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Multiple Choice Questions

- Decide which of the choices best completes the statement or answers the question.
 - Locate that question number on the separate answer sheet provided.
 - Use the procedure described by your teacher to answer each question. For example, “fill in the circle that corresponds to your choice” or “make an X over the letter corresponding to your choice.”
1. In human males, the site for spermatogenesis (sperm production) and the site for the storage of the sperm to mature and await ejaculation are, respectively:
 - a. epididymis, interstitial cells
 - b. epididymis, ductus deferens
 - c. seminiferous tubules, interstitial cells
 - d. seminiferous tubules, epididymis
 2. Which row below identifies the structures in the human male that secrete alkaline fluid to protect the sperm from the acidic environment of the female reproductive tract?

Row	Structure	Structure
a.	Sertoli cells	ductus deferens
b.	prostate gland	Cowper's gland
c.	seminal vesicle	epididymis
d.	urethra	ureter

3. Which row below correctly identifies a primary and a secondary sexual characteristic of a female?

Row	Primary Sexual Characteristic	Secondary Sexual Characteristic
a.	oviducts	breasts
b.	oviducts	uterus
c.	higher voice	less obvious muscle development
d.	cervix	vagina

4. The function of the acrosome on the male sperm is to provide
 - a. the energy required for motility.
 - b. the energy for the mitochondria.
 - c. protection for the nucleus (DNA) found in the sperm.
 - d. the enzymes that help the sperm enter the egg.
5. The egg is fertilized by the sperm in which structure in the human female?
 - a. ovary
 - b. uterus
 - c. fimbriae
 - d. oviduct

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6. Which row below completes the following statement?

Statement: “After the ovum is released, the mature follicle develops into the *i* that secretes *ii* and some *iii*.”

Row	<i>i</i>	<i>ii</i>	<i>iii</i>
a.	secondary follicle	luteinizing hormone (LH)	follicle stimulating hormone (FSH)
b.	corpus luteum	progesterone	estrogen
c.	secondary follicle	estrogen	progesterone
d.	corpus luteum	luteinizing hormone (LH)	follicle stimulating hormone (FSH)

7. The rows below identify reproductive structures of males and females. Which row below shows the male and female reproductive structures that are LEAST similar in function?

Row	Male	Female
a.	testes	ovaries
b.	ductus deferens	oviducts
c.	sperm	eggs
d.	epididymis	uterus

8. Which row below identifies a viral and a bacterial sexually transmitted infection (STI), respectively?

Row	Viral STI	Bacterial STI
a.	hepatitis C	chlamydia
b.	genital herpes	HIV/AIDS
c.	chlamydia	gonorrhea
d.	syphilis	genital herpes

9. Gonadotropin releasing hormone (GnRH) is released from the hypothalamus in both males and females. This hormone stimulates the release of which two hormones from the anterior pituitary gland?

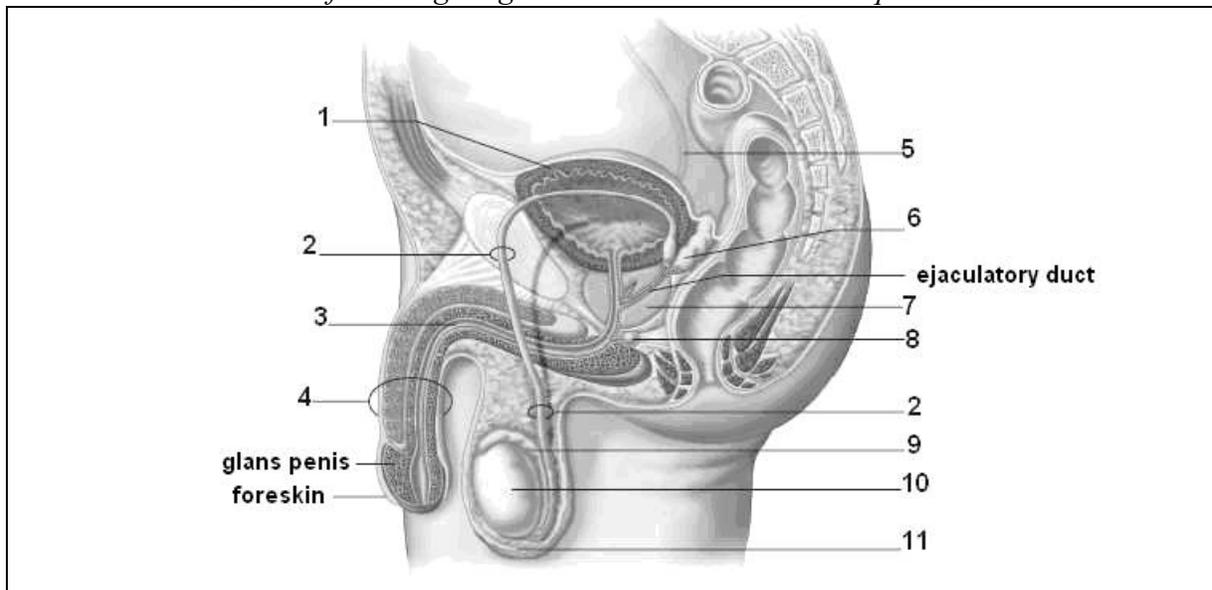
- estrogen and progesterone
- testosterone and inhibin
- estrogen and follicle stimulating hormone (FSH)
- follicle stimulating hormone (FSH) and luteinizing hormone (LH)

10. Which of the following hormones is responsible for the production of sperm in the testes?

- inhibin
- follicle stimulating hormone (FSH)
- testosterone
- luteinizing hormone (LH)

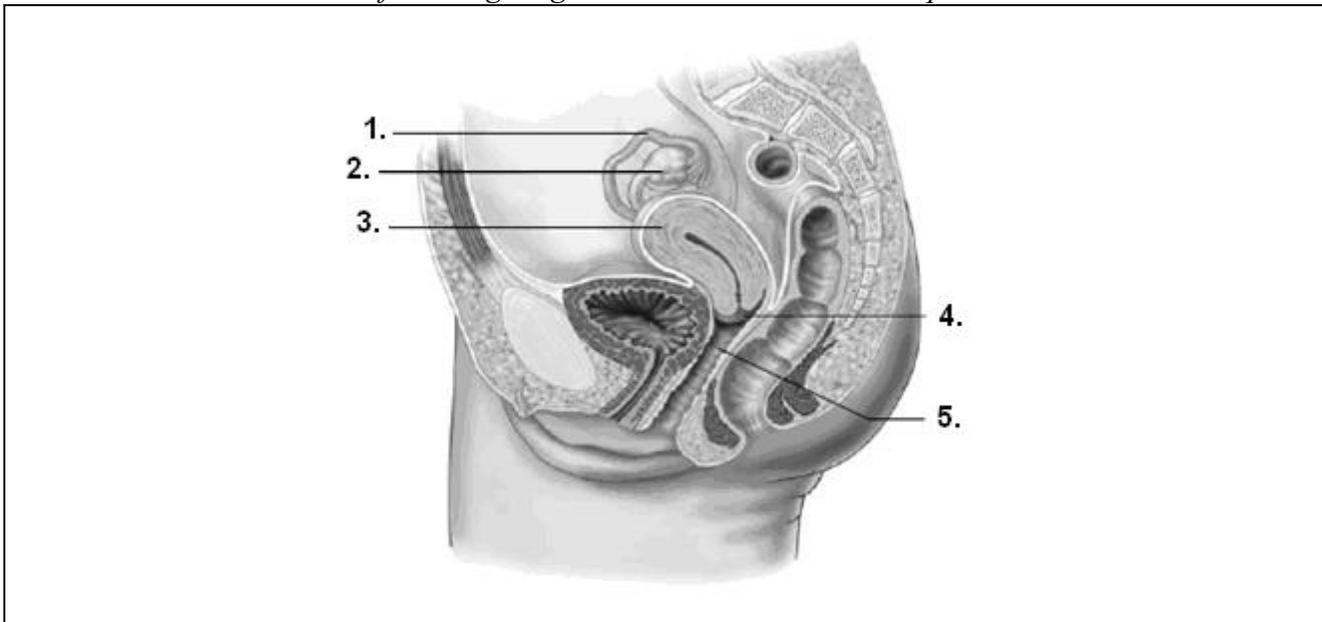
11. Which two anterior pituitary gland hormones are described by the following statement?
 “These hormones are released from the anterior pituitary, travel to the ovaries, and stimulate oogenesis, ovulation, and the production of hormones responsible for the development of secondary sexual characteristics in humans.”
- estrogen and progesterone
 - progesterone and gonadotropin releasing hormone (GnRH)
 - gonadotropin releasing hormone (GnRH) and luteinizing hormone (LH)
 - follicle stimulating hormone (FSH) and luteinizing hormone (LH)
12. The hormone that is directly responsible for ovulation is
- luteinizing hormone (LH).
 - follicle stimulating hormone (FSH).
 - estrogen.
 - progesterone.

Use the following diagram to answer the next two questions.



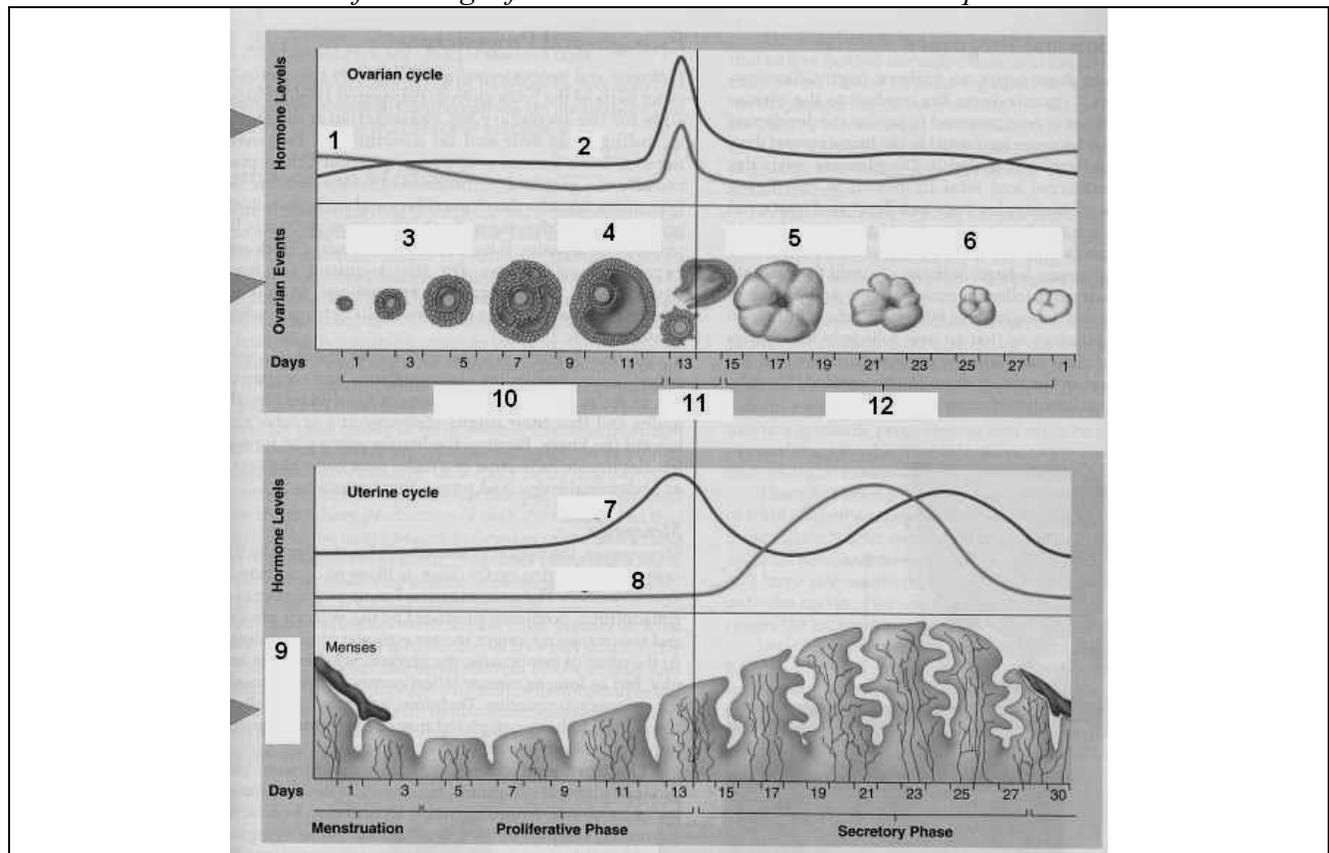
13. Identify the structures that contribute the liquid component of the semen.
- 1, 5, and 3
 - 11, 10, and 9
 - 6, 7, and 8
 - 10, 7, and 2
14. The structure that stores sperm while it matures is labelled number _____ and is called the _____.
- 7, prostate gland
 - 2, ductus deferens
 - 9, epididymis
 - 11, scrotum

Use the following diagram to answer the next two questions.



15. The corpus luteum forms in the structure numbered _____ and known as the _____.
- 1, oviduct
 - 2, ovary
 - 3, uterus
 - 5, vagina
16. When a woman becomes pregnant, the fertilized egg (zygote) implants in the structure numbered _____ and labelled the _____.
- 1, oviduct
 - 2, ovary
 - 3, uterus
 - 5, vagina
17. Which event marks the completion of the follicular phase of the ovarian cycle?
- ovulation
 - menstruation
 - pregnancy
 - child birth

Use the following information to answer the next three questions.

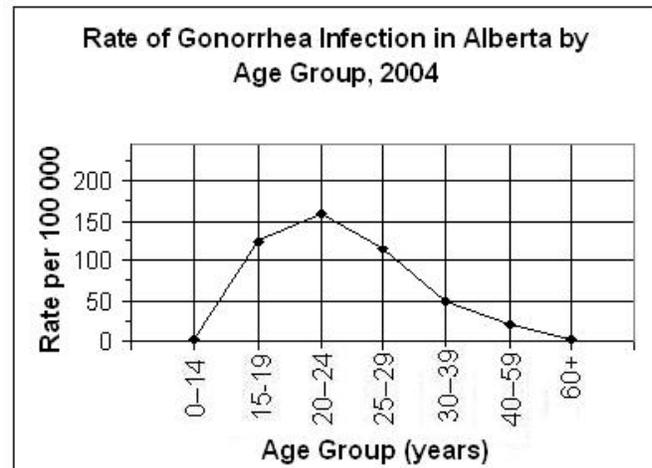
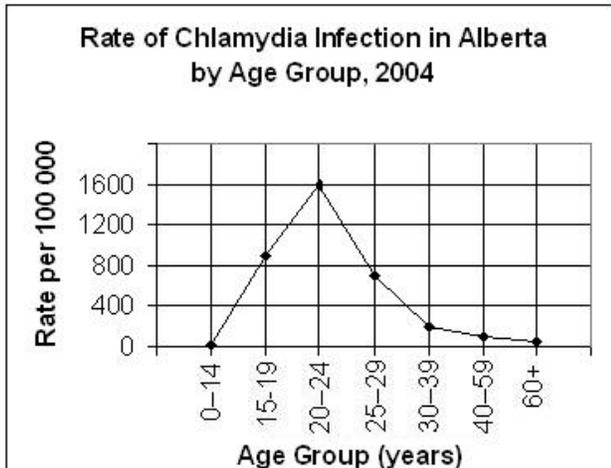


18. The hormone labelled number 1 on this diagram is
- estrogen.
 - progesterone.
 - follicle stimulating hormone (FSH).
 - luteinizing hormone (LH).
19. The hormone estrogen on this diagram is represented by number ____ on this diagram.
- 1
 - 2
 - 8
 - 7
20. Unlike most human organs, this endocrine gland is not a permanent structure. This endocrine gland is called the
- hypothalamus.
 - corpus luteum.
 - testes.
 - anterior pituitary.

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21. The decline of testosterone production in males and the end of the menstrual cycle in females are known, respectively as
- andropause and menopause.
 - follicular stage and luteal stage.
 - testosterone stage and endometrial stage.
 - prostatitis and hormone replacement therapy.

Use the following graphs to answer the next question.



22. The age group with the highest rate of infection for both chlamydia and gonorrhea is the
- 15 – 19 age group.
 - 25 – 29 age group.
 - 20 – 24 age group.
 - 30 – 39 age group.

Use the following information to answer the next question.

Erectile Dysfunction Medication

In males, sexual stimulation causes cells and nerve endings in the erectile tissue of the penis to release a substance called nitric oxide. The nitric oxide activates a dormant enzyme, which produces an important signalling molecule called cyclic GMP (cGMP). This molecule is a vasodilator—it relaxes the smooth muscles surrounding the blood vessels at the base of the penis, allowing stronger blood flow and leading to an erection. However, there is another enzyme called phosphodiesterase whose function is to break down cGMP. Men with erectile dysfunction often produce too little nitric oxide, which means not enough cGMP is made. The little that is made is rapidly broken down by phosphodiesterase, and blood flow is reduced, resulting in erectile failure.

Viagra is a substance that mimics the shape of cGMP, the natural substrate of the enzyme phosphodiesterase. All enzymes possess what is known as an active site, which is where the chemical reaction controlled by the enzyme actually takes place. If that site is blocked somehow, for example by inserting a molecule that has a similar shape to the normal substrate but which cannot be broken down, then the enzyme is unable to work.

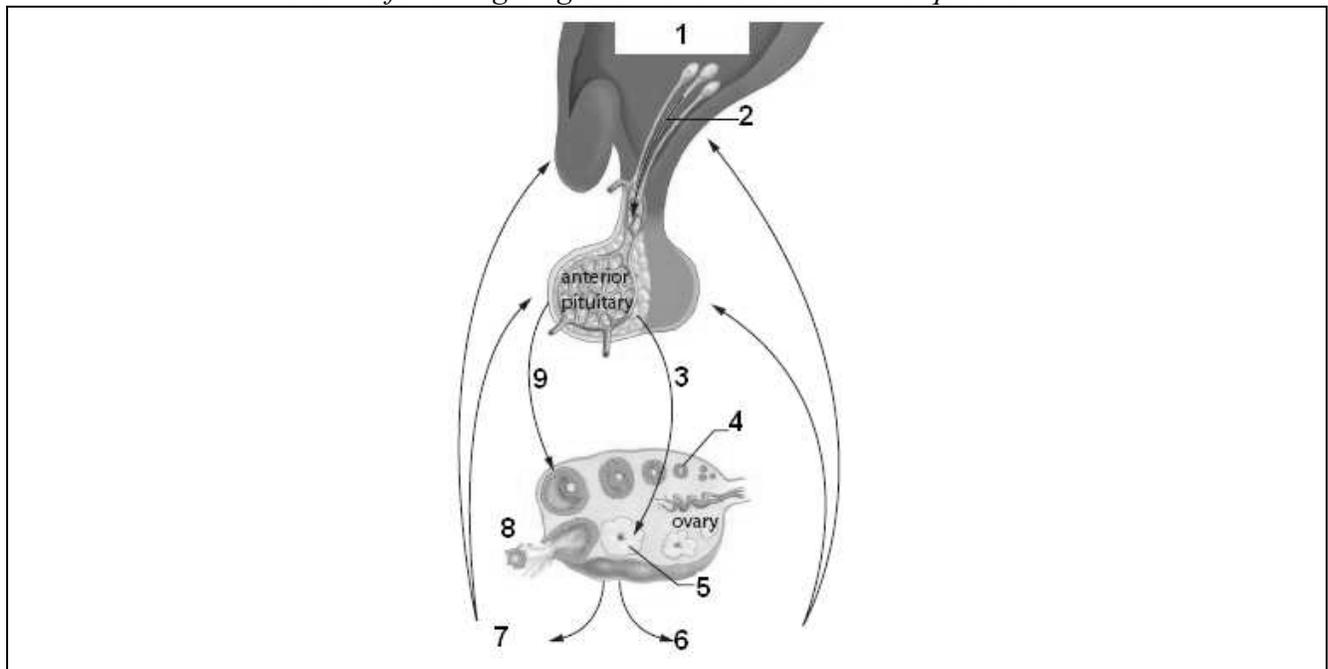
(continued on next page)

When Viagra binds to phosphodiesterase, the enzyme is unable to break down cGMP, allowing it to accumulate in the blood. As Viagra targets one of the final steps in the pathway of erectile function, it can be used regardless of the underlying cause of the disorder (such as injury, surgery, disease, or depression).

Source: http://genome.wellcome.ac.uk/doc_WTD020941.html

23. Viagra could be prescribed to treat erectile dysfunction in males with
- normal levels of cyclic GMP but low levels of phosphodiesterase.
 - low levels of cyclic GMP but normal levels of phosphodiesterase.
 - high levels of cyclic GMP but normal levels of phosphodiesterase.
 - normal levels of cyclic GMP but normal levels of phosphodiesterase

Use the following diagram to answer the next two questions



24. Follicle stimulating hormone (FSH) and luteinizing hormone are labelled ____ and _____, respectively in this diagram.
- 7 and 6
 - 1 and 2
 - 9 and 3
 - 4 and 5
25. The hormones estrogen and progesterone are labelled ____ and ____ in this diagram.
- 7 and 6
 - 1 and 2
 - 9 and 3
 - 4 and 5

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Numerical Response Questions

- Record your answer on the answer sheet provided.
- If an answer is a value between 0 and 1 (e.g., 0.25), then be sure to record the 0 before the decimal place.

Use the following information to answer the next question.

Structures of the Female Reproductive System

1. cervix
2. oviduct
3. uterus
4. fimbriae
5. vagina

1. The order of the structures that an egg would travel through after ovulation is _____, _____, _____, _____, and _____. Record your **five-digit** answer in the numerical response section on the answer sheet.

Use the following information to answer the next question.

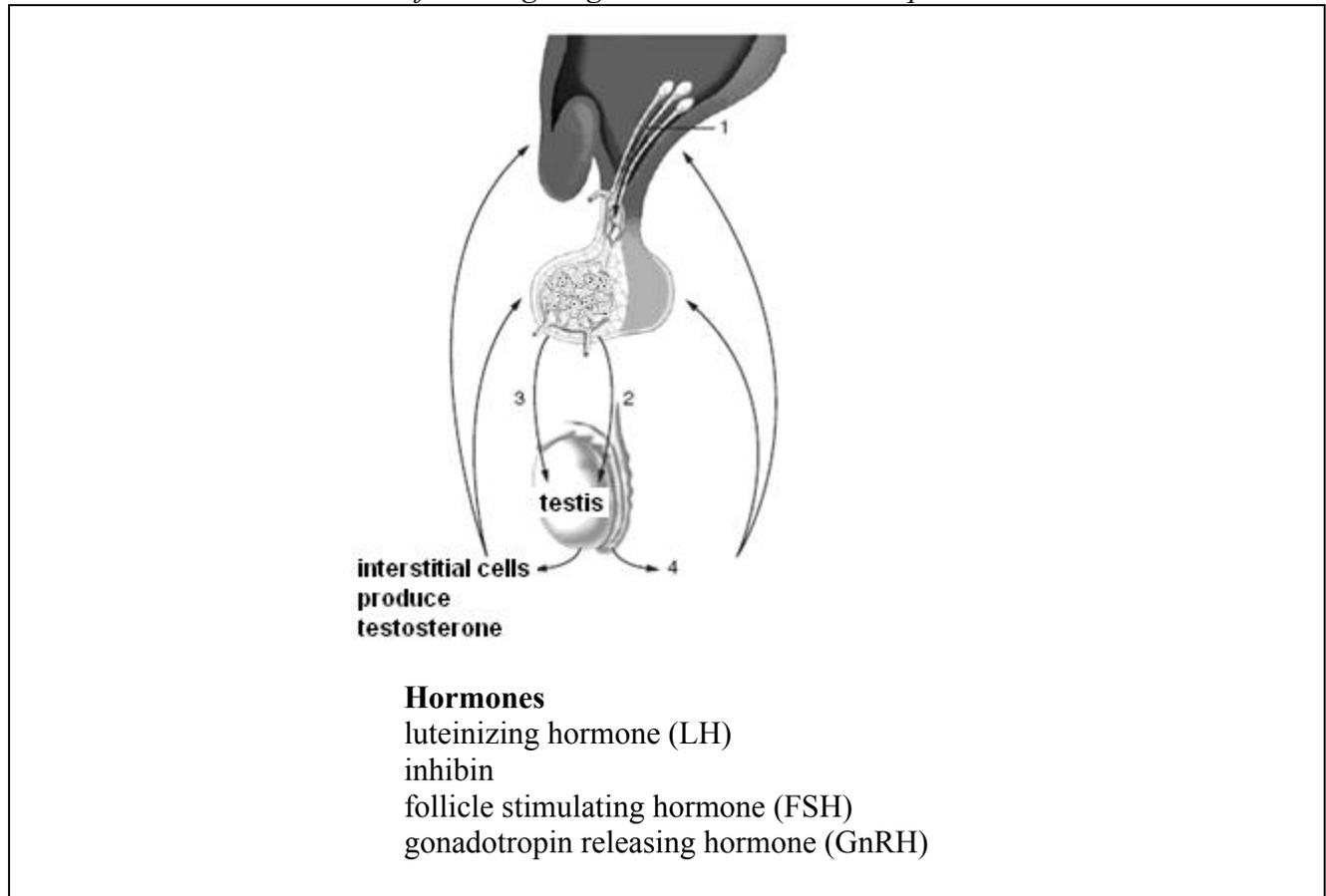
Sexually Transmitted Infections (STI)

1. human papilloma virus (HPV)
2. chlamydia
3. genital herpes
4. syphilis

2. Use the numbers above to complete the following statement:

Statement: “The most common viral STI is ____ while the most common bacterial STI is _____. ____ is responsible for a condition known as genital warts. The ____ bacterium causes the least common STI and has three stages in its development.” Record your **four-digit** answer in the numerical response section on the answer sheet.

Use the following diagram to answer the next question.



3. In the diagram above, match the hormones numbered 1, 2, 3, and 4 to their names. Record your **four-digit** answer in the numerical-response section on the answer sheet.

Numbers:

Hormones:

LH

inhibin

FSH

GnRH

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Written Response Questions

Use the following information to answer the following questions

Human Papilloma virus (HPV) Prevention and HPV Vaccine

What is HPV?

There are over 100 types of human papilloma virus (HPV). HPV is a virus that can infect many parts of the body. Some types of HPV are sexually transmitted; these are not the same as the viruses that cause warts and other infections on other areas such as the fingers, hands, and face.

Some types of sexually transmitted HPV are referred to as “low-risk” viruses because they rarely develop into cancer. HPV types that are more likely to lead to the development of cancer are referred to as “high-risk.” It is important to note, however, that most women with high-risk HPV will not develop cervical cancer.

How can you protect yourself from getting HPV?

For females, some of the common types of sexually transmitted HPV can be prevented through vaccination. This is an important option, given that there is no treatment available that can cure a sexually transmitted HPV infection. These HPV vaccines have been in development for many years, and one of the vaccines was approved for use in Canada in July of 2006. The vaccine was licensed in the United States on June 8, 2006.

Who should get the vaccine?

The vaccine has been approved for use in Canada for females 9-26 years of age. The proposed schedule is three doses given 0, 2, and 6 months apart. HPV vaccines are currently being studied for use in men.

What does the vaccine protect against?

The vaccine will protect women against infection with two high-risk types of HPV (16 and 18) and two low risk types (6 and 11). HPV types 16 and 18 cause approximately 70 percent of cervical cancers. HPV types 6 and 11 cause approximately 90 percent of ano-genital warts.

Source: Public Health Agency of Canada

http://www.phac-aspc.gc.ca/std-mts/hpv-vph/hpv-vph-vaccine_e.html

1. a) **Identify** the pathogen that causes genital warts, and **describe** why this pathogen cannot be treated by antibiotics. (2 marks)

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- b) **Describe** the symptoms of a person infected by HPV. (2 marks)

Use the additional information to answer the next question.

Prevalence and predictors of human papilloma virus infection in women in Ontario, Canada

From May 1998 to January 1999, women 15 to 49 years of age who were seen for cervical cytologic screening by 32 participating family physicians were randomly selected for recruitment. The family practices were chosen from the 6 health planning regions of Ontario, proportionate to the regional populations. A maximum of 6 randomly selected, consenting women in each of the seven 5-year age categories from 15 to 49 years could be enrolled from each practice.

One test used was the hybrid capture II assay. The hybrid capture II assay is a second-generation DNA probe test based on signal amplification, which uses a chemiluminescent readout to indicate the presence of one or more carcinogenic HPV types as a group (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59 and 68). The test was considered positive if the light emitted by a specimen was greater than the light emitted by the positive control.

The following table summarizes the results of the hybrid capture II assay of 824 women.

Age Group	Positive Test Results (%)
15 – 19	17.5
20 – 24	23.2
25 – 29	17.5
30 – 34	13.2
35 – 39	10.3
40 – 44	8.3
45 – 49	4

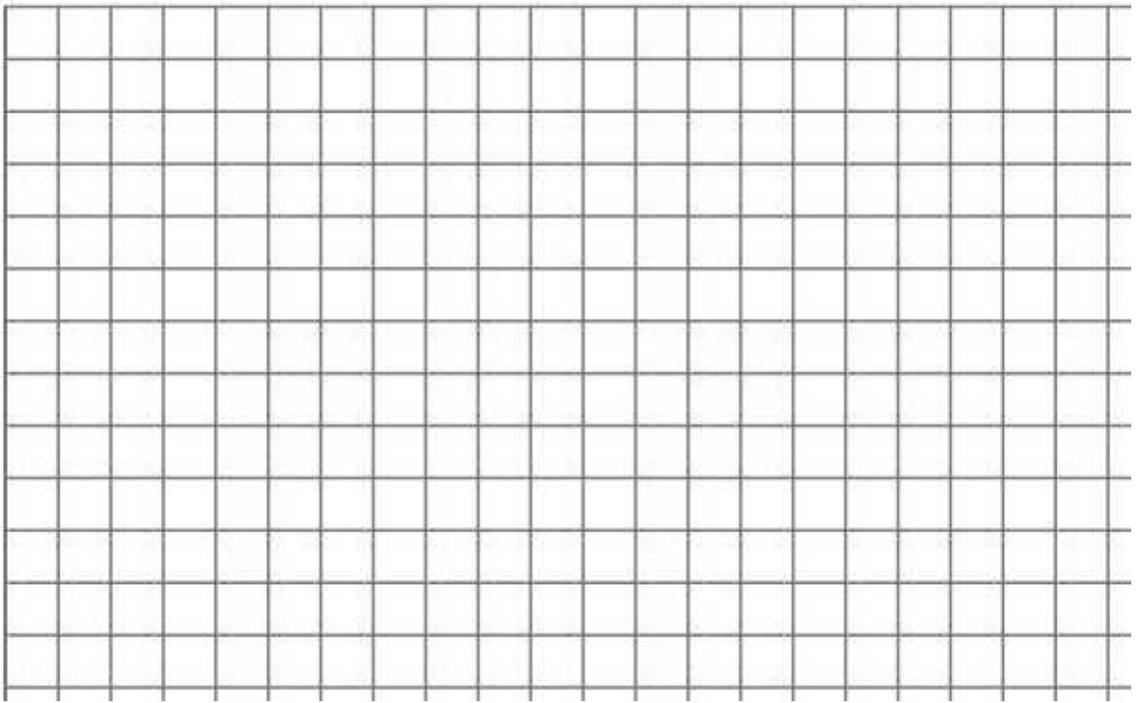
Source: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=80454>

- c) Using the grid on the next page, **draw** a fully labelled graph summarizing the data collected by the hybrid capture II assay. (5 marks)

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d) Many people who have infections caused by HPV are asymptomatic (do not always show any symptoms of the infection). **Explain** why this is a concern to healthcare professionals. (3 marks)

e) **Identify** three things that people can do to protect themselves from sexually transmitted infections such as HPV. (3 marks)

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- f) **Explain** why most healthcare practitioners want to teach safe sex practices to as many young people as possible. **Describe** the challenges associated with these educational programs, and **state** your position on this issue. (5 marks)
