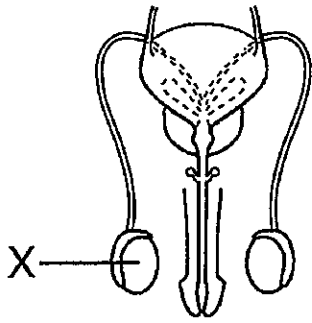
Fertilization normally occurs within this structure.

- A) 1 B) 2 C) 3 D) 4 E) 5

17. With which type of organism does external fertilization occur most often?

- A) mammals and birds
 B) reptiles and birds
 C) amphibians and reptiles
 D) fish and amphibians

-
18. The diagram below represents a system in the human body.



The primary function of structure X is to

- A) produce energy needed for sperm to move
 - B) provide food for the sperm to carry to the egg
 - C) produce and store urine
 - D) form gametes that may be involved in fertilization
19. Which situation involves a risk to a fetus due to the mother smoking during pregnancy?
- A) decreased digestive activity in the stomach of the fetus
 - B) a decrease in the amount of oxygen in the ovary of the mother
 - C) inhalation of secondhand smoke by the fetus
 - D) toxins in the bloodstream of the mother
-

Base your answers to questions 20 and 21 on the information below and on your knowledge of biology.

Stem Cells

If skin is cut, the wound closes within days. If a leg is broken, the fracture will usually mend if the bone is set correctly. Almost all human tissue can repair itself to some extent. Much of this repair is due to the activity of stem cells. These cells resemble those of a developing embryo in their ability to reproduce repeatedly, forming exact copies of themselves. They may also form many other different kinds of cells. Stem cells in bone marrow offer a dramatic example. They can give rise to all of the structures in the blood: red blood cells, platelets, and various types of white blood cells. Other stem cells may produce the various components of the skin, liver, or intestinal lining.

The brain of an adult human can sometimes compensate for damage by making new connections among surviving nerve cells (neurons). For many years, most biologists believed that the brain could not repair itself because it lacked stem cells that would produce new neurons.

A recent discovery, however, indicates that a mature human brain does produce neurons routinely at one site, the hippocampus, an area important to memory and learning. This discovery raises the prospect that stem cells that make new neurons in one part of the brain might be found in other areas. If investigators can learn how to cause existing stem cells to produce useful numbers of functional nerve cells, it might be possible to correct a number of disorders involving damage to neurons such as Alzheimer's disease, Parkinson's disease, stroke, and brain injuries.

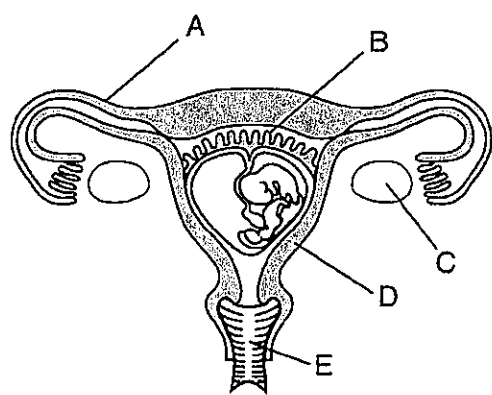
20. Stem cells may be similar to the cells of a developing embryo because both cell types can

- A) produce only one type of cell
- B) help the brain to learn and remember things
- C) divide and differentiate
- D) cause Alzheimer's and Parkinson's diseases

21. What is the process by which stem cells produce exact copies of themselves?

- | | |
|-----------------------------|-----------------------------|
| A) cell division by mitosis | B) cell division by meiosis |
| C) sexual reproduction | D) glucose synthesis |

22. The human female reproductive system is represented in the diagram below.



Complete boxes 1 through 4 in the chart below using the information from the diagram.

| Name of Structure | Letter on Diagram | Function of Structure |
|-------------------|-------------------|--|
| 1 _____ | 2 _____ | produces gametes |
| uterus | D | 3 _____ |
| 4 _____ | B | transports oxygen directly to the embryo |

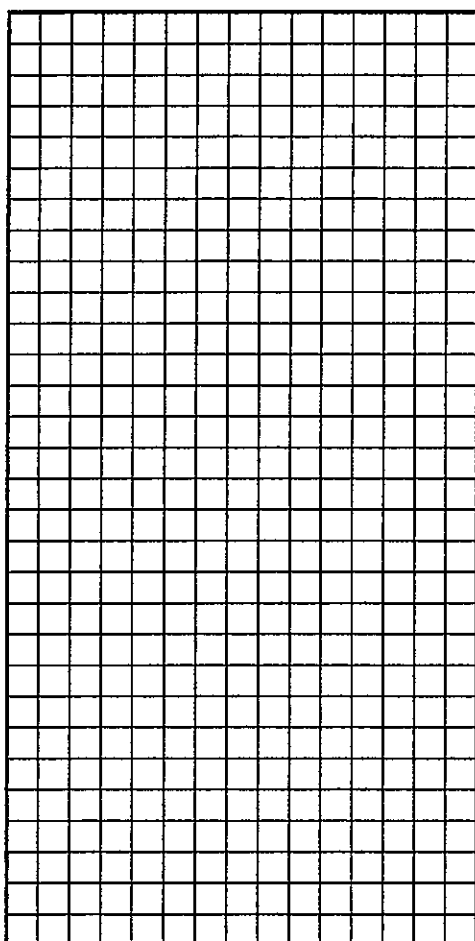
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23. Base your answer to the following question on the information and data table below and on your knowledge of biology.

Three biology students wanted to find out if adding fertilizer to some potting soil would affect the germination of radish seeds. Each student added an equal amount of potting soil from the same bag to each of 10 cups. Student *A* added 1 gram of fertilizer to each cup of soil in group *A*. Student *B* added 2 grams of fertilizer to each cup of soil in group *B*. Student *C* added 3 grams of fertilizer to each cup of soil in group *C*. After stirring the mixture to obtain an even distribution of fertilizer, 8 radish seeds were placed in each cup and covered with 0.5 centimeter of soil. Over the next 6 days, all conditions, including the amounts of water and sunlight, were kept the same. The results are recorded in the data table below.

Data Table

| Days After Planting | Total Number of Seedlings Visible Above the Soil | | |
|---------------------|--|---------|---------|
| | Group A | Group B | Group C |
| 1 | 0 | 0 | 0 |
| 2 | 5 | 7 | 0 |
| 3 | 10 | 14 | 0 |
| 4 | 17 | 24 | 0 |
| 5 | 20 | 40 | 0 |
| 6 | 30 | 52 | 0 |

Total Number of Seedlings Visible Above the Soil



Key

| | |
|---------|--|
| Group A | |
| Group B | |

Example:

Example:

Days

Plot the data for group *B* on the grid. Surround each point with a small triangle and connect the points.