1. When a planarian (a type of worm) is cut in half, each half usually grows back into a complete worm over time. This situation most closely resembles

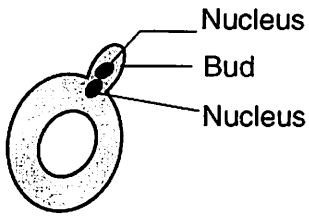
   1) asexual reproduction in which a mutation has occurred

   2) sexual reproduction in which each half represents one parent

   3) asexual reproduction of a single-celled organism

   4) sexual reproduction of a single-celled organism

2. The diagram below represents a yeast cell that is in the process of budding, a form of asexual reproduction.



   Which statement describes the outcome of this process?

   1) The bud will develop into a zygote.

   2) The two cells that result will each contain half the species number of chromosomes.

   3) The two cells that result will have identical DNA.

   4) The bud will start to divide by the process of meiotic cell division.

3. A variety of plant produces small white fruit. A stem was removed from this organism and planted in a garden. If this stem grows into a new plant, it would most likely produce

   1) large red fruit, only

   2) large pink fruit, only

   3) small white fruit, only

   4) small red and small white fruit on the same plant

4. A tree produces only seedless oranges. A small branch cut from this tree produces roots after it is planted in soil. When mature, this new tree will most likely produce

   1) oranges with seeds, only

   2) oranges without seeds, only

   3) a majority of oranges with seeds and only a few oranges without seeds

   4) oranges and other kinds of fruit

5. Many viruses infect only a certain type of cell because they bind to certain

   1) other viruses on the surface of the cell

   2) mitochondria in the cell

   3) hormones in the cell

   4) receptor sites on the surface of the cell

6. The human reproductive system is regulated by

   1) restriction enzymes

   2) antigens

   3) complex carbohydrates

   4) hormones

7. Asexually reproducing organisms pass on hereditary information as

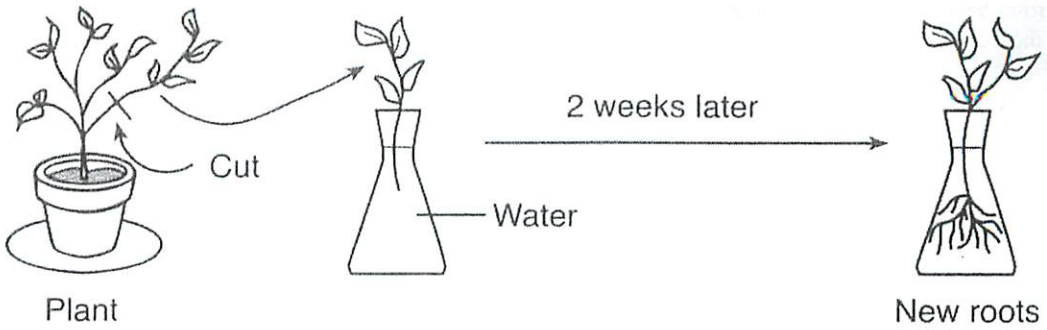
   1) sequences of A, T, C, and G

   2) chains of complex amino acids

   3) folded protein molecules

   4) simple inorganic sugars

8. A technique used to reproduce plants is shown in the diagram below.



This technique is a form of

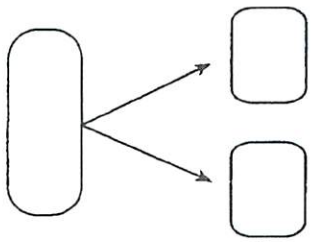
1) sexual reproduction

2) asexual reproduction

3) gamete production

4) gene manipulation

9. An antibiotic is effective in killing 95% of a population of bacteria that reproduce by the process shown below.



Which statement best describes future generations of these bacteria?

1) They will be produced by asexual reproduction and will be more resistant to the antibiotic.

2) They will be produced by sexual reproduction and will be more resistant to the antibiotic.

3) They will be produced by asexual reproduction and will be just as susceptible to the antibiotic.

4) They will be produced by sexual reproduction and will be just as susceptible to the antibiotic.

10. Marine sponges contain a biological catalyst that blocks a certain step in the separation of chromosomes. Which cellular process would be directly affected by this catalyst?

1) mitosis

2) diffusion

3) respiration

4) photosynthesis

11. The uncontrolled division of certain body cells, which then invade the surrounding tissues and interfere with the normal functioning of the body, is known as

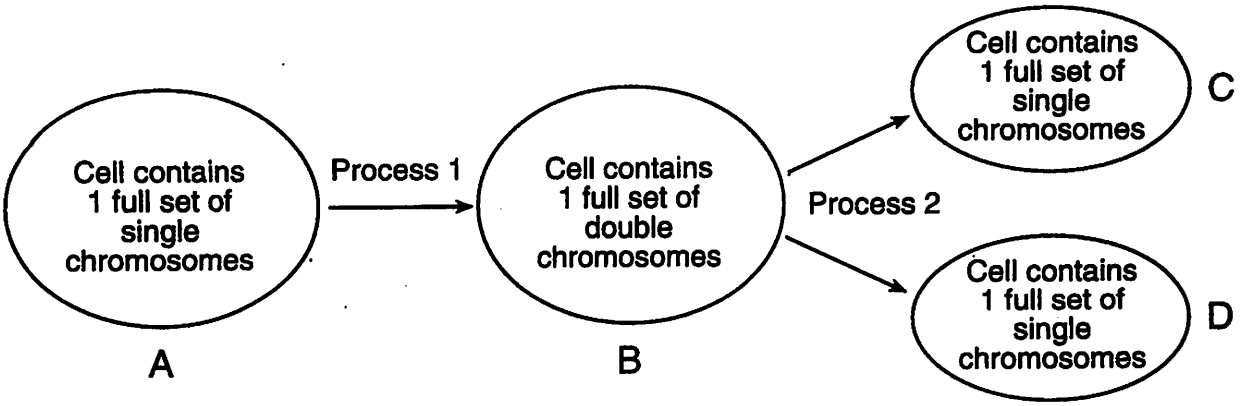
1) cancer

2) regeneration

3) cleavage

4) oogenesis

Base your answers to questions **15** through **18** on the diagram below and on your knowledge of biology. The diagram represents a single-celled organism, such as an ameba, undergoing the changes shown.



15. Process 1 and process 2 are directly involved in

    1) meiotic cell division

    2) mitotic cell division

    3) fertilization

    4) recombination

16. As a result of these processes, the single-celled organism accomplishes

    1) gamete production

    2) energy production

    3) sexual reproduction

    4) asexual reproduction

17. Process 1 is known as

    1) replication

    2) meiosis

    3) differentiation

    4) digestion

12. The sequence of events occurring in the life cycle of a bacterium is listed below.

(A) The bacterium copies its single chromosome.
(B) The copies of the chromosome attach to the cell membrane of the bacterium.
(C) As the cell grows, the two copies of the chromosome separate.
(D) The cell is separated by a wall into equal halves.
(E) Each new cell has one copy of the chromosome.

This sequence most closely resembles the process of

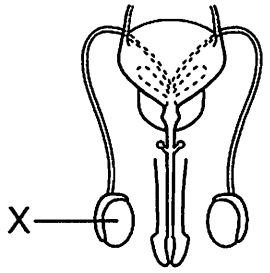
1) recombination

2) zygote formation

3) mitotic cell division

4) meiotic cell division

13. The diagram below represents a system in the human body.



The primary function of structure X is to

1) produce energy needed for sperm to move

2) provide food for the sperm to carry to the egg

3) produce and store urine

4) form gametes that may be involved in fertilization

14. Which reproductive structure is correctly paired with its function?

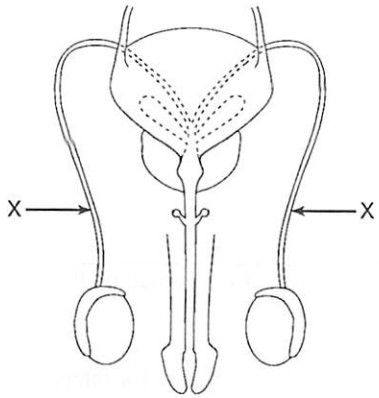
1) uterus—usual site of fertilization

2) testis—usual location for egg development

3) ovary—delivers nutrients to the embryo

4) sperm—transports genetic material

25. Some body structures of a human male are represented in the diagram below.



An obstruction in the structures labeled *X* would directly interfere with the

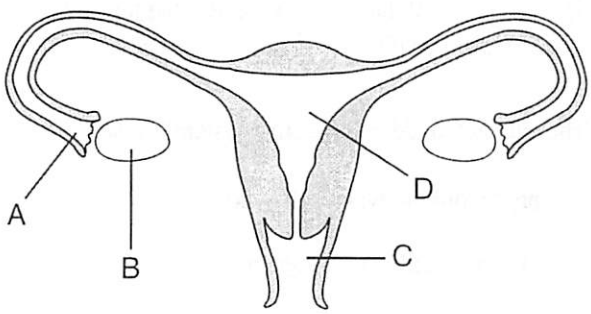
1) transfer of sperm to a female

2) production of sperm

3) production of urine

4) transfer of urine to the external environment

26. The diagram below represents the human female reproductive system.



Exposure to radiation or certain chemicals could alter the genetic information in the gametes that form in structure

1) *A*

2) *B*

3) *C*

4) *D*

27. Removal of one ovary from a human female would most likely affect the production of eggs make fertilization impossible make carrying a fetus impossible decrease her ability to provide essential nutrients to an embryo

1) affect the production of eggs

2) make fertilization impossible

3) make carrying a fetus impossible

4) decrease her ability to provide essential nutrients to an embryo

28. Toxins can harm a developing fetus. They usually enter the fetus by the process of

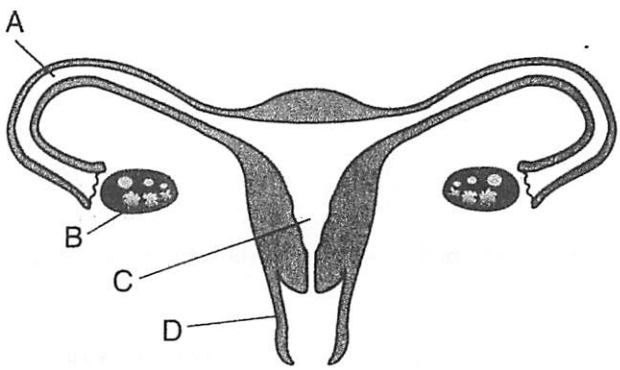
1) blood flow from the mother to the fetus

2) active transport from the ovary

3) diffusion across placental membranes

4) recombination of genes from the fetus and mother

29. A diagram of human female reproductive structures is shown below.



Which structure is correctly paired with its function?

1) *A* – releases estrogen and progesterone

2) *B* – produces and releases the egg

3) *C* – provides the usual site for fertilization

4) *D* – nourishes a developing embryo

18. The genetic content of *C* is usually identical to the genetic content of

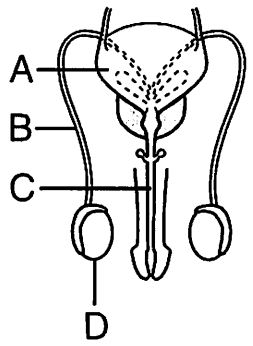
1) *B* but not *D*

2) both *B* and *D*

3) *D* but not *A*

4) both *A* and *D*

19. The diagram below represents a human reproductive system.



Meiosis occurs within structure

1) *A*

2) *B*

3) *C*

4) *D*

20. Which statement describes the reproductive system of a human male?

1) It releases sperm that can be used only in external fertilization.

2) It synthesizes progesterone that regulates sperm formation.

3) It produces gametes that transport food for embryo formation.

4) It shares some structures with the excretory system.

21. The reproductive system of the human male produces gametes and

1) transfers gametes to the female for internal fertilization

2) produces enzymes that prevent fertilization

3) releases hormones involved in external fertilization

4) provides an area for fertilization

22. Testes are adapted to produce

1) body cells involved in embryo formation

2) immature gametes that undergo mitosis

3) sperm cells that may be involved in fertilization

4) gametes with large food supplies that nourish a developing embryo

23. The human female reproductive system is adapted for

1) production of zygotes in ovaries

2) external fertilization of gametes

3) production of milk for a developing embryo

4) transport of oxygen through a placenta to a fetus

24. Human egg cells are most similar to human sperm cells in their

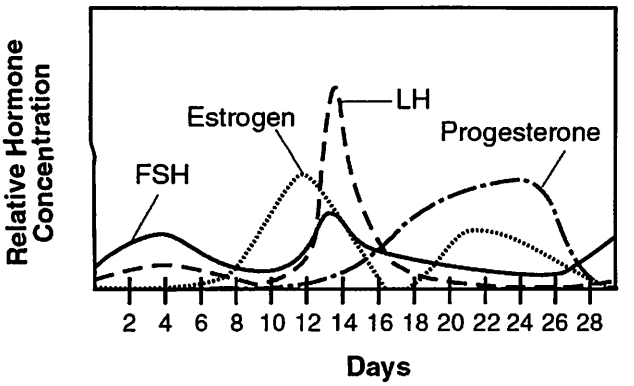
1) degree of motility

2) amount of stored food

3) chromosome number

4) shape and size

30. Some chemical interactions in a human are shown in the graph below.



This graph represents hormones and events in the

1) process of fetal growth and development

2) process of meiotic cell division during sperm development

3) reproductive cycle of males

4) reproductive cycle of females

31. Meiosis and fertilization are important processes because they may most immediately result in

1) many body cells

2) immune responses

3) genetic variation

4) natural selection

32. As women age, their reproductive cycles stop due to decreased

1) digestive enzyme production

2) production of ATP

3) levels of specific hormones

4) heart rate

Base your answers to questions **33** through **35** on the information below and on your knowledge of biology.

Human reproduction is influenced by many different factors.

33. Identify *one* harmful substance that can pass through this structure and describe the *negative* effect it can have on the fetus.

34. Identify *one* reproductive hormone and state the role it plays in reproduction.

35. Identify the structure in the uterus where the exchange of material between the mother and the developing fetus takes place.