CHAPTER 3

Review

SUGGESTED ANSWERS

WHAT DO YOU REMEMBER?

1. The level of organism contains all the other levels.
2. Sample answer:

Tissue type	Structure	Function
muscle	made up of long cells that are able to contract	movement, heart beat
nerve	cells are long and thin, with a long axon	transmitting information around the body
connective	long, tough, elastic ligaments and cartilage	hold bones and muscles together and cushion bones from rubbing against each other
epithelial	flat cells that overlap and form a smooth surface	protection and reduction of water loss

3. **(a)** The main function of the digestive system is to break down food so the body can absorb nutrients which can be used for energy, growth, and repair.
   (b) The main function of the brain is to control movement, regulate body functions, and interpret and respond to sensory input.
   (c) The main function of the blood is to bring oxygen and nutrients to cells and carry away wastes and carbon dioxide; also to provide defense against infections
4. The main organs of the nervous system are: brain: controls movement and body functions, processes sensory information; sense organs: to bring information in so the brain can process it; spinal cord: to transmit nerve impulses to and from the body
5. **(a)** Smooth muscle moves food through the digestive tract.
   (b) It is a suitable type of muscle because it moves without conscious control.
6. **(a)** The musculoskeletal system provides support and structure for the body.
   (b) Another function of the musculoskeletal function is movement.
   (c) Connective and muscle tissues make up the musculoskeletal system.
7. **(a)** The circulatory system is responsible for transporting nutrients to all parts of the body.
   (b) The main organ in the circulatory system is the heart.

WHAT DO YOU UNDERSTAND?

8. **(a)** Embryonic stem cells come from embryos. Tissue stem cells come from adult cells.
   (b) Tissue stem cells from bone marrow can be used to replace non-functioning bone marrow cells. The new cells can allow a person to create healthy blood cells.
9. **(a)** Regeneration means to grow new cells to replace a lost or damaged body part.
   (b) Humans can regenerate damaged tissue but only in a limited way. Liver tissue and mucus lining in the digestive and respiratory systems can regenerate itself, but humans cannot regenerate lost limbs.

10. (a) Some functions of a human arm are to move, grasp, throw, and catch.

    (b) Some functions of a bird's wing are to flap and fly.

    (c) Both functions involve movement, but the chicken's movement is more specialized and limited.

    (d) The chicken's wing joints have less freedom of movement.

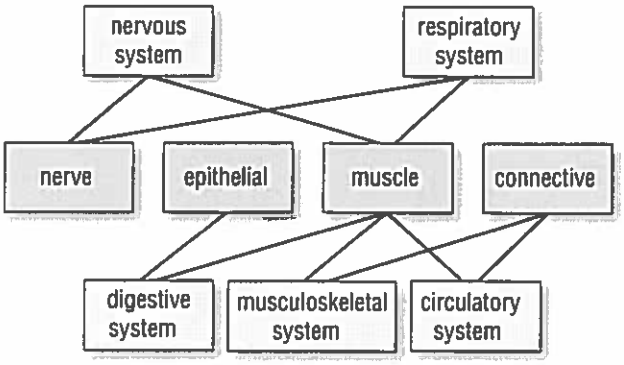
11. Circulatory, respiratory, digestive systems all work together. The digestive system provides food to the circulatory system. The respiratory system provides oxygen to the circulatory system. The circulatory system delivers this oxygen and food to body cells. Carbon dioxide from cells is delivered from the circulatory system back to the respiratory system so it can exit from the body.

12.

Technology	What damage or disease it can detect or diagnose	How it is used to diagnose or treat damage or disease
MRI	brain injuries	pinpoints damages in brain areas
tissue stem cells	bone marrow diseases	new cells can be put into the blood, arrive in the bone marrow and make new, healthy blood cells
angiogram	coronary artery disease	dyes show up in X-rays to show where arteries are blocked
X-ray	tuberculosis	can be used along with stomach and lung samples to diagnose TB

13. Embryonic stem cells divide and differentiate to become specialized tissue, such as brain or muscle cells. As a fetus develops, these specialized cells form tissues and organs, and eventually grow into adult organ systems.

14. Sample diagram:



SOLVE A PROBLEM

15. Pros: saves lives, does not harm donors, technology is improving. Cons: expensive, risky, donors may not be found, prevents other technologies from being developed.

Pros	Cons
saves lives	expensive
usually no harm to donors	risky
technology less invasive	often not successful
	can harm donors
	prevents other technologies from being used