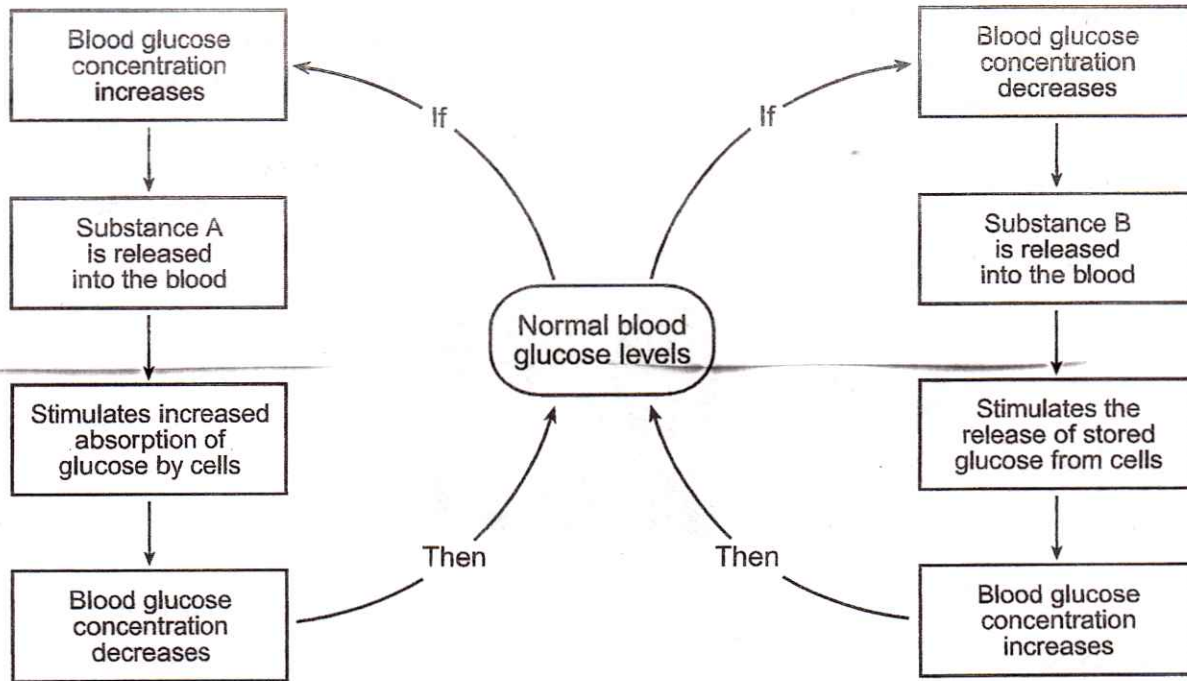


Base your answers to questions 1 and 2 on the diagram below and on your knowledge of biology. The diagram represents the effect of two chemical substances, A and B, in maintaining the level of glucose in the blood in humans.



1. The interaction of substances A and B is an example of

- (1) a genetic mutation
- (2) homeostatic feedback
- (3) an immune response
- (4) active transport

2. Which statement is correct regarding the substances involved in these interactions?

- (1) Substance A is insulin, which is released by cells in the pancreas.
- (2) Substance B is a chemical receptor molecule produced by blood cells.
- (3) Both substances A and B are classified as biological catalysts.
- (4) Substance A is a chemical that is produced by specialized blood cells.

3. Explain **Diabetes**.

4. Name the **hormone** associated with **Diabetes**.

5. Name the **gland** that releases the hormone associated with **Diabetes**.

6. Which **gland** releases **egg cells**?

7. What **hormone** is released by the **testes**?

8. **Hormones** and **Enzymes** are **made of**

9. Give an **example** on how your body **maintains homeostasis**. (2 points)

Homework 4.2

Name: _____

Date: _____

Living Environment Period _____

15 points

Homework 4.2 Asexual Reproduction

- A. ASEXUAL REPRODUCTION:** Asexual reproduction results from mitotic cell division (mitosis). During asexual reproduction, one cell, called the parent cell, divides into two identical daughter cells. The new organisms, called offspring, are genetically identical to the parent cell. Asexual reproduction is more common in invertebrate animals than in vertebrate animals. Unicellular and multicellular plants can reproduce both asexually and sexually. Common types of asexual reproduction include binary fission, budding, sporulation, regeneration, and vegetative propagation.

REVIEW QUESTIONS:

1. What is asexual reproduction?
2. Asexual reproduction is more common in _____ animals than in _____ animals.
3. Name three types of asexual reproduction.

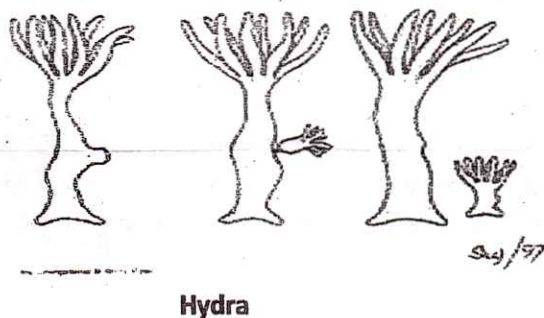
- B. BINARY FISSION.** Binary fission is the simplest type of asexual reproduction. During **binary fission**, a one-celled organism divides by mitosis to form two daughter cells of equal size. Both the nucleus and the cytoplasm divide equally. The chromosomes of the offspring are identical to that of the parent. Amebas, paramecia, and bacteria reproduce by binary fission.

REVIEW QUESTIONS:

4. Describe binary fission.
5. Name two organisms that divide by binary fission.



- C. **BUDDING.** A type of asexual reproduction in which a new organism develops as an outgrowth of the parent is called **budding**. The new organism, called the bud, is a tiny duplicate of the parent organism. In budding, the nucleus divides equally and the cytoplasm divides unequally. The bud and the parent may separate from each other or may remain together and form a colony. Budding occurs in unicellular organisms, such as yeast, and in multicellular organisms, such as the hydra.



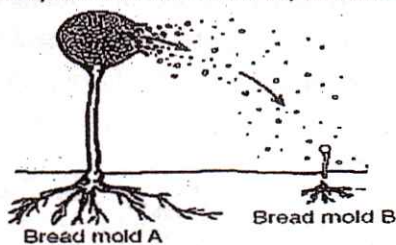
Hydra

Yeast

REVIEW QUESTIONS

6. Budding results in equal division of the _____ and unequal division of the _____.
7. A one celled organism that reproduces by budding is _____.
8. _____ is a multicellular organism that reproduces by budding.

- D. **SPORULATION.** Spores are specialized asexual reproductive cells that contain a nucleus and a small amount of cytoplasm. Spores are surrounded by tough protective coats that enable them to survive unfavorable conditions, such as extreme heat or cold, for long periods of time. When environmental conditions become favorable, each spore can develop in a new organism. The new organism has the same genetic makeup as its parent. **Sporulation**, the formation of spores, occurs in bread mold, mushrooms, mosses and ferns.



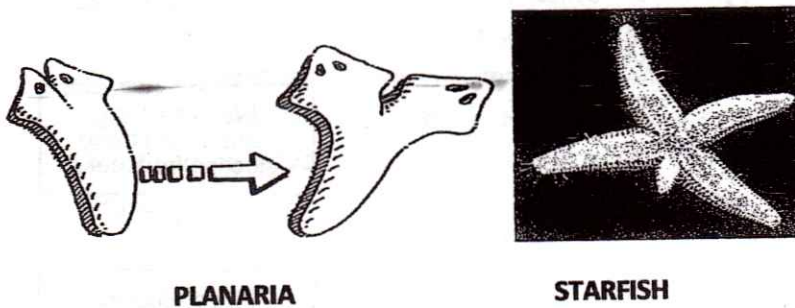
Bread mold A

Bread mold B

REVIEW QUESTIONS

9. What is a spore?
10. State one advantage of spore formation.

E. **REGENERATION.** Regeneration is the development of a new organism from a part of the parent organism. For example, in starfish, a single arm can develop into a new starfish. Starfish eat oysters and oyster fisherman once tried to kill starfish by cutting them into pieces. Instead of dying, each starfish piece grew into a new starfish. Regeneration can also mean the replacement of lost body parts. For example, lobsters are able to grow a new claw to replace one that has been lost. Regeneration of lost body parts occurs mostly in invertebrates. Other animals that can regenerate are planaria and sponges.



REVIEW QUESTIONS

11. What is regeneration?
12. Name two animals that reproduce by regeneration.

F. **VEGEGATIVE PROPAGATION.** **Vegetative propagation** is a form of asexual plant reproduction. In vegetation propagation, a part of a plant- a root, stem, or leaf, grown into a new plant. The new plant is exactly the same as the parent plant. Commercial growers use vegetative propagation rather than seeds when they want to be sure the offspring is identical to the parent. Seedless fruits and vegetables have to reproduced by this method. In addition, growers use this type of reproduction because it is fast, easy to use, and usually successful. Vegetative propagation can occur naturally or artificially. Natural vegetative propagation occurs naturally without human interference. Types of natural vegetative propagation include tubers, runners, rhizomes, and bulbs. Artificial vegetative propagation occurs as a result of human activities. Two common methods of artificial vegetative propagation are **cuttings** and **grafting**.

REVIEW QUESTIONS:

13. What is vegetative propagation?
14. Name three plants that reproduce by vegetative propagation.