1. The vagina
   a. Contains skeletal muscle
   b. Has ridges called rugae
   c. Is lined by stratified squamous epithelium
   d. All of the above
   e. None of the above

2. A decrease in ambient air temperature will cause the level of cremaster muscle contraction to:

3. As a spermatid is converted into a sperm cell, the number of chromosomes it contains in its nucleus will:

4. Which of the following is NOT TRUE?
   a. The longest portion of the male urethra is located in the corpus spongiosum.
   b. The glans penis is the distal portion of the corpus cavernosa.
   c. The prepuce is removed during a circumcision.
   d. There are 3 erectile bodies within the penis.
   e. The male external genitalia are the penis and scrotum.

5. Which of the following is NOT TRUE?
   a. The acrosome is found in the head of the sperm and contains digestive enzymes.
   b. Fructose and citrate are 2 nutrients found in semen.
   c. The seminal vesicles are on the posterior surface of the urinary bladder.
   d. The bulbourethral glands are found just superior to the prostate gland.
   e. The membranous urethra passes through the urogenital diaphragm

6. Which of the following is NOT TRUE?
   a. Spermatogenesis consists of meiosis and spermiogenesis.
   b. A primary spermatocyte is a diploid cell.
   c. Sertoli cells are large cells within the seminiferous tubules that help regulate sperm synthesis.
   d. Spermatids are haploid and contain long flagella.
   e. FSH stimulates the production of androgen binding protein by interstitial cells.

7. Which of the following is NOT TRUE?
   a. A male contraceptive pill that blocked hypothalamic release of gonadotropin releasing hormone would have undesirable side effects.
   b. A rise in plasma levels of LH will cause a rise in plasma levels of testosterone.
   c. Spermatogonia are found in the outer rim of the seminiferous tubules.
   d. The end result of the meiosis of 1 type B spermatogonium is 4 spermatids.
   e. FSH and LH are released by the posterior pituitary in response to rising levels of GnRH.

8. Which of the following is NOT TRUE?
   a. As plasma levels of testosterone increase, plasma levels of LH will decrease.
   b. The prostatic urethra transports semen but does not convey urine.
   c. Seminal fluid contains a coagulating enzyme that thickens semen.
   d. Ejaculation is caused by an increase in sympathetic output to the penis.
   e. The midpiece of the sperm cell is packed with mitochondria.

9. Which of the following is NOT TRUE?
   a. The layer of the uterus that contains the most actin is the myometrium.
   b. The external os is the junction between the cervical canal and the uterine cavity.
   c. The stratum basalis is unresponsive to the cyclic changes in ovarian hormone levels.
   d. The uterus is posterosuperior to the bladder and anterior to the rectum.
   e. The normal uterus is in an anteverted position.
10. Which of the following is NOT TRUE?
   a. In the uterine tubes, the fimbriae are distal to the infundibulum.
   b. The oviducts are lined by a ciliated epithelium.
   c. The external urethral orifice is anterior to the external vaginal orifice.
   d. Secondary follicles contain secondary oocytes.
   e. Lactiferous ducts convey milk from the alveoli towards the body exterior.

11. Which of the following is NOT TRUE?
   a. The pelvic diaphragm supports the uterus inferiorly.
   b. The erectile tissue of the clitoris is homologous to the corpora cavernosa of the penis.
   c. The fetal ovary will contain oogonia and primary oocytes.
   d. The first menstrual period is known as menarche.
   e. The secondary oocyte is a haploid cell that is produced just before ovulation.

12. Which of the following is NOT TRUE?
   a. The typical site of fertilization is the ampulla of the uterine tube.
   b. The first polar body and the primary oocyte are both haploid cells.
   c. The formation of the corpus luteum is stimulated by LH.
   d. The corpus luteum is maintained during the initial months of pregnancy by HCG.
   e. The corpus luteum eventually turns into a corpus albicans.

13. Which of the following is NOT TRUE?
   a. Normally 1 graafian follicle is produced during each menstrual cycle.
   b. Progesterone causes a slight rise in body temperature.
   c. In females, meiosis II occurs if and only if fertilization occurs.
   d. Typically around 5000 oocytes are ovulated in a lifetime.
   e. A primary follicle does not have an antrum

Fix the false statement questions
14. The major secretory product of the Graafian follicle is progesterone.

15. In the average female ovulation occurs on day 21 of the menstrual cycle.

16. The ovary is firmly attached to the uterus by the round ligament.

17. Contraction of the cremaster muscle will cause an increase in testicular temperature.

18. Sustentacular cells secrete testosterone.

19. The prostatic urethra is the shortest portion of the male urethra.

20. Explain how oral contraceptives consisting of high doses of progesterone can prevent fertilization.

21. Compare and contrast oogenesis and spermatogenesis. How are they similar? How are they different?

22. What 2 pituitary hormones are present in both males and females? What are their primary functions in males? What are their primary functions in females?

23. Trace the path that a sperm would travel from the site of its production to the site of fertilization. You should name at least 17 things that the sperm cell would travel through. Then trace the path of a secondary
oocyte from its release from the ovary to the site of fertilization. You name at least 3 things the secondary oocyte would travel through.

24. As plasma [testosterone] increases beyond normal values, hypothalamic GnRH release will:

25. As ambient air temperature decreases, the distance between the testes and the abdominopelvic cavity will:

26. The conversion of a corpus luteum to a corpus albicans will cause plasma [progesterone] to:

27. As plasma [estrogen] rises, the thickness of the stratum basalis will:

28. A normal healthy female does NOT produce testosterone

29. A vasectomy will cause a complete cessation of sperm production

30. During ovulation, a secondary oocyte is ejected into the peritoneal cavity

31. The presence of inhibin in the plasma can act as an indicator of pregnancy

32. Which of the following does NOT secrete hormones involved in the reproductive system?
   a. Testes
   b. Hypothalamus
   c. Anterior Pituitary
   d. Corpus luteum
   e. Secondary oocyte

33. Which of the following is TRUE of menstruation?
   a. It occurs during the last days of the uterine cycle
   b. It is a sloughing off of the endometrial stratum basalis
   c. It is an event that is in no way affected by plasma [progesterone]
   d. Menstrual fluid would most likely contain deoxyribonucleic acid
   e. 2 of the above are true

34. Which of the following is NOT TRUE?
   a. The female gametes are called ova
   b. The male gonads are the testes
   c. The testes are surrounded by a tunica albuginea and a tunica vaginalis
   d. The testes’ interstitial cells function primarily in FSH secretion
   e. None of the above

35. An adult male with a tumor that caused hypersecretion of testosterone would be expected to have:
   a. A greater than normal blood concentration of LH
   b. A lower than normal blood concentration of LH
   c. Developing ovaries
   d. Both A and C are TRUE
   e. Both B and C are TRUE

36. A lack of functioning bulbourethral glands could result in semen that:
a. Is more acidic
b. Is more basic
c. Has a pH of 14
d. Lacks sperm
e. Lacks fructose and citrate

37. Which of the following would be the best candidate for a male birth control pill that did not affect male secondary sexual characteristics?
   a. A chemical that prevented testosterone synthesis
   b. A chemical that destroyed all testosterone receptors on body cells
   c. A chemical that blocked LH release
   d. A chemical that blocked FSH release
   e. A chemical that destroyed all Leydig and Sertoli cells

38. Which of the following would be farthest from the lumen in a seminiferous tubule?
   a. Type A spermatogonium
   b. Sperm
   c. Spermatid
   d. Primary spermatocyte
   e. Secondary spermatocyte

39. Mr. Hasselback discovered a very small, spherical cell that contained 23 chromosomes, lacked a flagellum and contained a Y chromosome. This cell is most likely an:
   a. Oogonium
   b. Sperm cell
   c. Spermatid
   d. Primary Spermatocyte
   e. Ovum

40. In a normal male, which of the following is NOT TRUE?
   a. FSH causes Sertoli cells to release ABP
   b. LH causes interstitial cells to release testosterone
   c. GnRH is released from the hypothalamus
   d. An increase in inhibin release would cause a decrease in LH release
   e. None of the above

41. Which of the following is TRUE?
   a. The external urethral orifice is posterior to the vaginal orifice
   b. The ovarian ligament extends laterally from the ovary to the body wall
   c. The ovaries, uterine tubes, and uterus comprise the female external genitalia
   d. The ovaries are kept approximately 3°F cooler than other pelvic organs
   e. None of the above

42. Which of the following would be present in the ovaries of a 4yr old?
   a. Secondary oocytes
   b. Primordial follicles
   c. Graafian follicles
   d. Acrosomes
   e. Seminiferous tubules

43. Which of the following would contain the most nuclei?
a. Primary oocyte
b. Early primary follicle
c. Vesicular follicle
d. Type B spermatogonium
e. Primordial follicle

44. The morphological change from a spermatid to a sperm cell is known as:
   a. Spermatogenesis
   b. Meiosis
   c. Spermiogenesis
   d. Mitosis
   e. None of the above

45. A single sperm cell would travel through the following structures in what order?
   1. Seminiferous tubule
   2. Penile urethra
   3. Epididymis
   4. Ejaculatory duct
   b. 1-2-3-4
   c. 1-4-3-2
   d. 2-1-3-4
   e. 1-4-2-3
   f. None of the above

46. It is within the ______ that sperm gain the ability to swim.
   a. Vas deferens
   b. Epididymis
   c. Rete testis
   d. Spongy urethra
   e. Corpus cavernosa

47. The cells that comprise your cerebellum MUST have been made via:
   a. Mitosis
   b. Meiosis

48. If the sympathetic nerves to the penis were severed:
   a. Erection would be possible but ejaculation would not
   b. Ejaculation would be possible but erection would not
   c. Neither erection nor ejaculation would be possible
   d. Both erection and ejaculation would still be possible

49. Which of the following is the most anterior?
   a. Anal canal
   b. Vaginal orifice
   c. External os
   d. Internal os
   e. Urethral orifice

50. Which of the following cells is LEAST likely to be found within a uterine tube?
51. Which of the following contains the MOST actin and myosin?
   a. Endometrium
   b. Perimetrium
   c. Myometrium
   d. Muscularis serosa
   e. Stratum muscularis

52. Days 1-5 of the uterine cycle are known as the proliferative phase.
   a. The above statement is TRUE
   b. The above statement is FALSE

53. The acrosome:
   a. Contains digestive enzymes
   b. Is NOT found within the midpiece
   c. Is haploid
   d. All of the above
   e. 2 of the above

54. Which of the following is released by the anterior pituitary gland?
   a. Androgen binding protein
   b. Gonadotropin releasing hormone
   c. Insulin
   d. Interstitial cell stimulating hormone
   e. Gastrin

55. Cutting the parasympathetic nerves to the penis would:
   a. Prevent ejaculation only
   b. Prevent erection only
   c. Prevent erection and therefore prevent ejaculation
   d. Prevent neither erection nor ejaculation
   e. Prevent neither erection nor ejaculation

56. Sperm are synthesized and then mature in the seminiferous tubules.
   a. The above statement is TRUE
   b. The above statement is FALSE because sperm do not need to mature
   c. The above statement is FALSE because sperm mature in the clavicular recess of the scrotum
   d. The above statement is FALSE because sperm mature in the epididymis
   e. The above statement is FALSE because sperm mature in the vas deferens
   f. 

57. If a spermatogonion undergoes mitosis, it will yield:
   a. 4 spermatids
   b. 2 spermatogonia
   c. 2 secondary spermatocytes
   d. 2 primary spermatocytes
   e. 1 spermatid and 3 polar bodies

58. Ovarian follicles are commonly found within the medulla of the ovary.
59. A majority (i.e., >50%) of primary follicles will become Graafian follicles.
   a. The above statement is TRUE
   b. The above statement is FALSE

60. During days 5-8 of the ovarian cycle, you would expect:
   a. The corpus luteum to begin secreting progesterone
   b. Plasma estrogen levels to rise
   c. The ovarian follicles to decrease in size
   d. The endometrium to decrease in size
   e. None of the above

61. The surge of LH release that occurs near the midpoint of the ovarian cycle causes:
   a. Ovulation
   b. Mitosis of fertile haploid oogonia
   c. Reverse peristalsis of the detrusor muscle of the uterus
   d. All of the above
   e. 2 of the above

62. A decrease in plasma [LH] will cause plasma [testosterone] to:

63. A decrease in plasma [testosterone] will cause plasma [LH] to:

64. An increase in plasma [inhibin] will cause plasma [FSH] to:

65. During days 5-10 of the ovarian cycle plasma [estrogen] will:

66. During days 1-10 of the ovarian cycle the number of primordial follicles in the ovary will:

67. Progesterone causes plasma [LH] to:

68. Progesterone causes the thickness of the endometrium to:

69. Progesterone causes the viscosity of cervical mucus to:

70. Progesterone causes body temperature to:

71. Estrogen causes the thickness of the endometrium to:

72. Estrogen causes the viscosity of cervical mucus to:

73. Estrogen causes the thickness of the stratum functionalis to:

74. Testosterone causes the body’s metabolic rate to:

75. Estrogen causes the rate of bone resorption to:

76. A woman taking synthetic progesterone would expect her plasma estrogen levels to:

77. Which of the following are carried by the components of the spermatic cord?
78. Put the following in the correct path that a sperm would take.
   a. 1. Ampulla of oviduct
   b. 2. Internal os of the cervix
   c. 3. Uterine cavity
   d. 4. Ductus deferens
   e. 5. Penile urethra

   b. 1-3-2-5-4
   c. 5-4-2-1-3
   d. 4-5-2-3-1
   e. 1-2-3-5-4
   f. 4-5-1-3-2

79. Which of the following is the GREATEST?
   a. Number of sperm produced from a single spermatogonium
   b. Number of seminiferous tubules in a single testis
   c. Number of skeletal muscle cells in the internal urethral sphincter
   d. Length in inches of the membranous urethra
   e. Number of chromosomes in a spermatid

80. Which of the following is TRUE of the epididymis?
   a. It is a site of sperm maturation
   b. Each testis is associated with a single epididymis
   c. It contains smooth muscle
   d. All of the above
   e. 2 of the above

81. Which part of the sperm is responsible for digesting the corona radiata that covers an ovulated oocyte?
   a. Flagellum
   b. Cilia
   c. Acrosome
   d. Haploid nucleus
   e. Amphioxus

82. Which of the following is NOT TRUE?
   a. The spermatic cord passes through the inguinal canal
   b. 2 ejaculatory ducts empty into the prostate gland
   c. The penile urethra is found within the corpus cavernosa
   d. The seminal vesicles secrete fructose as a food source for sperm
   e. Ejaculation is primarily mediated by the sympathetic nervous system

83. Which of the following is the fewest in number?
a. Total number of primordial follicles a woman has in her lifetime.
b. Total number of primary follicles a woman has in her lifetime.
c. Total number of secondary follicles a woman has in her lifetime.
d. Total number of Graafian follicles a woman has in her lifetime.
e. It cannot be determined

84. Which of the following is CORRECT?
   a. # of chromosomes in a spermatogonium > # of chromosomes in an oogonium
   b. # of chromosomes in a secondary spermatocyte = # of chromosomes in a secondary oocyte
   c. # of vas deferentia in a male = # of ova produced by meiosis of one oogonium
   d. Size of a polar body > size of an ovum
   e. All of the above

85. ______________ is the primary hormone secreted by the ovary during the follicular phase.
   a. HCG
   b. Progesterone
   c. Estrogen
   d. Aldosterone
   e. None of the above

86. What hormone causes ovulation?
   a. GnRH
   b. LH
   c. FSH
   d. Estrogen
   e. Progesterone

87. Which of the following hormones is found in both males and females?
   a. LH
   b. FSH
   c. Aldosterone
   d. GnRH
   e. All of the above

88. Sexually transmitted diseases such as gonorrhea are more likely to cause peritonitis in females than in males. Which of the following is the most likely reason for this difference?
   a. Males do not perform meiosis, whereas females do.
   b. The male urethra performs both urinary and reproductive functions.
   c. The Fallopian tube is open to the peritoneal cavity
   d. Male orgasm is usually accompanied by ejaculation of semen
   e. Females secrete progesterone almost continuously

89. Which of the following cells is haploid?
   a. Cardiac muscle cell
   b. Oogonium
   c. Spermatogonium
   d. Spermatid
   e. 2 of the above

90. Which phase of the uterine cycle would coincide with high levels of progesterone?
Menstrual
b. Follicular
c. Secretory
d. Proliferative
e. Ovarian

91. Which of the following does NOT belong?
   a. Ovary
   b. Prostate
c. Fallopian tube
d. Uterus
e. Clitoris

92. A leiomyoma is a very common benign tumor that originates within uterine smooth muscle. Based on this, you could assume that a leiomyoma would most likely be found in the:
   a. Parietal biliary peritoneum
   b. Labia minora
c. Epididymis
d. Lactiferous ductule
e. Myometrium

93. Which of the following is INCORRECT?
   a. Primary follicle → contains a primary oocyte
   b. Secondary follicle → contains a primary oocyte
c. Primordial follicle → only found in individuals who have gone through puberty
d. Graafian follicle → largest, most mature follicle type, which is distinguished by its large antrum.
e. None of the above

94. Following ovulation, the remaining follicle cells are transformed into a:
   a. Corpus albicans
   b. Vesicular follicle
c. Secondary hemorrhagicum
d. Corpus luteum
e. Bulbospongiosum

95. Which of the following is NOT TRUE?
   a. The fimbriae of the uterine tube contain cilia.
   b. The opening between the cervical canal and the vagina is the external os.
c. The lumen of the fallopian tube is continuous with the peritoneal cavity
d. In most women the uterus is retroverted and flexed anteriorly
e. The cervical mucosa contains mucus-secreting glands

96. Which of the following is closest to the liver?
   a. Stratum functionalis of the endometrium
   b. Stratum basalis of the endometrium
c. Myometrium
d. Perimetrium
e. External vaginal orifice

97. In terms of chromosome number, which of the following is most similar to a spermatid?
a. Spermatogonium
b. Primary spermatocyte
c. Oogonium
d. Detrusor cell
e. Second polar body

98. Which of the following is TRUE?
   a. The seminiferous tubules are the major sites of FSH secretion in the male body.
   b. Erectile tissues are only found in males.
   c. Ciliated cells are in greater abundance in the male reproductive ducts than in the female reproductive ducts.
   d. The prepuce is a common term for the glans penis.
   e. None of the above.

99. Which of the following is TRUE?
   a. A zygote is an example of a haploid cell.
   b. Spermiogenesis is the process by which a spermatid develops into a sperm.
   c. Type A spermatogonia only divide meiotically.
   d. Sustentacular cells are primarily found within the medial glans penis.
   e. A primary spermatocyte will have half as much DNA as a diploid cell.

100. Which of the following is TRUE?
   a. Both sperm and PCT cells contain multiple mitochondria.
   b. The acrosome is found within the flagellum of the sperm and primarily contains digestive enzymes.
   c. During meiosis, one haploid cell divides twice to form four diploid cells.
   d. Most spermatids are not found within seminiferous tubules.
   e. Both A and B are true.