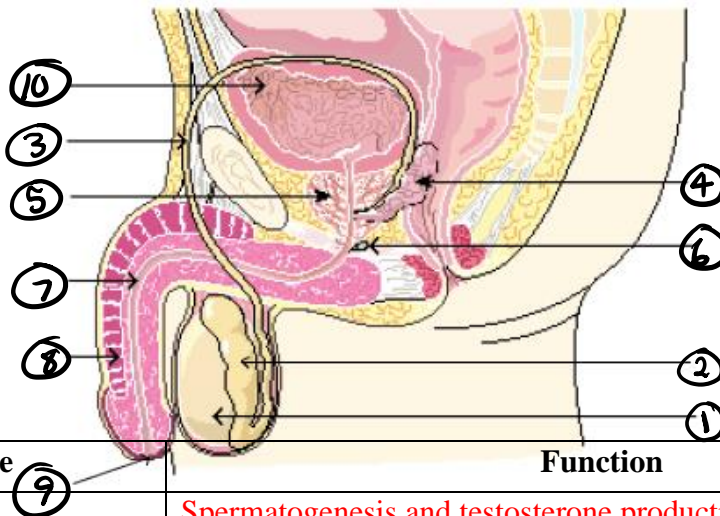


Chapter 14 Practice Written Questions **KEY**

1. Label the following diagram of the human male reproductive system. Include a brief summary of the function for each labeled structure.



Structure	Function
1. Testes	Spermatogenesis and testosterone production. Held in scrotum to maintain a slightly lower than body temp for proper sperm production.
2. Epididymis	Allows sperm to mature and gain motility for fertilization
3. Vas Deferens	Conducts sperm by peristalsis from the epididymis towards the ejaculatory duct
4. Seminal Vesicle	Adds fructose for energy for sperm and prostaglandins for uterine contractions to the semen at the ejaculatory duct
5. Prostate Gland	Adds the alkaline (basic) fluid to semen to protect sperm from the acidity of the urethra and vagina
6. Bulbourethral Gland (Cowper's Gland)	Adds mucus (pre-ejaculate) for lubrication during sexual intercourse and mucus to semen during ejaculation
7. Urethra	Pathway for urine during urination. Pathway for semen during ejaculation via the erect penis
8. Penis	Consists of erectile tissue that becomes engorged during sexual stimulation. Contracts during orgasm to facility ejaculation of semen.
9. Urethral Orifice (Opening)	Exit for urine or semen from the penis.
10. Bladder	Stores urine from the kidneys (transported from ureters) until the urination reflex.

2. Describe the complete regulation of the production of testosterone and the production of sperm.

1. The hypothalamus detects the low level of testosterone or inhibin, it produces GnRH which stimulates the anterior pituitary gland.

2. The anterior pituitary secretes FSH and LH.

3. FSH stimulates the seminiferous tubules of the testes to initiate sperm production (spermatogenesis) and LH stimulates the interstitial cells of the testes to produce testosterone.

4. When more sperm is produced, the inhibin hormone is produced and secreted. When inhibin and testosterone levels rise, they cause negative feedback on the hypothalamus and anterior pituitary to decrease GnRH and LH and eventually sperm and inhibin levels and testosterone levels fall again.

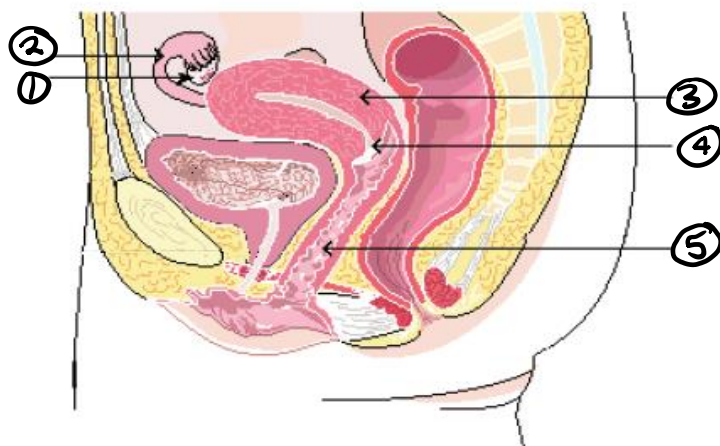
3. List, provide sources and the functions of the components in seminal fluid (semen).

Component	Source	Function
Sperm	Seminiferous tubules in testes	Deliver the genetic information for fertilization
Fructose and Prostaglandins	Seminal Vesicle	Provide energy for sperm and promotes uterine contractions in the female
Alkaline fluid	Prostate Gland	A basic fluid that surrounds the sperm to protect it while it travels in the acidic urethra and vagina.
Mucus	Bulbourethral Gland (Cowper's Gland)	Mucus for lubrication during sexual intercourse.

4. List five different effects of testosterone on males.

1. Hair growth – pubic, chest, underarms, facial (body hair)
2. Muscle growth
3. Sperm production
4. Largening of the larynx
5. Broadening of the shoulders
6. Increased height – longer legs relative to torso
7. Contributes to aggressive behaviour
8. Contributes to male pattern baldness

5. Label the following diagram of the human female reproductive system. Include a brief summary of the function for each labeled structure.



Structure	Function
1. Ovary	Oogenesis (egg production) and production of estrogen and progesterone. Also site of ovulation.
2. Oviduct (Fallopian Tube or Uterine Tube)	Fimbriae sweep in egg at ovulation and cilia, along with peristalsis, transport egg towards the uterus. Also, site of fertilization.
3. Uterus	Lined with endometrium. Houses developing embryo and fetus. Shedding of endometrium is menstruation (period). Smooth muscle organ.
4. Cervix	Entrance/exit for uterus. Plugged by mucus to protect uterus from bacteria. Mucus plug becomes watery at ovulation to allow sperm to enter.
5. Vagina	Organ of sexual intercourse. Smooth muscle. Secretes mucus for lubrication. Exit for menstrual flow or fetus during birthing.

6. Describe the complete menstrual cycle (including both the ovarian and uterine cycles as they occur concurrently).

Calendar	Ovarian	Uterine
Day 1-5	FSH stimulates follicle growth Estrogen is produced from the follicle	Menstruation (shedding of the uterine lining) due to low hormone levels (low progesterone and estrogen).
Day 6-13	Egg matures as follicle continues to grow. -FB from rising estrogen causes a decreased FSH to ensure only one follicle remains.	The endometrium rebuilds and becomes vascular due to estrogen (from the follicles in the ovary)
Day 14	The enlarged follicle produces a high amount of estrogen around day 12. This causes the Anterior Pituitary to secrete a surge of LH on Day 14 which causes ovulation.	No change – continuation of endometrium growth
Day 15-28	The remaining follicle (after egg is released) turns into the corpus luteum. LH maintains the corpus luteum. The corpus luteum secretes progesterone. Progesterone causes -FB to the anterior pituitary to decrease LH Eventually the lower LH causes the corpus luteum to regress or degenerate and it secretes less hormone towards day 28	The endometrium grows to double or triple thickness and begins producing mucoid secretions in preparation for implantation of an embryo due to progesterone (from the corpus luteum in the ovary)

7. List five different effects of estrogen on the female.

1. The remaining follicle (after egg is released) turns into the corpus luteum.
2. LH maintains the corpus luteum.
3. The corpus luteum secretes progesterone.
4. Progesterone causes -FB to the anterior pituitary to decrease LH
5. Eventually the lower LH causes the corpus luteum to regress or degenerate and it secretes less hormone towards day 28.

8. Describe the changes that occur when an embryo implants in the endometrium.

Implantation is when the blastocyst (embryo) arrives at the uterus around day 20 and implants into the endometrium (uterine lining/uterus).

The early placenta starts to grow and secretes HCG.

HCG maintains the corpus luteum (prevents it from regressing) so it continues to secrete high levels of progesterone and estrogen to prevent menstruation.

9. Describe the complete positive feedback loop that occurs to deliver a baby.

1. The large fetus exerts pressure on the cervix which sends a signal to the hypothalamus.

2. The hypothalamus produces oxytocin which is secreted from the posterior pituitary gland.

3. Oxytocin enters the blood and reaches the uterus to cause uterine contractions.

4. Uterine contractions squeeze the fetus which cause it to exert more pressure on the cervix.

5. Positive feedback occurs → more pressure on the cervix results in increased signals to the hypothalamus and increased oxytocin to increase uterine contractions.

6. Positive feedback ends with the fetus and placenta are birthed and there is no more pressure on the cervix.