Chapter 39 Endocrine and Reproductive Systems

Section 39–1 The Endocrine System  (pages 997–1002)

Key Concepts
- What is the function of the endocrine system?
- How does the endocrine system maintain homeostasis?

Introduction  (page 997)
1. What makes up the endocrine system? 
   
2. What do the products of the endocrine system do? 
   
Hormones  (page 997)
3. Chemicals released in one part of the body that travel through the bloodstream and affect the activities of cells in other parts of the body are called . 

4. How do hormones affect the activities of other cells? 

5. Cells that have receptors for a particular hormone are referred to as . 

6. Is the following sentence true or false? Cells without receptors are not affected by hormones. 

7. Is the following sentence true or false? Generally, the body’s responses to hormones are quicker and shorter lasting than the responses to nerve impulses. 

Glands  (page 998)
8. An organ that produces and releases a substance, or secretion, is called a(an) . 

9. What is an exocrine gland? 

10. Glands that release sweat, tears, and digestive juices are considered glands. 

11. What is the function of the parathyroid glands? 

12. Match the endocrine gland with the hormone it produces.
   - Endocrine Gland  
     a. Pineal  
     b. Thyroid  
     c. Pancreas  
     d. Thymus  
     e. Adrenal  
     f. Ovary  
     g. Testis  
   - Hormone It Produces  
     a. Glucagon  
     b. Melatonin  
     c. Epinephrine  
     d. Thyroxine  
     e. Thymosin  
     f. Testosterone  
     g. Estrogen 

13. The hormone that regulates metabolism is . 

Hormone Action  (page 999)
20. List the two general groups into which hormones may be classified.
   a. 
   b. 

21. Circle the letter of each sentence that is true about steroid hormones.
   a. They are lipids.
   b. They cannot cross cell membranes.
   c. They help regulate gene expression.
   d. They can enter the nucleus.

22. Circle the letter of each sentence that is true about nonsteroid hormones.
   a. They are proteins, small peptides, or modified amino acids.
   b. They can cross cell membranes.
   c. They rely on secondary messengers.
   d. They cannot enter the nucleus.

23. Is the following sentence true or false? Secondary messengers may include calcium ions, cAMP, nucleotides, and fatty acids. 

24. Prostaglandins  (page 1000)
25. Hormonelike substances produced by other kinds of cells and tissues are called .
26. Why are prostaglandins known as “local hormones”? ________________________________

27. Is the following sentence true or false? Some prostaglandins cause smooth muscles to contract. ________________

Control of the Endocrine System  (pages 1000–1001)

28. When does feedback inhibition occur? ________________________________

29. Fill in the missing labels in the diagram to show how the thyroid gland is regulated by feedback controls.

   Inhibition

   TRH → Anterior pituitary → Thyroid →

30. Circle the letter of each event that occurs when core body temperature begins to drop.
   a. The hypothalamus produces less TRH.
   b. More TSH is released.
   c. Less thyroxine is released.
   d. Metabolic activity increases.

31. Is the following sentence true or false? As you lose water, the concentration of dissolved materials in the blood falls. ________________

Complementary Hormone Action  (page 1002)

32. What is complementary hormone action? ________________________________

33. Is the following sentence true or false? Calcitonin increases the concentration of calcium in the blood. ________________________________

34. If calcium levels drop too low, the parathyroid glands release ________________________________.

35. How does PTH increase calcium levels? ________________________________

36. Why is the regulation of calcium levels so important? ________________________________

Section 39–2 Human Endocrine Glands  (pages 1003–1008)

Key Concept
- What are the functions of the major endocrine glands?

Introduction  (page 1003)
1. List seven major glands of the endocrine system.
   a. ________________________________ e. ________________________________
   b. ________________________________ f. ________________________________
   c. ________________________________ g. ________________________________
   d. ________________________________

Pituitary Gland  (page 1003)
2. Describe the pituitary gland and its location. ________________________________

3. List the two parts of the pituitary gland.
   a. ________________________________ b. ________________________________

4. In general, what is the role of pituitary gland hormones? ________________________________

Hypothalamus  (page 1004)
5. Is the following sentence true or false? The hypothalamus controls the secretions of the pituitary gland. ________________________________

6. What influences the activity of the hypothalamus? ________________________________

7. In what way is the posterior pituitary an extension of the hypothalamus? ________________________________

8. Is the following sentence true or false? The hypothalamus has direct control of the anterior pituitary. ________________________________

Match each pituitary hormone with its action.

<table>
<thead>
<tr>
<th>Hormone</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. ADH</td>
<td>a. Stimulates ovaries and testes</td>
</tr>
<tr>
<td>10. FSH</td>
<td>b. Stimulates production of eggs and sperm</td>
</tr>
<tr>
<td>11. LH</td>
<td>c. Stimulates release of hormones from adrenal cortex</td>
</tr>
<tr>
<td>12. GH</td>
<td>d. Stimulates protein synthesis and growth in cells</td>
</tr>
<tr>
<td>13. ACTH</td>
<td>e. Stimulates the kidneys to reabsorb water</td>
</tr>
</tbody>
</table>
14. What are releasing hormones, and what do they do? 

15. Where is the thyroid gland located? 

16. Is the following sentence true or false? The thyroid gland regulates reproduction. 

17. List the two hormones produced by the thyroid.
   a. 
   b. 

18. What does thyroxine do in the body? 

19. Production of too much thyroxine leads to a condition called 

20. An enlargement of the thyroid gland is called a(an) .

21. Infants who lack enough iodine to produce normal amounts of thyroxine suffer from a condition called .

22. How can cretinism usually be prevented? 

23. How does parathyroid hormone regulate calcium levels in the blood? 

24. What is the general role of the adrenal glands? 

25. The outer part of the adrenal gland is called the , and the inner part is called the .

26. Is the following sentence true or false? The release of hormones from the adrenal medulla is regulated by the sympathetic nervous system. 

27. Complete the table about adrenal gland hormones.

<table>
<thead>
<tr>
<th>Part of Adrenal Gland</th>
<th>Hormones It Produces</th>
<th>Role of the Hormones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adrenal medulla</td>
<td>Corticosteroids</td>
<td>Regulating minerals, metabolism</td>
</tr>
</tbody>
</table>

28. Is the following sentence true or false? The pancreas is both an endocrine gland and an exocrine gland. 

29. What is the role of insulin and glucagon? 

30. When the pancreas fails to produce or properly use insulin, a condition known as __________ occurs.

31. __________ is an autoimmune disorder that usually develops in people before the age of 15.

32. People with what type of diabetes produce low to normal amounts of insulin? 

33. List the two important functions served by the gonads.
   a. 
   b. 

34. The female gonads are the ____________, and the male gonads are the ____________.

Reading Skill Practice
Taking notes can help you identify and remember the most important information in a section. Take notes on Section 39–2 by writing the main headings and under each heading listing the most important points. Do your work on a separate sheet of paper.
Section 39–3  The Reproductive System  (pages 1009–1015)

Key Concepts
- What are the main functions of the male and female reproductive systems?
- What are the four phases of the menstrual cycle?

Sexual Development  (page 1009)
1. Circle the letter of each sentence that is true about sexual development before birth.
   a. Testes and ovaries begin to develop during the first six weeks.
   b. Male and female reproductive organs develop from the same tissues in the embryo.
   c. The testes produce testosterone, and the ovaries produce estrogen.
   d. Hormones determine whether the embryo will develop into a male or a female.

2. What is puberty? ______________________________

3. How does the hypothalamus begin puberty? ______________________________

The Male Reproductive System  (pages 1010–1011)
4. Is the following sentence true or false? The release of FSH and LH stimulates cells in the testes to produce testosterone. ________________

5. Circle the letter of each term that refers to a structure of the male reproductive system.
   a. testes
   b. Fallopian tube
   c. vas deferens
   d. urethra

6. The testes are contained in a sac called the ____________________.

7. Why do the testes remain outside the body cavity? ______________________________

8. Is the following sentence true or false? Sperm are produced in the vas deferens. ________________

9. The structure in which sperm fully mature and are stored is the ____________________.

10. The tube that leads to the outside of the body through the penis is the ____________________.

The Female Reproductive System  (pages 1011–1012)
13. Circle the letter of each choice that is a structure of the female reproductive system.
   a. ovary
   b. epididymis
   c. uterus
   d. vagina

14. Is the following sentence true or false? The ovaries usually produce only one mature ovum each month. ________________

15. Clusters of cells surrounding a single egg are called primary ____________________.

16. The hormone that stimulates a follicle to grow and mature each month is ____________________.

17. Is the following sentence true or false? Fertilization takes place in the uterus. ________________

The Menstrual Cycle  (pages 1013–1014)
18. Circle the letter of each sentence that is true about the menstrual cycle.
   a. It lasts an average of 3 to 7 days.
   b. It is controlled by hormones.
   c. It prepares the uterus to receive an egg.
   d. It has four phases.

19. Is the following sentence true or false? The level of estrogen falls at the start of the follicular phase of the menstrual cycle. ________________

20. During the luteal phase, the follicle turns yellow and is now known as the ____________________.

11. Label the drawing of a sperm with the following structures: head, nucleus, midpiece, and tail.

12. A nutrient-rich fluid called seminal fluid, when combined with sperm, forms ____________________.
21. Is the following sentence true or false? The chances that an egg will be fertilized are the greatest during the first two days of the luteal phase. ______________

Match each phase of the menstrual cycle with the event that occurs then.

<table>
<thead>
<tr>
<th>Menstrual Phase</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>24. Luteal phase</td>
<td>c. Lining of uterus is shed.</td>
</tr>
<tr>
<td>25. Menstruation</td>
<td>d. Egg is released from ovary.</td>
</tr>
</tbody>
</table>

26. What triggers menstruation to occur? ______________

27. Is the following sentence true or false? A new cycle begins with the last day of menstruation. ______________

Sexually Transmitted Diseases (page 1015)

28. Diseases spread from one person to another during sexual contact are known as ______________.

29. Is the following sentence true or false? Viral infections can be treated with antibiotics. ______________.

30. The most common STD is ______________.

Section 39–4 Fertilization and Development (pages 1016–1024)

Key Concepts
- What is fertilization?
- What are the stages of early development?
- What is the function of the placenta?

Fertilization (pages 1016–1017)
1. The process of a sperm joining an egg is called ______________.
2. Is the following sentence true or false? A fertilized egg is known as a zygote. ______________

Early Development (pages 1017–1020)

Match each term with its definition.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Morula</td>
<td>a. Organ that nourishes the embryo</td>
</tr>
<tr>
<td>4. Blastocyst</td>
<td>b. Name of embryo when it is a solid ball of about 64 cells</td>
</tr>
<tr>
<td>5. Implantation</td>
<td>c. Name of morula when it is a hollow ball of cells</td>
</tr>
<tr>
<td>6. Gastrulation</td>
<td>d. Membrane that surrounds and protects the embryo</td>
</tr>
<tr>
<td>7. Amnion</td>
<td>e. Process in which the blastocyst attaches to the wall of the uterus</td>
</tr>
<tr>
<td>8. Placenta</td>
<td>f. Process of cell migration that produces three cell layers</td>
</tr>
</tbody>
</table>

9. Is the following sentence true or false? The first few cell divisions take place in the Fallopian tube. ______________

10. After eight weeks of development, the embryo is called a(an) ______________.

11. Is the following sentence true or false? Most of the major organs and tissues are fully formed by the end of three months of development. ______________

Control of Development (page 1020)
12. Is the following sentence true or false? The fates of many cells in the early embryo are not fixed. ______________

Later Development (page 1021)
13. What changes occur during the last three months of fetal development? ______________

Childbirth (pages 1022–1023)
14. Is the following sentence true or false? The process of childbirth begins when the hormone calcitonin is released from the posterior pituitary gland. ______________
15. The series of rhythmic contractions of the uterine wall that force the baby out through the vagina is known as ________________.

16. What stimulates the production of milk in the breast tissues of the mother? __________

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**Multiple Births (page 1023)**

17. If two eggs are released and fertilized by two different sperm, ________________ twins result.

18. If a single zygote splits apart to produce two embryos, ________________ twins result.

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**Early Years (pages 1023–1024)**

19. Is the following sentence true or false? A baby’s birth weight generally triples within 12 months of birth. __________

20. Is the following sentence true or false? Infancy refers to the first year of life.

21. Circle the letter of each development that occurs during infancy.
   a. Crawling  
   b. Walking  
   c. Appearance of first teeth  
   d. First use of language

22. Childhood lasts from infancy until the onset of ________________.

23. Is the following sentence true or false? Reasoning skills are not developed until adolescence. __________

24. Adolescence begins with puberty and ends with ________________.

25. What produces the growth spurt that starts at puberty? ________________

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**Adulthood (page 1024)**

26. Is the following sentence true or false? Adults reach their highest levels of physical strength and development between the ages of 25 and 35. __________

27. When do the first signs of physiological aging appear in most individuals?