The urinary system is the principal system responsible for _____.

A)removal of carbon dioxide

B)water and electrolyte balance

C)excretion of toxic nitrogenous compounds

D)both "A" and "B"

E)both "B" and "C"

F)"A", "B", and "C"

The _____ is the functional unit of the kidney.

A)renal pyramid

B)renal medulla

C)nephron

D)renal cortex

3
Microscopic _____ arise from branches of the interlobular arteries and lead to the glomeruli.

A)arcuate arteries

B)interlobar arteries

C)efferent glomerular arterioles

D)afferent glomerular arterioles

4

INCORRECT

What portion of the nephron extends into the medulla?

A)nephron loop

B)proximal convoluted tubule

C)distal convoluted tubule

D)papillary duct

5INCORRECT

What portion of the nephron does not absorb water passively by osmosis?

A)proximal convoluted tubule

B)descending limb of nephron loop

C)distal convoluted tubule

D)All of these portions absorb water passively by osmosis.

6CORRECT

The muscularis of the urinary bladder, collectively called the detrusor muscle, is

made up of _____ layers of muscle.

- **A)**2
- ✓ **B)**3
- **C)**4
- **D)**5

7CORRECT

Where is the location of the external urethral sphincter in the human male?

- **A)**prostatic urethra
- **B)**spongy urethra
- ✓ **C)**membranous urethra
- **D)**tip of the penis

8CORRECT

In what portion of the central nervous system is the micturation center located?

- **A)**in the medulla oblongata
- **B)**in the pons
- **C)**in the superior spinal cord
- ✓ **D)**in the sacral spinal cord

9CORRECT

Abnormalities of the urinary system occur in approximately _____ of newborns.

- **A)**1%
- **B)**3%

✓ **C)**12%

D)25%

10UNANSWERED

A scanty output of urine is referred to as _____.

A)oliguria

B)hematuria

C)incontinence

D)polyuria

11CORRECT

An infection of the urinary bladder is termed _____.

A)urethritis

✓ **B)**cystitis

C)nephritis

D)glomerulonephritis

12CORRECT

Shock of physical trauma to the kidneys can result in _____.

A)chronic renal failure

✓ **B)**acute renal failure

C)diabetes insipidus

D)urinary incontinence

Which of the following systems does not have an excretory function? (676)

A)respiratory system

✓

B)lymphatic system

C)urinary system

D)integumentary system

E)digestive system

Feedback: Incorrect Answer: The urinary system rids the body of excess water and electrolytes, as well as toxic nitrogenous compounds. 2INCORRECT Micturition is the (676) ✓

A)voiding of urine from the urinary bladder

B) filtration of urine from the blood

C) concentration of urine within the nephrons

D) storage of urine within the urinary bladder

Feedback: Incorrect Answer: Micturition is voiding of urine from the urinary bladder.

3 INCORRECT During normal resting conditions, the kidneys receive approximately _____ of the cardiac output. (676)

A) 5%-7%

B) 15%-20%

C) 20%-25%

D) 45%-50%

Feedback: Incorrect Answer: At rest, the kidneys receive approximately 20% to 25% of the cardiac output.

4 INCORRECT Which of the following statements concerning the kidneys is false? (677)

A) They are retroperitoneal.

B) They each contain 8 to 15 renal pyramids.

C) They each have a distinct renal cortex and renal medulla region.

D) They are positioned between the third and fifth lumbar

Feedback: Incorrect Answer: The kidneys are positioned between the levels of the twelfth thoracic and the third lumbar vertebrae.

5 INCORRECT Which of the following is not one of the three supportive layers surrounding the kidney? (677)

A) renal peritoneum

B) renal capsule

C) renal adipose capsule

D) renal fascia

Feedback: Incorrect Answer: The three supportive layers of the kidney are the renal capsule, renal adipose capsule, and renal fascia.

6 CORRECT Which of the following is the correct sequence in which urine flows through the kidney toward the urinary bladder? (682)

A) renal pelvis, major calyx, minor calyx, papillary duct, ureter

B) papillary duct, minor calyx, major calyx, renal pelvis, ureter

C) minor calyx, major calyx, papillary duct, renal pelvis, ureter

D) papillary duct, major calyx, minor calyx, ureter, renal pelvis

Feedback: Correct Answer 7INCORRECT Capillaries are found within the (678)

A) afferent arterioles

B) urinary tubules

C) interlobar vessels

D) glomeruli

E) nephron loops

Feedback: Incorrect Answer: Glomeruli are ball-shaped capillary networks.

8INCORRECT Arterial blood flowing toward the nephron passes in sequence through the (677)

A) renal artery, interlobar artery, arcuate artery, interlobular artery, afferent arteriole, glomerulus

B) renal artery, arcuate artery, interlobar artery, interlobular artery, afferent arteriole, glomerulus

C) renal artery, interlobular artery, interlobar artery, arcuate artery, afferent arteriole, glomerulus

D) arcuate artery, renal artery, interlobar artery, interlobular artery, afferent arteriole, glomerulus.

Feedback: Incorrect Answer: The correct sequence is renal artery, interlobar artery, arcuate artery, interlobular artery, afferent arteriole, and glomerulus. 9INCORRECT All of the following are located within the renal cortex except the (682)

A) glomerulus

B) nephron loop

C) proximal convoluted tubule

D) glomerular capsule

Feedback: Incorrect Answer: The nephron loop descends into the renal medulla.

10INCORRECT Which of the following statements concerning the ureters is false? (684)

A) The mucosa of each ureter is composed of transitional epithelium.

B) They are composed of three tunics.

C) Muscular peristaltic waves move urine through the ureters.

D) They are located within the peritoneal cavity.

Feedback: Incorrect Answer: The ureters are retroperiotoneal. 11INCORRECT Urine passing through the ureter comes in contact with the _____ layer. (684)

A) muscularis

B) mucosa

C) submucosa

D) adventitia

Feedback: Incorrect Answer: The mucosa is the inner lining of the ureter and is consistent with the linings of the renal tubules and the urinary bladder. 12INCORRECT A calculus, or renal stone, would most likely cause stagnation of urine in the (693)

A) urinary bladder

B) renal column

C) ureter

D) renal calyces

E) urethra

Feedback: Incorrect Answer: The most likely place for a renal calculus to develop is the renal calyces. A renal calculus could block the ureter, causing stagnation of urine in the pelvis. 13INCORRECT Distention of the urinary bladder is possible because of the presence of the (685)

A) rugae

B) trigone

C) fibrous coat

D) transitional epithelium

E) both a and d

Feedback: Incorrect Answer: The rugae and transitional epithelium inside the urinary bladder allow distension. 14INCORRECT Which of the following statements is false concerning the urethra of a male? (687)

A) It serves both the urinary and reproductive systems.

B) It contains a single urethral sphincter near the neck of the urinary bladder.

C) It receives secretions from the bulbourethral glands.

D) It consists of three distinct regions.

E) It is approximately 20 cm long in an adult.

Feedback: Incorrect Answer: The male urethra has two muscular sphincters: the internal urethral sphincter and the external urethral sphincter. 15INCORRECT The organ or structure that does not secrete or empty into the urethra of a male is the (687)

A) urinary bladder

B) seminal vesicle

C) prostate

D) ejaculatory duct

E) bulbourethral gland

Feedback: Incorrect Answer: The seminal vesicle empties into the ejaculatory duct. 16INCORRECT The micturition reflex center is located in the (687)

A) kidney

B) cerebrum

C) sacral segment of the spinal cord

D) urinary bladder

E) hypothalamus

Feedback: Incorrect Answer: The micturition reflex center is located in the second, third, and fourth sacral segments of the spinal cord. 17INCORRECT The voiding stage of micturition is initiated by (687)

A) sympathetic impulses

B) peristaltic waves

C) elastic recoiling of the fibrous coat

D) parasympathetic impulses

Feedback: Incorrect Answer: Parasympathetic stimuli cause a relaxation of the internal urethral sphincter. 18INCORRECT An organ or structure that is not a component of the urinary system is the (676)

A) urethra

B) urinary bladder

C) ureter

D) adrenal gland

E) kidney

Feedback: Incorrect Answer: The adrenal gland is part of the endocrine system.
19INCORRECT The kidney in its final permanent form is called a (689)
A) metanephric kidney

B) pronephric kidney

C) mesonephric kidney

D) urogenital kidney
Feedback: Incorrect Answer: The final form of the kidney is called a metanephric kidney.
20CORRECT The permanent kidney becomes functional in forming urine at (690)
A) birth

B) 8-9 weeks

C) 20 weeks

D) 30 weeks
Feedback: Correct Answer: The permanent kidney becomes functional at the end of the eighth week.
21INCORRECT The ureter and tubular channels within the kidney form from the (690)
A) urachus

B) cloaca

C) ureteric bud

D) metanephrogenic mass

E) both c and d
Feedback: Incorrect Answer: The tubular drainage portion of the kidney forms from the ureteric bud, and the other tubular channels in the kidney form from the metanephrogenic mass.
22INCORRECT Which of the following is not a congenital malformation of the urinary system? (684)
A) renal calculi

B) renal agenesis

C) epispadias

D) renal ectopia

E) exstrophy of the urinary bladder
Feedback: Incorrect Answer: Epispadias is a failure of closure of the urethra on the dorsum of the penis.
23INCORRECT Dysuria is (691)

A) painful urination

B) trauma to the urinary bladder

C) a scanty output of urine

D) none of the above

Feedback: Incorrect Answer: Dysuria is painful urination. 24CORRECT The inability to control micturition is (694)

A) oliguria

B) incontinence

C) dysuria

D) none of the above

Feedback: Correct Answer 25INCORRECT Which of the following is the proper sequence of structures in the nephron? (680)

A) glomerulus, proximal convoluted tubule, distal convoluted tubule, nephron loop

B) glomerulus, nephron loop, proximal convoluted tubule, distal convoluted tubule

C) glomerulus, proximal convoluted tubule, nephron loop, distal convoluted tubule

D) proximal convoluted tubule, glomerulus, nephron loop, distal convoluted tubule

Feedback: Incorrect Answer: The correct sequence is glomerulus, proximal convoluted tubule, nephron loop, and distal convoluted tubule

Urea and creatinine are toxic metabolic products excreted by the urinary system. (676)

A) True

B) False

Feedback: Incorrect Answer: Urea and creatinine are produced by the breakdown of nitrogenous compounds and are excreted the urinary system. 2CORRECT The urinary bladder is the only unpaired organ of the urinary system. (676)

A) True

B) False

Feedback: Correct Answer: The urinary bladder and the urethra are unpaired organs of the urinary system. 3CORRECT Every minute, the renal arteries transport approximately 1,200 ml of blood to the kidneys for filtration. (676)

A) True

B) False

Feedback: Correct Answer: During normal resting conditions, the kidneys receive 20% to 25% of the cardiac output (about 1,200 ml of blood) for filtration each minute.
4CORRECT The kidneys are yellowish in color due to the urine content. (677)
A)True
B)False
Feedback: Correct Answer: The kidneys are reddish brown in color.
5INCORRECT The kidneys are located within the peritoneal cavity at the level of the twelfth ribs. (677)
A)True
B)False
Feedback: Incorrect Answer: The kidneys are located between the levels of the twelfth thoracic and third lumbar vertebrae.
6INCORRECT Renal ptosis is potentially dangerous because it may cause the ureter to kink. (677)
A)True
B)False
Feedback: Incorrect Answer: Renal ptosis is a drop in position of the kidney. If the kidney drops too much, the ureter will kink.
7CORRECT The glomerulus is considered the basic functional unit of the kidney. (677)
A)True
B)False
Feedback: Correct Answer: The nephron is the basic functional unit of the kidney.
8CORRECT The convoluted tubules of the nephron are composed of simple squamous epithelium to facilitate molecular exchange. (682)
A)True
B)False
Feedback: Correct Answer: The convoluted tubules of the nephron are composed of a single layer of cuboidal cells containing millions of microvilli.
9CORRECT Juxtamedullary nephrons and cortical nephrons differ only with regard to their positions in the kidney. (682)
A)True
B)False
Feedback: Correct Answer: Juxtamedullary nephrons have longer loops than cortical nephrons. The glomeruli of juxtamedullary nephrons are located in the inner one-third of the cortex, while cortical glomeruli are located in the outer two-thirds of the cortex.
10CORRECT The walls of the ureters and the urinary bladder consist of three layers, or tunics. (685)
A)True
B)False

Feedback: Correct Answer: The wall of the urinary bladder consists of four layers. 11CORRECT The effect of gravity causes urine to move through the ureters to the urinary bladder. (684)

A)True

B)False

Feedback: Correct Answer: Muscular peristaltic waves move the urine through the bladder. 12INCORRECT The arterial supply to the ureter is from branches of the renal, testicular, (ovarian), and superior vesicular arteries. (684)

A)True

B)False

Feedback: Incorrect Answer: The renal artery serves the superior portion. The testicular (ovarian) artery serves the middle portion. The superior vesicular artery serves the pelvic region. 13CORRECT All of the organs of the urinary system are retroperitoneal. (685)

A)True

B)False

Feedback: Correct Answer: The kidneys and the ureters are retroperitoneal, but the bladder and urethra are not. 14INCORRECT Two urethral sphincters regulate the flow of urine from the urinary bladder into the urethra. (687)

A)True

B)False

Feedback: Incorrect Answer: The internal urethral sphincter is formed from the detrusor muscle of the urinary bladder and the external urethral sphincter is formed from skeletal muscle fibers. 15CORRECT The volume of urine produced by an adult averages about 500 ml per day. (687)

A)True

B)False

Feedback: Correct Answer: The volume of urine produced by the adult averages about 1,200 ml a day. 16INCORRECT Both the urinary and the reproductive system originate from an elevation of mesodermal tissue called the urogenital ridge. (689)

A)True

B)False

Feedback: Incorrect Answer: The urogenital ridge is an elevation of mesodermal tissue that gives rise to both the urinary and reproductive systems. 17INCORRECT Urine formed during fetal development is expelled into the amniotic fluid. (690)

A)True

B)False

Feedback: Incorrect Answer: Urine formation begins about the ninth week and continues through the rest of fetal development. 18CORRECT The urinary bladder develops along with the ureter from the metanephrogenic mass. (690)

A)True

B)False

Feedback: Correct Answer: The urinary bladder develops from the urogenital sinus. 19CORRECT The urethra develops from the embryonic urachus. (690)

A)True

B)False

Feedback: Correct Answer: The urethra develops from the uretic bud. 20CORRECT Hypospadias is a congenital condition of the urethra that can occur only in males. (691)

A)True

B)False

Feedback: Correct Answer: Hypospadias is a congenital abnormality of the urethra that occurs when the urethra opens on the underside of the penis instead of at the tip. 21INCORRECT Cystitis is an infection and inflammation of the urinary bladder. (692)

A)True

B)False

Feedback: Incorrect Answer: Cystitis is frequently a secondary infection from some other part of the urinary tract. 22INCORRECT A renal output of less than 30 cc per hour may indicate renal failure. (693)

A)True

B)False

Feedback: Incorrect Answer: Renal output of 50 to 60 cc of urine per hour is considered normal. 23INCORRECT Blood leaves the glomerulus through an efferent arteriole. (678)

A)True

B)False

Feedback: Incorrect Answer: This arrangement is unique because blood usually flows out of a capillary bed into venules rather than into another arteriole. 24CORRECT Both the inner and outer layer of the glomerular capsule are composed of cells called podocytes with numerous cytoplasmic extensions known as pedicels. (682)

A)True

B)False

Feedback: Correct Answer: The inner layer of the glomerular capsule is composed of podocytes. The outer layer is a parietal layer. 25INCORRECT The proximal convoluted tubule contains millions of microvilli that serve to increase the surface area for reabsorption. (682)

A)True

B)False

Feedback: Incorrect Answer: Salt, water, and other molecules are transported from the lumen through the tubules and into the peritubular capillaries. Microvilli provide increased surface area so more absorption can occur.

Urolithiasis

Case Presentation

Daniel, a thirty-two year old history instructor, was in his office preparing notes for an upcoming seminar presentation when he was struck with a very sudden and intense pain in his side and lower back. He remained at his desk, breathing deeply, and the pain began to recede. Five minutes later, the pain was not as severe but Daniel was still uncomfortable and decided to call his physician. Daniel described his symptoms to the doctor's receptionist and made an early afternoon appointment. One of Daniel's colleagues drove Daniel to the doctor's office. While on the way to his appointment, Daniel experienced another bout of severe pain and began to feel nauseous. The pain seemed to be spreading into his lower abdomen and groin.

After asking Daniel a few questions about his symptoms, the doctor requested an abdominal x-ray, several blood tests, and urinalysis. As Daniel supplied the urine sample he was disturbed to notice that the urine had a pinkish cast. The physician returned and informed Daniel that he had a kidney stone which, based on its size, should pass on its own within a day or so. The doctor told Daniel that he should rest at home until the stone passed, drink at least 2-3 quarts of water each day, and strain his urine in order to retrieve the stone for analysis. The doctor also gave Daniel a prescription for pain medication.

Daniel passed the stone the following morning and brought it to the doctor's office. Analysis of the stone's composition revealed that it was a calcium stone. Daniel's blood and urine tests had also shown high calcium levels. Based on this, the doctor told Daniel to eat fewer foods containing calcium or oxalate and provided Daniel with a list of foods to limit. He also told Daniel to continue to drink at least two quarts of water each day.

Case Description

The presence of kidney stones, or urinary caliculi, in the urinary tract is called urolithiasis. These stones form from materials that are excreted by the kidneys. Normally these excreted materials stay dissolved in urine, but in some individuals they form precipitates that can develop into kidney stones. Kidney stones can form from several different substances. Kidney stone analysis, blood tests, and urinalysis all assist a physician in determining how best to avoid the development of future stones. Calcium stones are most common, comprising between 80 and 90 percent of urinary caliculi. The calcium stones are formed from calcium phosphate or calcium oxalate, and persons predisposed to developing these stones are often instructed to decrease calcium and

oxalate intake. In some cases, medications are prescribed that decrease calcium excretion by the kidneys or alter urine pH, a factor in kidney stone formation.

The pain associated with the blockage of the urinary tract by a kidney stone is called renal colic and can be very intense. Treatment depends primarily on the size of the stone. Stones smaller than 5 mm are usually passed without assistance, and passage is facilitated by drinking plenty of water. Larger stones can be pulverized with shockwaves or surgically removed depending on the size and the location of the stone. Sometimes, a stone within a ureter is removed by inserting a fiberoptic device through the urethra and ureter and either grabbing or destroying the stone.

Your Results:

1UNANSWERED	List the components of the urinary tract from the renal pelvis outward.
2UNANSWERED	Why would water facilitate the passage of kidney stones?
3UNANSWERED	Why would water aid in the prevention of developing future kidney stones?
4UNANSWERED	List the three stages in the formation of urine and describe each stage with regard to the structures involved and the direction substance transport.
5UNANSWERED	The glomerular filtrate concentration of calcium (Ca^{+2}) is about 4 mEq/L. The concentration of calcium in the urine is about 5 mEq/L. How would you explain this difference?

List the components of the urinary tract from the renal pelvis outward. **Your Answer:** why Feedback: Renal pelvis, ureter, urinary bladder, urethra 2 NOT GRADED Why would water facilitate the passage of kidney stones? **Your Answer:** how Feedback: The water would flush the stone through the urinary tract. 3 NOT GRADED Why would water aid in the prevention of developing future kidney stones? **Your Answer:** when Feedback: Increased intake of water would dilute the urine, thereby decreasing the concentration of stone forming substances and decreasing the likelihood that stones will form. 4 NOT GRADED List the three stages in the formation of urine and describe each stage with regard to the structures involved and the direction substance transport. **Your Answer:** out Feedback: 1. Glomerular filtration - Movement of substances from the glomerular capillaries into the renal tubule.
2. Tubular reabsorption - Movement of substances from the renal tubule into the peritubular capillaries.
3. Tubular secretion - Movement of substances from the peritubular capillaries into the renal tubule.
5 NOT GRADED The glomerular filtrate concentration of calcium (Ca^{+2}) is about 4

mEq/L. The concentration of calcium in the urine is about 5 mEq/L. How would you explain this difference? **Your Answer:** maybe Feedback: Additional calcium is moved from the plasma in the peritubular capillaries to the fluid in the renal tubule during tubular secretion.

The Case of the College Romeo

James, a twenty year old male college student, visits the student health clinic because of a rash that has developed over the past few days and is becoming more widespread. He said that he did not come in sooner because the rash does not itch and he thought it would go away like a similar rash he had about a month ago. The rash actually appears to be clusters of smaller rashes dispersed over his entire body, including the palms of his hands and the soles of his feet. The individual rash clusters are also somewhat similar, but not identical. In addition to the rash, James notes that he has been feeling tired lately and has lost his appetite. He also complains of a stiff neck and joints as well as watery eyes and a runny nose.

In obtaining a patient history the nurse practitioner notes that James is sexually active and claims to have had intercourse with approximately 40 different women over the past nine months. He says that he meets most of these women at either the nightclubs around campus or at various parties on campus. He states that he rarely sees each woman more than twice and does not routinely use condoms or any form of birth control since it "decreases the pleasure".

Physical examination revealed enlargement of the lymph nodes, **splenomegaly**, and **hepatomegaly**. In part, due to the **anorexia**, James has lost weight. In addition, the hair in his eyebrows and beard is thinning and he is beginning to suffer from a patchy **alopecia**. His body temperature is slightly elevated and his pulse, blood pressure and respiratory rate are all within normal ranges. The rash is as James described and does appear over his entire body. The rash is characterized by the nurse practitioner as being primarily macular and maculopapular with a symmetrical pattern. The individual spots in the lesions are pinkish red in color and become confluent with each other. In addition to the rash on his skin, the nurse practitioner notices that James has developed patches on the mucous membranes in his oral cavity. These patches are circular and grayish-white in color with a red areola.

The nurse practitioner tells James that she suspects he has contracted syphilis, a **sexually transmitted disease**. She asks James if at some time in the past few months he noticed a sore, known as a chancre, on his penis. James said he did notice such a sore, but it was small and healed within two weeks. In order to confirm her diagnosis she tells James that she needs to run some tests. These include a blood test and testing samples from the lesions on his skin. The results of the blood test indicate James is suffering from **anemia** and **jaundice**. In addition, the serological tests specific for syphilis indicate the antibodies against *Treponema pallidum*, the syphilis **pathogen**, are present in his blood. The evaluation of the samples from the skin lesions confirms the present of the same organism. Since James is exhibiting neurological symptoms (headache, neck stiffness)

she recommends a spinal tap to rule out neurosyphilis. The results of the spinal tap are negative for Treponema pallidum indicating an absence of neurosyphilis.

The nurse practitioner tells James that he has secondary syphilis. He will need to provide a list of names and telephone numbers of all women he has had sexual contact with over the last year. This is necessary in order to determine who may have infected James and also to inform the other women that they have been exposed to syphilis. James is to refrain from intercourse until his treatments end and he must have repeated tests to confirm the effectiveness of the treatment at 1, 3, 6, and 12 months post treatment or until a negative serological test is obtained. She also encourages James to consider undergoing a test for the human immunodeficiency virus (HIV) as he is at high risk for HIV infection. Finally, before starting the treatments, she encourages James to decrease his risk of contracting sexually transmitted diseases by using a condom and a spermicide and decreasing his number of sexual partners.

Since James has no drug allergies, the nurse practitioner then gives James 2.4 million units of penicillin G (two intramuscular injections of 1.2 million units, one injection into each of his buttocks) and tells him to return once each week for the next two weeks for additional penicillin treatment. She reminds James that he is not to engage in sex until after the final treatment as he is still contagious and failure to complete the treatment will lead to a continuation of syphilis and possible life threatening consequences.

Define the bold terms in the text. 2 UNANSWERED What risk factors did James present with? 3 UNANSWERED Describe how the presence of chancre during the early stages of syphilis can be transmitted between sexual partners during intercourse. 4 UNANSWERED Based on the difference in the external genitalia between males and females, why might it be more likely for women to remain unaware of the initial infection? 5 UNANSWERED Why would it be possible for the lesions on the skin to be infectious? 6 UNANSWERED Identify other sexually transmitted diseases and the causative agent.

Define the bold terms in the text.

Your Answer: maybe

Feedback: **splenomegaly:** enlargement of the spleen
hepatomegaly: enlargement of the liver
anorexia: loss of appetite
alopecia: natural or abnormal baldness or deficiency of hair, partial or complete, localized or generalized
sexually transmitted disease: a disease contracted through intimate contact with an infected individual, usually, but not limited to, contact with the genitalia or sexual secretions of an infected individual
anemia: an abnormally low number of erythrocytes, concentration of hemoglobin, hematocrit, or any combination of these measures
jaundice: a condition in which high concentrations of bilirubin in the blood lead to the accumulation of bilirubin in the tissues and mucous membranes

of an individual, leading to a yellowing of the skin and mucous membranes
pathogen: a microorganism or substance capable of causing disease

2 NOT GRADED What risk factors did James present with?

Your Answer: for what

Feedback: James is sexually promiscuous and does not use condoms. Increasing the number of sexual partners increases the risk for contracting sexually transmitted diseases. Condoms provide a physical barrier against the transmission of disease causing organisms between partners during intercourse or when contact occurs between the penis and mouth or anus of the partner. Since James does not use a condom, this barrier is absent and the transmission of pathogens is not impeded.

3 NOT GRADED Describe how the presence of chancre during the early stages of syphilis can be transmitted between sexual partners during intercourse.

Your Answer: any

Feedback: In the early stages of syphilis the chancre that is present at the site of infection contains large numbers of *Treponema pallidum*. The site of infection in men is most frequently the coronal sulcus of the penis, while in women the most frequent site of infection is the labia majora. Edema often occurs at the site of the chancre, increasing the amount of fluid, and subsequently, exudate that would be present. The fact that the chancre has large numbers of *Treponema pallidum* and is very edematous would enahnce the transmission of the pathogen between partners during sexual intercourse.

4 NOT GRADED Based on the difference in the external genitalia between males and females, why might it be more likely for women to remain unaware of the initial infection?

Your Answer: any

Feedback: The labia majora, the primary genital site of infection in females, consists of two longitudinal folds of skin composed of adipose tissue which are covered with pubic hair and contain large numbers of sweat and sebacous glands. Since the chancre may occur anywhere on the labia it is highly likely that it may go undetected, especially since the chancre is usually painless. By contrast, in men, the prepuce, which is absent in circumcised men, is the only fold of skin which would "hide" a chancre that developed. In addition, the penis also lacks the hair that is found covering the labia. Finally, since the penile urethra is the common passage way for sperm and urine, men would be more likely to notice the presence of a chancre during urination than a woman would during urination.

5 NOT GRADED Why would it be possible for the lesions on the skin to be infectious?

Your Answer: some
Feedback: Skin lesions would be infectious for the same reason that the chancre is infectious. These lesions are often maculopapular in nature and would allow for the pathogen to be transmitted between the infected and uninfected individual. Transmission of the pathogen to various portions of the body by the individual (either previously infected or recently infected) would then spread the disease to other portions of the body.

6 NOT GRADED Identify other sexually transmitted diseases and the causative agent.

Your Answer: do not
Feedback: Other sexually transmitted diseases and their causative agents include but are not limited to

Sexually transmitted disease	**Causative agent**
Gonorrhea	*Neisseria gonorrhoeae*
Chancroid	*Haemophilus ducreyi*
Chlamydia infection	*Chlamydia trachomatis*
AIDS	Human immunodeficiency virus
Herpes simplex	Herpes simplex viruses (types I and II
Genital warts	Human papillomarvirus
Trichomonas vaginitis	*Trichomonas vaginalis*
Vulvovaginitis and balanitis	*Candida albicans*

Of the following male organs, which one is considered a primary sex organ?
○ **A)**ejaculatory ducts
✓
○ **B)**gonads (testes)

◉ **C)**penis

○ **D)**seminal vesicles
2INCORRECT The _____ are the site of sperm maturation, and they store and convey spermatozoa to the dectus deferentia.
○ **A)**interstitial cells of the testes

◉ **B)**ejaculatory ducts

○ **C)**bulbourethral glands

D)epididymides

3CORRECT The _____ of the testes secrete male hormones, such as testosterone.

A)seminiferous tubules

B)sustentacular cells

C)interstitial cells

D)efferent ductiles

4INCORRECT Which of these is not an action of the male androgens?

A)deposition of subcutaneous fat on the hips and thighs

B)growth of bone and muscle

C)growth of facial and axillary hair

D)development of male external genitalia

5INCORRECT The _____ are the first haploid cells during the process of spermatogenesis.

A)spermatogonia

B)primary spermatocytes

C)secondary spermatocytes

D)spermatids

6CORRECT What is spermiogenesis?

A)Spermiogenesis is another name for the process of puberty.

B)Spermiogenesis is the sequence of events that leads to the production of spermatozoa.

C)Spermiogenesis is the reabsorbing of sperm that are not ejaculated.

D)Spermiogenesis is the conversion of spermatids to spermatozoa.

7CORRECT Choose the correct order for the path of sperm from the testes to outside the body.

A)ductus deferens - epididymis - ejaculatory duct - penis

B)epididymis - ductus deferens - ejaculatory duct - penis

C)ejaculatory duct - ductus deferens - epididymis - penis

D)penis - ejaculatory duct - epididymis - ductus deferens

8CORRECT What does the prostate gland secrete into the semen?

A) alkaline secretion to aid the survival of sperm in the acidic atmosphere of the female reproductive tract

B) acid phosphatase

C) thin liquid that helps sperm become motile

D) All of these are secretions of the prostate.

9CORRECT What portions of the penis contain erectile tissue that becomes engorged with blood?

A) corpora cavernosa

B) corpus spongiosum

C) corona glandis

D) both "A" and "B"

E) both "B" and "C"

F) "A", "B", and "C"

10INCORRECT During sexual arousal, _____ impulses cause vasodilation of the arterioles of the penis.

A) parasympathetic

B) sympathetic

C) somatic

D) None of these - vasodilation is the result of hormonal influences.

11INCORRECT When semen is discharged, about _____ of the volume is made up of spermatozoa.

A) 1%

B) 10%

C) 40%

D) 75%

12INCORRECT There are several developmental problems of the male reproductive system. Those associated with _____ result from having one X chromosome and no Y chromosome.

A) Klinefelter's syndrome

B) hermaphroditism

C)Turner's syndrome

D)cryptochidism

13INCORRECT Which of these sexually transmitted diseases is caused by a virus?

A)gonorrhea

B)syphilis

C)genital herpes

D)chlamydia

Which of the following statements is not true regarding sexual reproduction? (698)

A)It provides for genetic diversity through genetic recombination.

B)It eliminates changes in the gene pool.

C)It requires the production of two types of gametes.

D)It requires two distinct body forms within the species.

E)It is beneficial to a population.

Feedback: Incorrect Answer: Sexual reproduction introduces great genetic variability into a population. 2INCORRECT The primary sex organs (698)

A)are those structures that are externally visible

B)produce the gametes and sex hormones

C)include the testes and penis

D)are sexual attractants

Feedback: Incorrect Answer: The primary sex organs are the gonads, which produce the games and sex hormones. 3UNANSWERED The secondary sex organs (698)

A)are those organs that differ in males and females

B)produce the gametes and sex hormones

C)regulate meiosis

D)are essential in caring for and transporting gametes

E)are functional at birth

4INCORRECT Which of the following statements concerning the scrotum is false? (700)

A)It is located within the perineum.

B) It is partially subdivided into two compartments by a fibrous septum.

C) Its external appearance varies depending on environmental conditions.

D) It supports, protects, and regulates the position of the testes.

Feedback: Incorrect Answer: The scrotum is completely subdivided into two compartments by a fibrous septum, to compartmentalize each testis in case of infection.

5INCORRECT Which of the following contract(s) in response to temperature changes? (700)

A) perineal raphe

B) dartos muscle

C) median septum

D) cremaster muscle

E) both b and d

Feedback: Incorrect Answer: The dartos and cremaster muscles contract in response to temperature changes.

6UNANSWERED The temperature of the testes is maintained at about (700)

A) 35°C

B) 37°C

C) 40°C

D) 42°C

7INCORRECT The seminiferous tubules function to (702)

A) nourish spermatids

B) produce spermatozoa

C) store mature sperm

D) produce steroids

E) both a and b

Feedback: Incorrect Answer: The seminiferous tubules are the functional units of the testis because it is here that spermatogenesis occurs. The sustentacular cells produce and secrete nutrients for the developing spermatozoa.

8INCORRECT The interstitial cells (cells of Leydig) (703)

A) nourish spermatids

B) produce testosterone

C) produce spermatozoa

D) secrete alkaline fluid

E) both b and d

Feedback: Incorrect Answer: The interstitial cells produce and secrete the male sex hormone testosterone. 9INCORRECT Which of the following is the correct sequence regarding production and passage of spermatozoa? (703)

A) interstitial cells, efferent ductules, ampulla, and epididymis

B) interstitial cells, rete testis, epididymis, and ampulla

C) seminiferous tubules, rete testis, efferent ductules, and epididymis

D) seminiferous tubules, ampulla, efferent ductules, and ductus deferens

Feedback: Incorrect Answer: The correct sequence is seminiferous tubules, rete testis, efferent ductules, and epididymis. 10INCORRECT The structure of a spermatozoon includes all of the following except the (704)

A) cilia

B) acrosome

C) mitochondria

D) flagellum

E) nucleus

Feedback: Incorrect Answer: The nucleus contains 23 chromosomes and is located in the head of the spermatozoon. 11INCORRECT The life expectancy of healthy spermatozoa ejaculated into the vagina is (705)

A) 24 to 48 hours

B) 48 to 72 hours

C) 3 to 4 days

D) 5 days

Feedback: Incorrect Answer: Ejaculated spermatozoa can survive up to 5 days at body temperature. 12CORRECT All of the following are spermatic ducts except the (707)

A) epididymis

B) urethra

C) ductus deferens

D) ejaculatory duct

Feedback: Correct Answer 13 INCORRECT Which of the following is characteristic of the ductus deferens? (707)

A) It extends from the testis to the prostate.

B) It secretes glucose to keep the sperm viable.

C) It conveys sperm from the epididymis to the ejaculatory duct.

D) It is totally empty except during the brief periods of ejaculation.

E) All of the above.

Feedback: Incorrect Answer: The ductus deferens conveys sperm from the epididymis to the ejaculatory duct. 14 CORRECT Spermatozoa are stored prior to ejaculation in the (707)

A) epididymides

B) seminal vesicles

C) ductus deferentia

D) ejaculatory ducts

E) both a and c

Feedback: Correct Answer 15 INCORRECT Which of the following is (are) not part of the spermatic cord? (707)

A) ductus deferens

B) ejaculatory duct

C) testicular artery

D) testicular venous plexus

E) cremaster muscle

Feedback: Incorrect Answer: The spermatic cord consists of the ductus deferens, testicular artery and venous plexus, nerves, cremaster muscle, lymph vessels, and connective tissue. 16 CORRECT The passageway through which the spermatic cord traverses to enter the pelvic cavity is called the (708)

A) testicular fossa

B) inguinal canal

C) femoral ring

D) pelvic canal

E) gubernaculum

Feedback: Correct Answer: The inguinal canal, the passageway for the spermatic cord through the abdominal wall, is a common site for the development of a hernia.

17INCORRECT Which of the following is the correct sequence of the paired-duct system for passage of spermatozoa during emission? (707)

A) epididymides, ductus deferentia, and ejaculatory ducts

B) epididymides, ejaculatory ducts, and ductus deferentia

C) ductus deferentia, epididymides, and ejaculatory ducts

D) ductus deferentia, ejaculatory ducts, and epididymides

Feedback: Incorrect Answer: The correct sequence is epididymides, ductus deferentia, and ejaculatory ducts.

18INCORRECT Which of the following organs is not an accessory gland of the male reproductive system? (708)

A) prostate

B) seminal vesicle

C) glans penis

D) bulbourethral gland

Feedback: Incorrect Answer: The glans penis is the cone-shaped terminal portion of the penis.

19CORRECT Semen is a mixture of fluids from the (708)

A) seminal vesicles and the prostate

B) bulbourethral gland and the prostate

C) accessory glands and the glans penis

D) ejaculatory ducts and the prostate

Feedback: Correct Answer: Semen contains secretions from the seminal vesicles and prostate as well as spermatozoa. Spermatozoa and the secretions from the seminal vesicles come through ejaculatory duct.

20INCORRECT Which of the following relationships between structure and location is incorrect? (708)

A) The seminal vesicle is posterior to and at the base of the urinary bladder.

B) The ejaculatory duct is located at the base (crus) of the penis.

C) The prostate is below the urinary bladder and surrounds the beginning portion of the urethra.

D) The bulbourethral gland is inferior to the prostate.

E) None of the above

Feedback: Incorrect Answer: All of the relationships are correct. 21CORRECT Which of the following is a function of the urethral glands? (709)

A) secretion of mucus

B) secretion of fructose

C) secretion of hormones

D) regulation of spermatogenesis

E) regulation of the pH of semen

Feedback: Correct Answer 22INCORRECT The bulb and crus of the penis are located within the (710)

A) glans

B) corona glandis

C) body

D) prepuce

E) root

Feedback: Incorrect Answer: The root of the penis expands posteriorly to form the bulb of the penis and the crus of the penis. 23INCORRECT Which of the following statements concerning the penis is false? (710)

A) It is attached proximally to the pubic arch.

B) It contains two columns of erectile tissue.

C) Its skin is loosely attached and retractable over the glans penis.

D) Its root contains the bulbospongiosus muscle.

E) It is positioned in the urogenital triangle of the perineum.

Feedback: Incorrect Answer: The body of the penis is composed of three cylindrical columns of erectile tissue, not two. 24INCORRECT Which of the following relationships between structure and location is incorrect? (711)

A) The prepuce is a retractable sheath of skin covering the glans penis.

B) The external urinary meatus is at the tip of the glans penis.

C) The septum penis separates the two columns of corpora spongiosum.

D) The crus and bulb of the penis are located proximally within the root.

Feedback: Incorrect Answer: The septum penis separates the two columns of corpora cavernosa. 25INCORRECT Erection of the penis (712)

A) occurs only when a man is sexually aroused

B) is under hormonal control

C) is necessary for ejaculation to occur

D) is a parasympathetic response

E) both c and d

Feedback: Incorrect Answer: Erection of the penis, a parasympathetic response, must occur before ejaculation. 26INCORRECT Erection is neurologically controlled by the (712)

A) hypothalamus and sacral portion of the spinal cord

B) cerebrum and hypothalamus

C) genital sensory receptors and cerebrum

D) vagus and sacral nerves

Feedback: Incorrect Answer: The hypothalamus and the sacral portion of the spinal cord control the process of erection. 27CORRECT A normal ejaculate contains (714)

A) 10 million spermatozoa per milliliter

B) 60-150 million spermatozoa per milliliter

C) 250-400 million spermatozoa per milliliter

D) 500 million spermatozoa per milliliter

Feedback: Correct Answer 28INCORRECT The sexual identity of a fetus is determined at (716)

A) birth

B) 10 weeks

C) the second trimester

D) conception

E) 8 weeks

Feedback: Incorrect Answer: Sexual identity is initiated at the moment of conception, when the genetic sex of the zygote is determined. 29INCORRECT Male external genitalia develop due to the presence of (716)

A) gametes

B) androgens

C)a prostate

D)the phallus

E)seminal vesicles
Feedback: Incorrect Answer: The external genitalia are secondary sex organs, which develop under the influence of androgens. 30INCORRECT The first sign of gonadal development is the appearance of a (716)
A)Y chromosome

B)primary sex cord

C)gonadal ridge

D)genital tubercle

E)gubernaculum
Feedback: Incorrect Answer: The gonadal ridge appears during the fifth week of development. 31INCORRECT All of the following arise from the embryonic mesonephric duct except the (716)
A)epididymis

B)ductus deferens

C)seminal vesicle

D)prostate
Feedback: Incorrect Answer: The epididymis, ductus deferens, and seminal vesicle all develop from the mesonephric duct. 32INCORRECT Sexual distinction of the external genitalia becomes apparent by the end of the (716)
A)embryonic period

B)sixth week

C)seventh week

D)ninth week

E)twelfth week
Feedback: Incorrect Answer: The sexual distinction of the external genitalia becomes apparent by the tenth through twelfth week. 33CORRECT The scrotum forms from the (716)
A)primary sex cords

B)genital tubercle

C)gubernaculum

D)labioscrotal swellings

E)urogenital sinus

Feedback: Correct Answer 34INCORRECT A person who has a 46 XY chromosome constitution and male gonads but intersexual and undifferentiated genitalia has the condition of (714)

A)pseudohermaphroditism

B)cryptorchidism

C)Klinefelter's syndrome

D)varicocele

E)Turner' s syndrome

Feedback: Incorrect Answer: A person with Klinefelter's syndrome has an XXY chromosome constitution, develops breasts and male genitalia. 35INCORRECT A person with Klinefelter's syndrome has (715)

A)genotype XO

B)45 chromosomes

C)an extra Y chromosome

D)an XXY chromosome constitution

E)none of the above

Feedback: Incorrect Answer: A person with Klinefelter's syndrome has an XXY chromosome constitution. 36CORRECT The incomplete descent of a testis is known as (720)

A)impotence

B)sterility

C)orchitis

D)varicocele

E)cryptorchidism

Feedback: Correct Answer 37CORRECT In which of the following conditions would the male produce viable spermatozoa? (715)

A)true hermaphroditism

B)pseudohermaphroditism

C)cryptorchidism

D)Turner's syndrome

E)Klinefelter's syndrome

Feedback: Correct Answer 38INCORRECT Which of the following is not a cause of infertility? (715)

A)vasectomy

B)varicocele

C)alcoholism

D)impotence

E)excessive heat

Feedback: Incorrect Answer: A male can be impotent, but still produce viable spermatozoa. 39INCORRECT Ligation (tying) of the ductus deferentia interferes directly with (720)

A)ejaculation

B)testosterone secretion

C)fertility

D)erection capability

E)all of the above

Feedback: Incorrect Answer: A vasectomy, ligation (tying) of the ductus deferentia, is a sterilization technique which prevents transport of spermatozoa.

Sexual reproduction offers little evolutionary advantage over asexual reproduction.

A)True

B)False

2INCORRECT The function of the dartos and cremaster muscles of the scrotum are to adjust the position of the testes in order to regulate their temperature.

A)True

B)False

The following statements are comparisons of male and female reproduction; choose the statement that is incorrect.

A)the reproductive organs of both sexes are homologous

B)both sexes have reproductive capabilities throughout adulthood

C) both systems experience latent development

D) both systems have gonads that produce gametes and sex hormones

2 INCORRECT What reproductive organ(s) of the female secretes fluid for vaginal lubrication during coitus?

A) uterine tubes

B) labia majora

C) vestibular glands

D) pudendal cleft

3 INCORRECT When do the oogonia begin meiosis in the female?

A) at puberty

B) monthly during menstruation

C) at age 20

D) toward the end of gestation of the female fetus

4 CORRECT Ovulation is triggered by _____.

A) follicle-stimulating hormone

B) a mid-cycle surge of luteinizing hormone

C) hormones from the follicular cells

D) hormones from the theca interna

5 INCORRECT When the secondary oocyte is released from the ovary, it is surrounded by _____.

A) corpus luteum

B) zona pellucida

C) corona radiata

D) polar bodies

E) All of the above.

F) "A" and "C" only

G) "B" and "C" only

6 INCORRECT The following statements concern the uterine tubes. Choose the statement that is true.

A) The infundibulum is not actually attached to the ovary and can allow pathogens to

enter the abdominal cavity.

B) The fimbriae do not beat in a wave-like fashion but instead are stationary.

C) The outer serous layer of the uterine tube is part of the parietal peritoneum.

D) The internal mucosa that lines the lumen is made up of squamous epithelium.

7 INCORRECT The opening of the cervical canal into the vagina is called the _____.

A) cervix

B) cervical canal

C) isthmus of the uterus

D) uterine ostium

8 INCORRECT What portion of the uterus is shed during menstruation?

A) perimetrium

B) stratum functionale of the endometrium

C) stratum basale of the endometrium

D) myometrium

9 INCORRECT The _____ is a subcutaneous pad of adipose tissue covering the symphysis pubis.

A) perineum

B) vulva

C) mons pubis

D) prepuce

10 INCORRECT In what part of the breast is milk stored before draining at the tip of the nipple?

A) areola

B) mammary alveoli

C) lactiferous sinus

D) mammary ducts

11 INCORRECT During the _____ phase of menstruation, the lining of the uterus rebuilds.

A) menstrual

B)proliferative

C)secretory

D)The lining of the uterus rebuilds continually.

12INCORRECT Severe menstrual cramps accompany _____.

A)amenorrhea

B)menorrhagia

C)dysmenorrhea

D)metrorrhagia