Saladin 7E
Answer Key
Chapter 27, The Male Reproductive System

Testing Your Comprehension

1. Testosterone acts as a hormone (endocrine secretion) insofar as it is secreted into the bloodstream and affects organs throughout the body. It also acts as a paracrine secretion insofar as it diffuses from the interstitial cells to the nearby seminiferous tubules and stimulates spermatogenesis.
2. Erection and ejaculation are controlled by autonomic and somatic reflexes mediated by lumbar and sacral segments of the spinal cord, and remain possible even in cases of cervical spinal cord injury. Sexual responses to nongenital stimuli and psychological factors, however, are typically abolished.
3. Hemoglobin unloads less oxygen at lower temperatures than at higher ones, as shown by the oxyhemoglobin dissociation curve. Thus, it unloads less oxygen to the testes than elsewhere, and the sperm develop in a hypoxic environment. According to one theory, this hypoxia induces sperm to develop their unusually large mitochondria and preconditions them for vigor in the hypoxic environment of the female reproductive tract.
4. Spermatogonia have the same diploid genome as the somatic cells of the body and therefore do not stimulate an immune response. Primary spermatocytes, however, must migrate to the other side of the blood–testis barrier before they undergo meiosis I, because meiosis I renders the cells genetically different from the somatic cells and thus capable of stimulating an immune attack if they are exposed to the blood.
5. Erection is brought about by high blood pressure in the erectile tissues of the penis. Drugs that lower the blood pressure (antihypertensive medications) can thus reduce engorgement of the penis with blood.