

P. Reproductive System

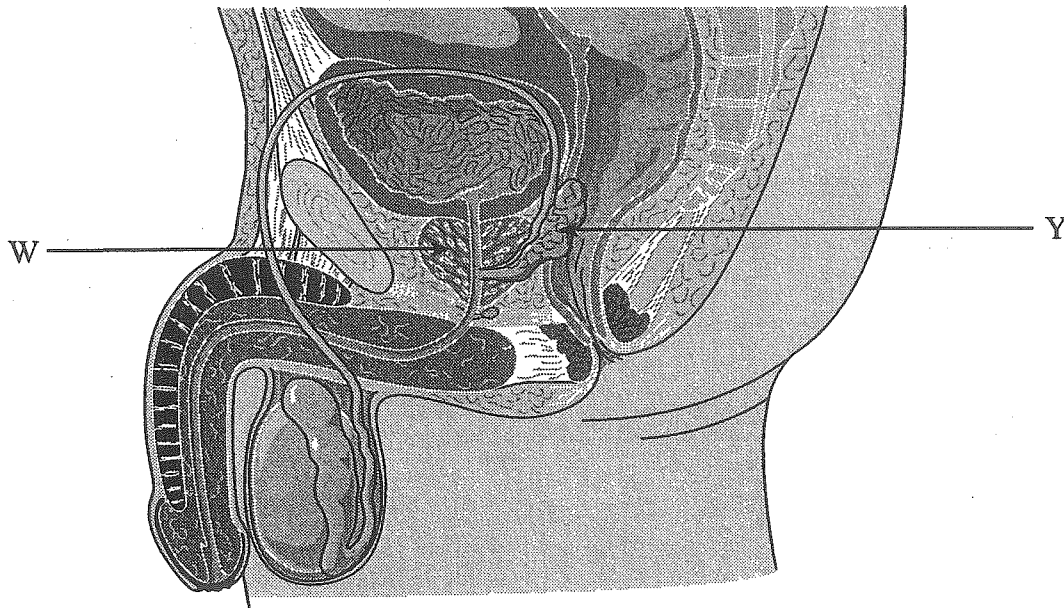
Use the following information to answer question 1.

CONCENTRATIONS OF SUBSTANCE X IN mg PER 100 mL		
PLASMA	GLOMERULAR FILTRATE	URINE
26	26	1 820

1. Substance X is

- A. urea.
- B. glucose.
- C. albumin.
- D. histamine.

Use the following diagram to answer question 2.



2. The function of structures W and Y is to

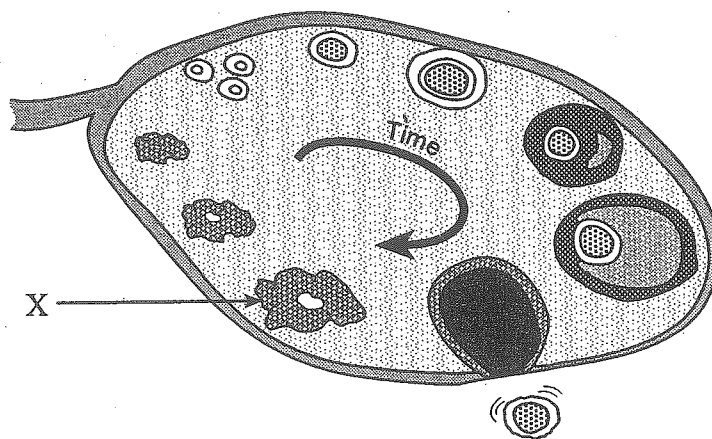
- A. produce testosterone.
- B. mature and store sperm.
- C. deliver the sperm to the female.
- D. produce fluids that make up semen.

3. What hormone is primarily responsible for egg maturation and the distribution of fat in females?

- A. estrogen
- B. progesterone
- C. luteinizing hormone (LH)
- D. human chorionic gonadotropic (HCG) hormone

4. What occurs as a result of the secretion of releasing hormone by the hypothalamus during the first 13 days of the ovarian and uterine cycles?
- the sloughing off of the uterine lining
 - the production of progesterone by the corpus luteum
 - the secretion of large amounts of estrogen by the follicle
 - the release of human chorionic gonadotropin (HCG) by the anterior pituitary
5. Where is luteinizing hormone (LH) produced?
- follicle
 - hypothalamus
 - corpus luteum
 - anterior pituitary

Use the following diagram to answer question 6.



6. The secretions from structure X cause
- the uterine lining to slough off.
 - the ovaries to produce a mature egg.
 - the uterine lining to produce a thick mucus.
 - the production of human chorionic gonadotropin (HCG).

7. Testosterone production in the male occurs in the

- A. prostate gland.
- B. interstitial cells.
- C. Cowper's gland.
- D. seminiferous tubules.

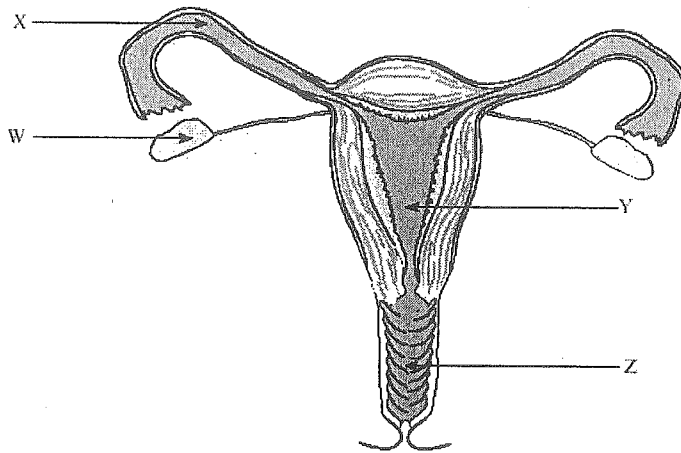
8. The structure in the sperm that contains 23 chromosomes is the

- A. tail.
- B. head.
- C. acrosome.
- D. mid-piece.

9. A steroid hormone produced in the ovary that causes breast development is

- A. estrogen.
- B. aldosterone.
- C. luteinizing hormone (LH).
- D. follicle-stimulating hormone (FSH).

Use the following diagram to answer question 10.



10. In which area does fertilization normally occur?

- A. W
- B. X
- C. Y
- D. Z

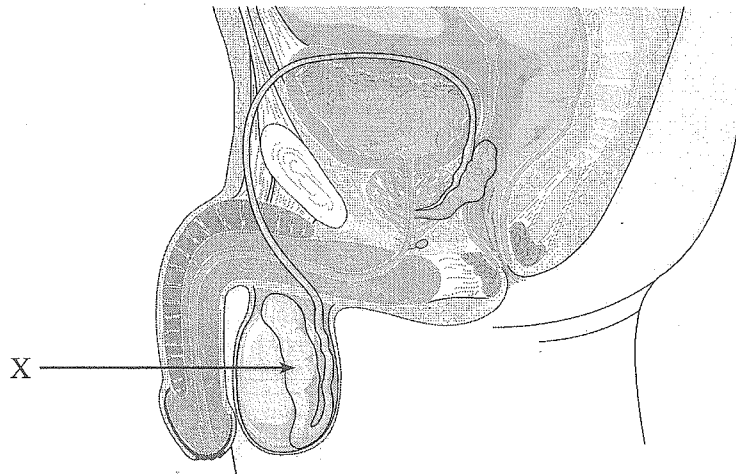
11. Which structure is sometimes surgically tied shut to prevent sperm from leaving the body?

- A. ureter
- B. seminal vesicle
- C. seminiferous tubules
- D. ductus (vas) deferens

12. Elevated levels of which hormone indicate that implantation has occurred?

- A. estrogen
- B. aldosterone
- C. progesterone
- D. human chorionic gonadotropin (HCG)

Use the following diagram to answer question 13.



13. Structure X is the site of

- A. maturation of sperm.
- B. production of testosterone.
- C. secretion of an alkaline substance to neutralize vaginal fluids.
- D. production of luteinizing hormone (LH) and follicle-stimulating hormone (FSH).

14. The correct pathway that sperm travel to leave the body is

- A. epididymis → testes → urethra.
- B. testes → vas deferens → urethra.
- C. epididymis → urethra → vas deferens.
- D. testes → prostate gland → vas deferens.

15. Which part of the female body is structurally similar to the penis in a man and functions as a sexually sensitive organ?

- A. uterus
- B. vagina
- C. clitoris
- D. follicle

16. Increased secretion of FSH (follicle-stimulating hormone) will result in increased production of

- A. sperm.
- B. progesterone.
- C. seminal fluid.
- D. human chorionic gonadotropin (HCG).

17 Which part of a mature sperm aids digestion of the outer membrane of an ovum?

- A. tail
- B. head
- C. acrosome
- D. mid-piece

18 Increased muscle strength, enlarged vocal cords and growth of pubic hair are stimulated by

- A. thyroxin.
- B. estrogen.
- C. testosterone.
- D. follicle-stimulating hormone (FSH).

19 The hormone that stimulates the secretion of sex hormones in both sexes is

- A. estrogen.
- B. testosterone.
- C. luteinizing hormone (LH).
- D. human chorionic gonadotropin (HCG).

20 Testosterone is produced in the

- A. urethra.
- B. epididymis.
- C. interstitial cells.
- D. seminiferous tubules.

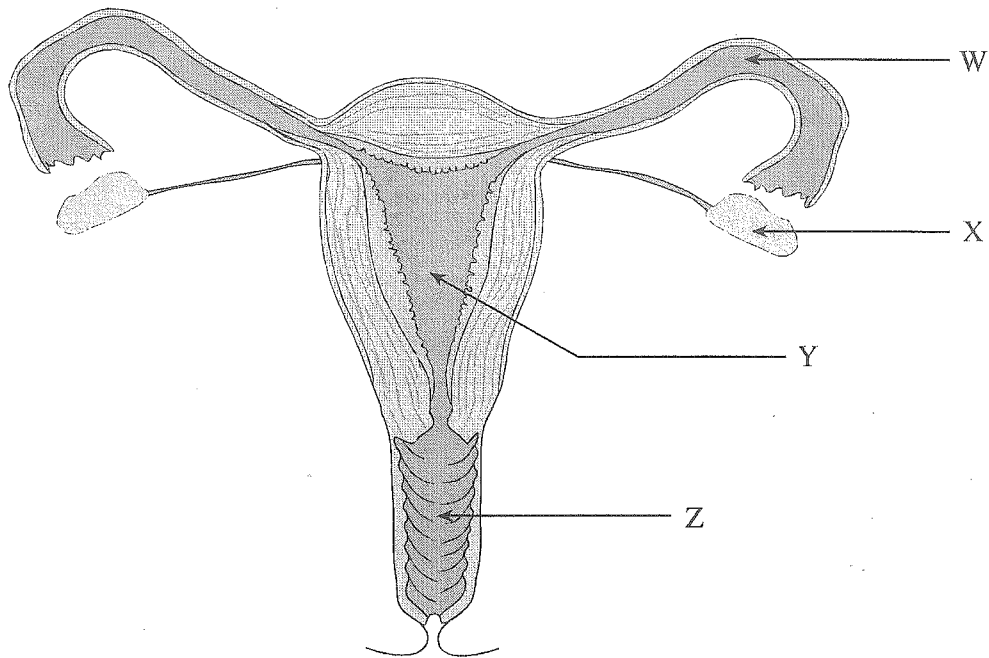
21 Which of the following is not a function of seminal fluid?

- A. to provide energy for sperm
- B. to cause the growth of sperm
- C. to provide a medium for movement of sperm cells
- D. to transport prostaglandins that promote uterine contraction

22 Human chorionic gonadotropic (HCG) hormone is produced by the

- A. hypothalamus.
- B. corpus luteum.
- C. developing embryo.
- D. lining of the oviduct.

Use the following diagram to answer question 23



23 In which of the labelled structures is an egg produced?,

- A. W
- B. X
- C. Y
- D. Z

24 The function of the corpus luteum is to

- A. help maintain the endometrium.
- B. secrete luteinizing hormone (LH).
- C. produce human chorionic gonadotropin (HCG).
- D. produce more follicle-stimulating hormone (FSH).

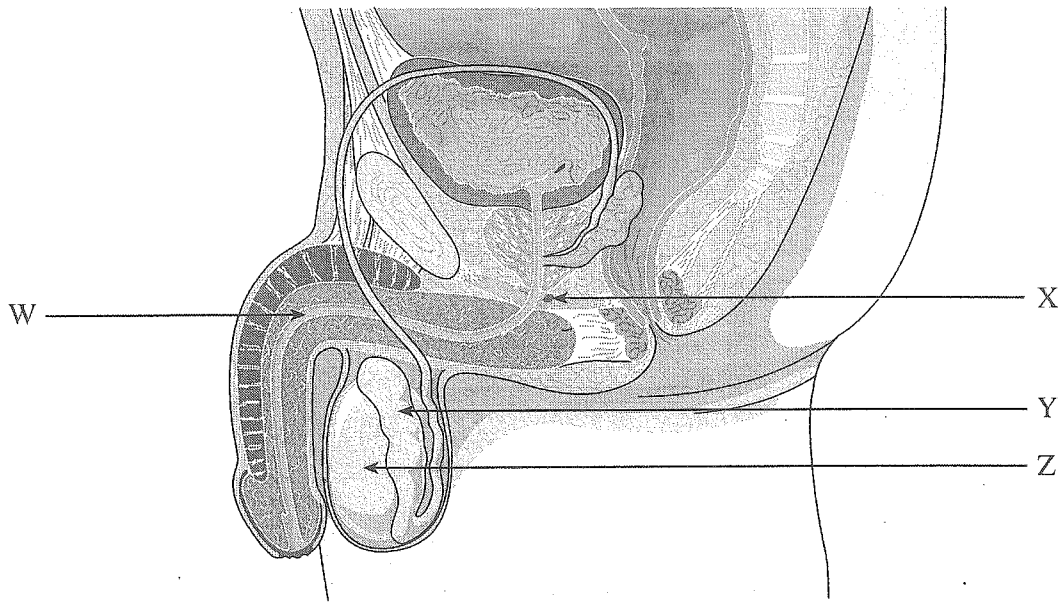
25 Days 15 to 28 of the 28-day uterine cycle are referred to as the

- A. luteal period.
- B. secretory phase.
- C. menstrual period.
- D. proliferative phase.

26 Which of the following is an example of positive feedback?

- A. A rise in oxytocin levels causes uterine contractions.
- B. An increase in body temperature produces increased perspiration.
- C. A drop in blood glucose levels stimulates the liver to release glucose.
- D. An increase in thyroxin levels in the blood decreases the amount of thyroid-stimulating hormone (TSH) released from the pituitary.

Use the following diagram to answer question 27



27 In which of the following structures does sperm maturation occur?

- A. W
- B. X
- C. Y
- D. Z

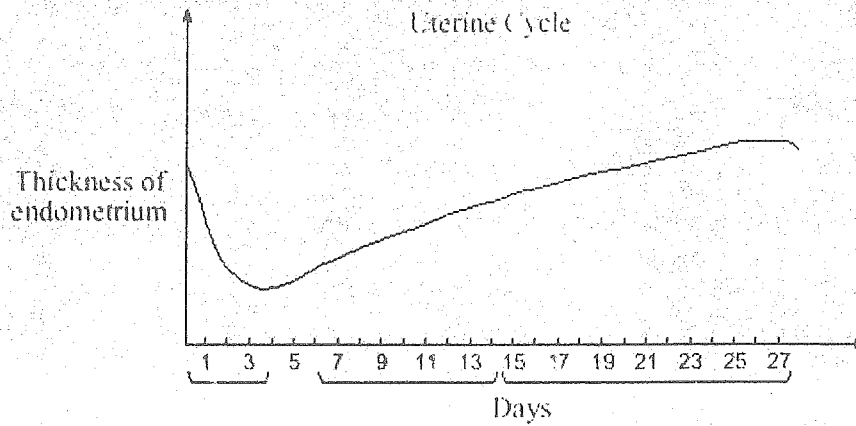
28 The cells of the seminiferous tubules respond to

- A. luteinizing hormone (LH) and produce sperm.
- B. luteinizing hormone (LH) and produce testosterone.
- C. follicle-stimulating hormone (FSH) and produce sperm.
- D. follicle-stimulating hormone (FSH) and produce testosterone.

29 One function of seminal fluid is to

- A. lower the pH of the uterus.
- B. lower the pH of the vagina.
- C. provide nourishment for the egg.
- D. provide a medium in which sperm swim.

Use the following graph to answer question 30



30 Relate the development of the follicle to the observed changes in the thickness of the endometrium at: (6 marks: 2 marks each)

Days 1-3: _____

Days 7-14: _____

Days 15-27: _____

- 31 Testosterone is produced in the
- A. epididymis.
 - B. interstitial cells.
 - C. seminal vesicles.
 - D. seminiferous tubules.

- 32 Which of the following would be affected by removal of the prostate gland?
- A. Urine formation.
 - B. Motility of sperm.
 - C. Sperm maturation.
 - D. Follicle development.

- 33 Which of the following hormones is controlled by positive feedback?
- A. Oxytocin.
 - B. Testosterone.
 - C. Progesterone.
 - D. Follicle-stimulating hormone (FSH).

Use the following information to answer question 34

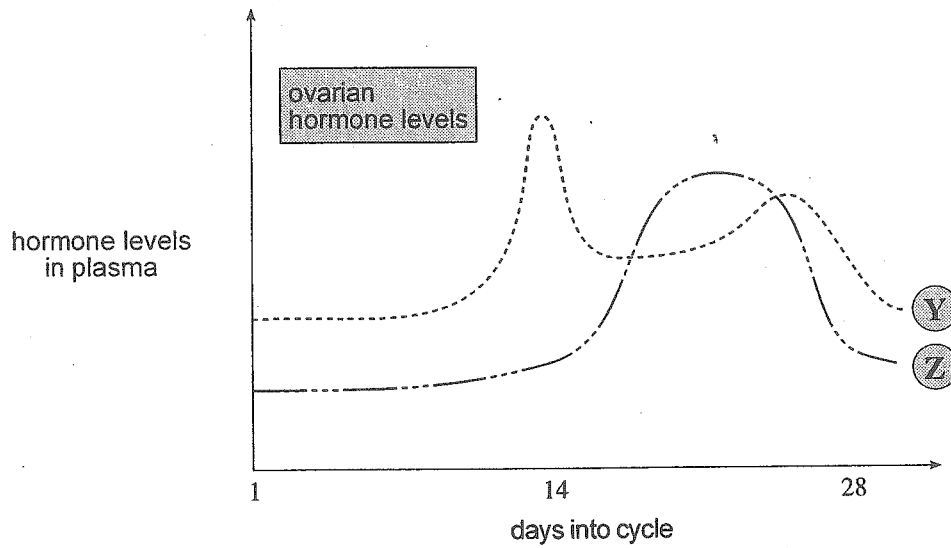
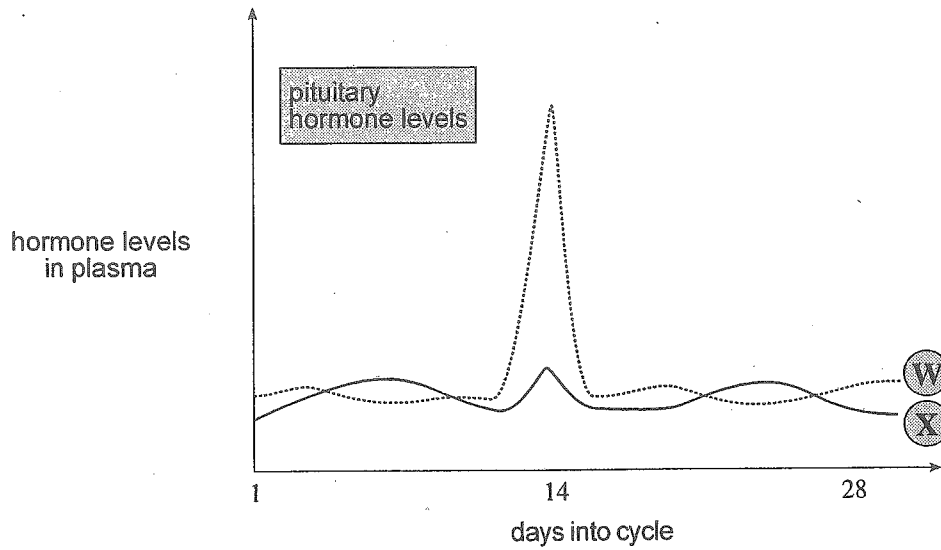
1. Urethra
2. Epididymis
3. Vagina
4. Oviduct
5. Ductus vas deferens

- 34 Which of the following would be the correct path of a sperm on its way to fertilize an egg?
- A. 1, 2, 3, 5, 4
 - B. 1, 3, 4, 5, 2
 - C. 2, 1, 3, 4, 5
 - D. 2, 5, 1, 3, 4

- 35 Which part of a mature sperm contains mitochondria?
- A. Tail.
 - B. Head.
 - C. Midpiece.
 - D. Acrosome.

This is the end of the multiple-choice section.
Answer the remaining questions directly in this examination booklet.

Use the following graphs to answer question 36



- 36 Which letter represents levels of follicle-stimulating hormone during the ovarian and uterine cycles?
- A. W
 - B. X
 - C. Y
 - D. Z

- 37 Which of the following store sperm cells and eliminate those that have major genetic defects?
- A. Epididymis.
 - B. Interstitial cells.
 - C. Seminal vesicles.
 - D. Seminiferous tubules.

38 Sperm acquire the ability to swim in the

- A. epididymis.
- B. seminal vesicles.
- C. seminiferous tubules.
- D. ductus (vas) deferens.

39 The function of the acrosome is to

- A. produce an energy supply for sperm.
- B. stimulate development of the follicle.
- C. contribute nutrients to the seminal fluid.
- D. release enzymes needed to penetrate the egg.

40 Movement of a fertilized egg in an oviduct occurs with the help of

- A. cilia.
- B. flagella.
- C. diffusion.
- D. active transport.

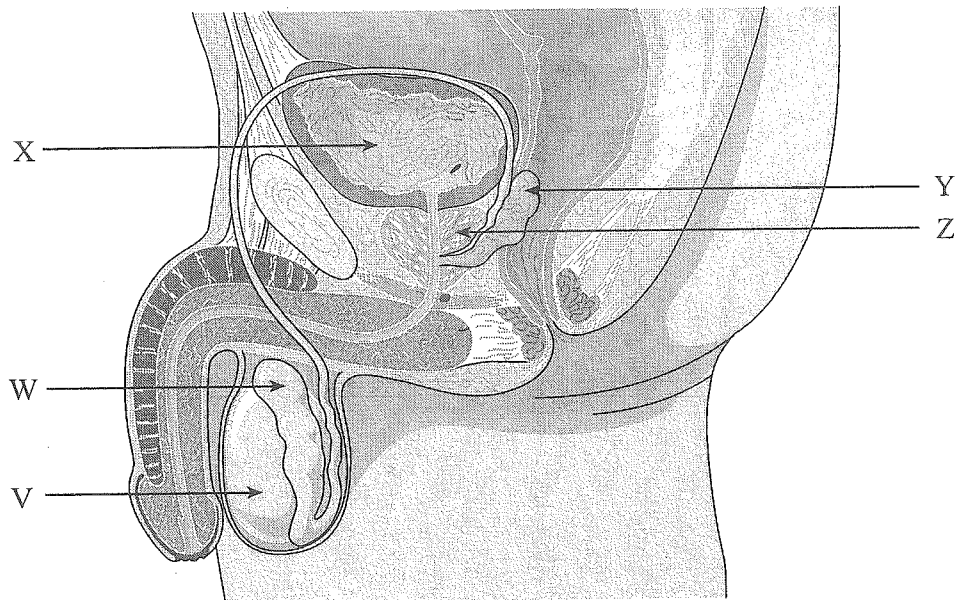
41 Rising progesterone levels in the blood trigger the pituitary to

- A. release luteinizing hormone (LH).
- B. release follicle-stimulating hormone (FSH).
- C. stop releasing luteinizing hormone (LH).
- D. stop releasing human chorionic gonadotropin (HCG) hormone.

42 The hormone that controls the maturation of eggs in women and the production of sperm in men is

- A. estrogen.
- B. testosterone.
- C. luteinizing hormone (LH).
- D. follicle-stimulating hormone (FSH).

Use the following diagram to answer questions 43-45



43 Which two structures contribute fluids that make up semen?

- A. W and X
- B. X and Y
- C. X and Z
- D. Y and Z

44 The structure labelled W is the

- A. prostate.
- B. epididymis.
- C. Cowper's gland.
- D. seminiferous tubule.

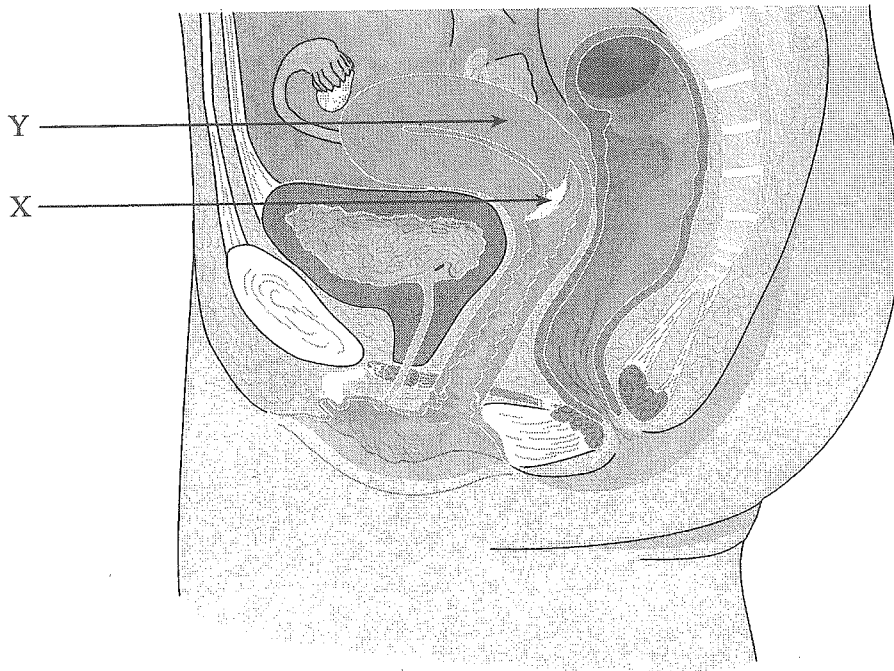
45 Secretions from structure V cause

- A. follicle maturation.
- B. increased secretion of luteinizing hormone (LH).
- C. beard growth and growth of the genitals at puberty.
- D. rhythmic contractions of the female reproductive system.

46 Cell division resulting in the production of sperm cells occurs in the

- A. epididymis.
- B. interstitial cells.
- C. seminal vesicles.
- D. seminiferous tubules.

Use the following diagram to answer questions 47 - 48



47 Structure X is the

- A. ovary.
- B. cervix.
- C. vagina.
- D. oviduct.

48 What will occur in structure Y if there is a reduction in hormones secreted from the ovary?

- A. the release of an egg
- B. increased vascularization
- C. the maturation of a follicle
- D. the breakdown of the endometrium

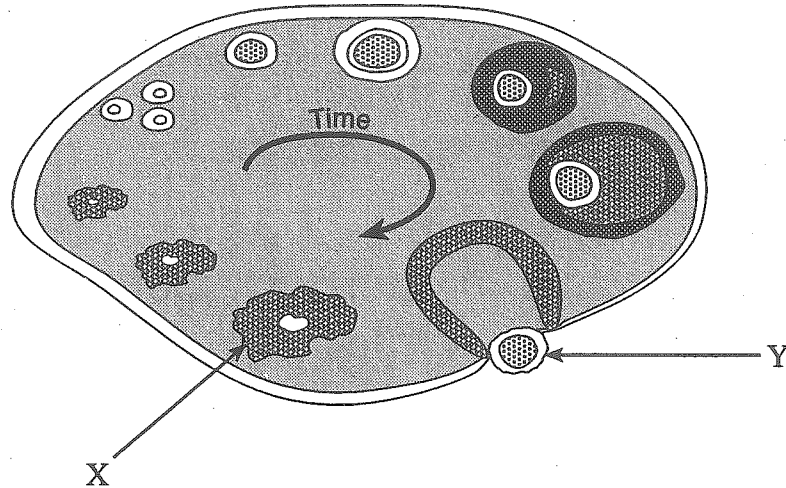
49 Menstruation is the discharge of

- A. a follicle.
- B. the uterine lining.
- C. the corpus luteum.
- D. the cells lining the vagina.

50 Sperm cells travel through which of the following structures?

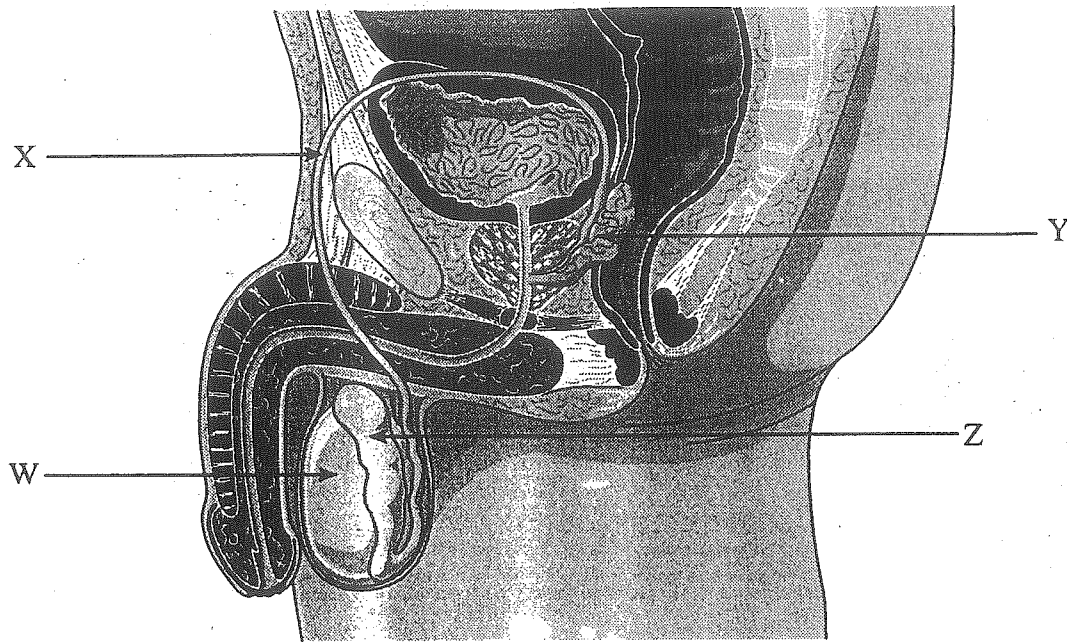
- A. ureter
- B. prostate gland
- C. seminal vesicles
- D. ductus (vas) deferens

Use the following diagram to answer questions 51-52



- 51 Which of the following structures within the ovary is labelled X?
- A. egg
 - B. follicle
 - C. oviduct
 - D. corpus luteum
- 52 After leaving the ovary, the next structure that Y will enter is the
- A. uterus.
 - B. cervix.
 - C. oviduct.
 - D. endometrium.
-
53. In order to prevent the degeneration of the corpus luteum, the concentration of which of the following hormones increases during implantation?
- A. estrogen
 - B. luteinizing hormone (LH)
 - C. follicle-stimulating hormone (FSH)
 - D. human chorionic gonadotropin (HCG)
-
- 54 Which of the following, if present in urine samples, would indicate pregnancy?
- A. estrogen
 - B. progesterone
 - C. luteinizing hormone (LH)
 - D. human chorionic gonadotropin (HCG)

Use the following diagram to answer question 55



55 Which of the labelled structures is the epididymis?

- A. W
- B. X
- C. Y
- D. Z

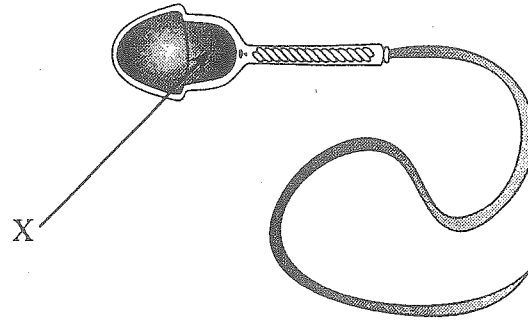
56 Testosterone is produced in the

- A. epididymis.
- B. prostate gland.
- C. interstitial cells.
- D. seminiferous tubules.

57 Which of the following is **not** a function of seminal fluid?

- A. provides a suitable pH
- B. supplies an energy source
- C. causes the uterus to contract
- D. constricts the urethra during ejaculation

Use the following diagram to answer question 58



58. The structure labelled X is the

- A. tail.
- B. head.
- C. acrosome.
- D. mid-piece.

59. When testosterone levels in a man's bloodstream decrease,

- A. the hypothalamus shuts down.
- B. more progesterone is secreted.
- C. luteinizing hormone (LH) secretion is increased.
- D. follicle-stimulating hormone (FSH) secretion is blocked.

60. Which of the following describes the hormonal levels on day one of a 28-day uterine cycle?

	ESTROGEN	PROGESTERONE
A.	low	high
B.	high	high
C.	low	low
D.	high	low

61. Most birth-control pills work by preventing egg maturation. These pills contain which of the following hormones?

- A. estrogen
- B. testosterone
- C. luteinizing hormone (LH)
- D. follicle-stimulating hormone (FSH)

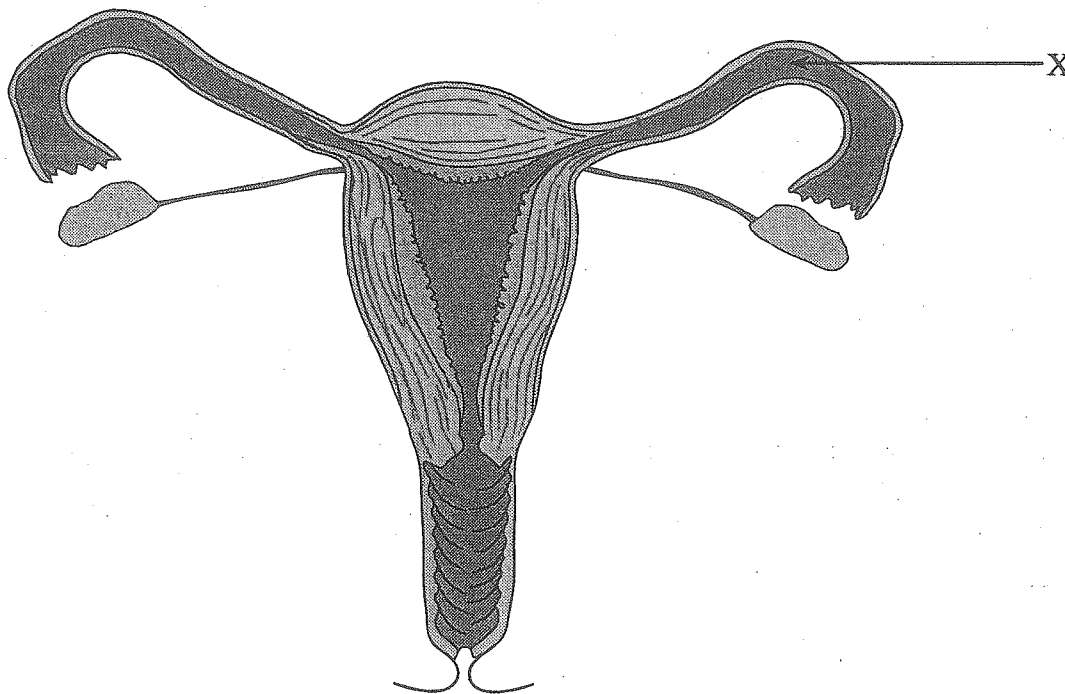
62 Testosterone is produced in the

- A. epididymis.
- B. interstitial cells.
- C. seminal vesicles.
- D. seminiferous tubules.

63 The part of the sperm that contains hydrolytic enzymes is the

- A. tail.
- B. nucleus.
- C. acrosome.
- D. mid-piece.

Use the following diagram to answer question 64



64 The structure labelled X is the

- A. uterus.
- B. cervix.
- C. follicle.
- D. oviduct.

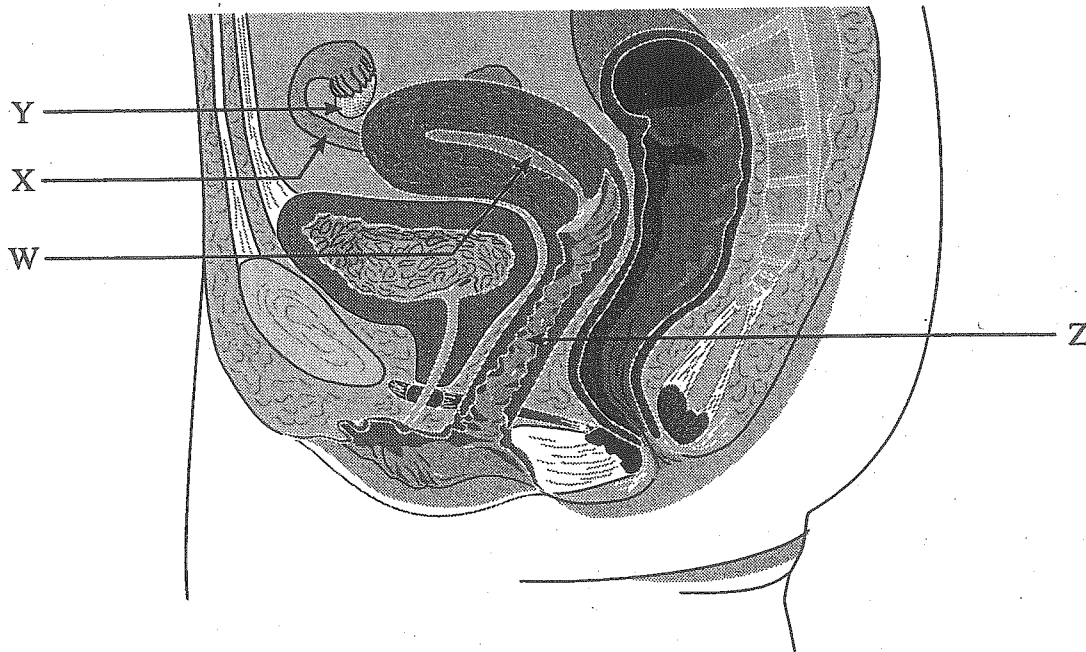
65 Which gland secretes prostaglandins that aid in the stimulation of uterine contractions?

- A. adrenal gland
- B. hypothalamus
- C. pituitary gland
- D. seminal vesicle

66 The function of the mid-piece of the sperm is to

- A. protect the sperm.
- B. nourish the sperm.
- C. carry genetic material.
- D. produce ATP (energy).

Use the following diagram to answer question 67



67. In which of the following structures does fertilization normally occur?

- A. W
- B. X
- C. Y
- D. Z

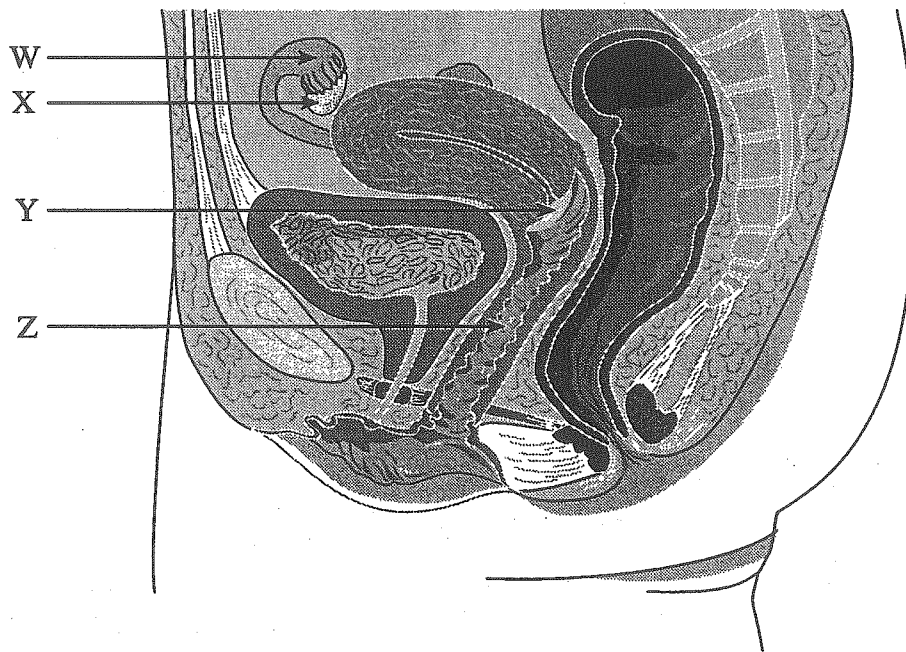
68 Sperm are produced in the

- A. interstitial cells of the testes.
- B. seminiferous tubules of the testes.
- C. interstitial cells of the epididymis.
- D. seminiferous tubules of the epididymis.

69. Which hormone is released from the anterior pituitary and results in growth of the penis and testes during puberty?

- A. testosterone
- B. progesterone
- C. luteinizing hormone (LH)
- D. follicle-stimulating hormone (FSH)

Use the following diagram to answer question 70



70 Which of the following indicates the cervix?

- A. W
- B. X
- C. Y
- D. Z

71 Which of the following hormones is involved in a negative feedback loop in the male reproductive system?

- A. oxytocin
- B. adrenalin
- C. aldosterone
- D. testosterone

72 Which of the following organs is lined with cilia?

- A. ovary
- B. uterus
- C. vagina
- D. oviduct

73 During puberty, increased estrogen production causes

- A. milk production.
- B. breast development.
- C. development of the corpus luteum.
- D. release of human chorionic gonadotropin (HCG).

74 Which of the following correctly describes days 15 to 28 of a 28-day menstrual cycle?

- A. increased estrogen is associated with the secretory phase in the uterus
- B. increased estrogen is associated with the proliferative phase in the uterus
- C. increased progesterone is associated with the secretory phase in the uterus
- D. increased progesterone is associated with the proliferative phase in the uterus

75 The part of a sperm cell containing the greatest number of mitochondria is the

- A. head.
- B. flagellum.
- C. acrosome.
- D. mid-piece.

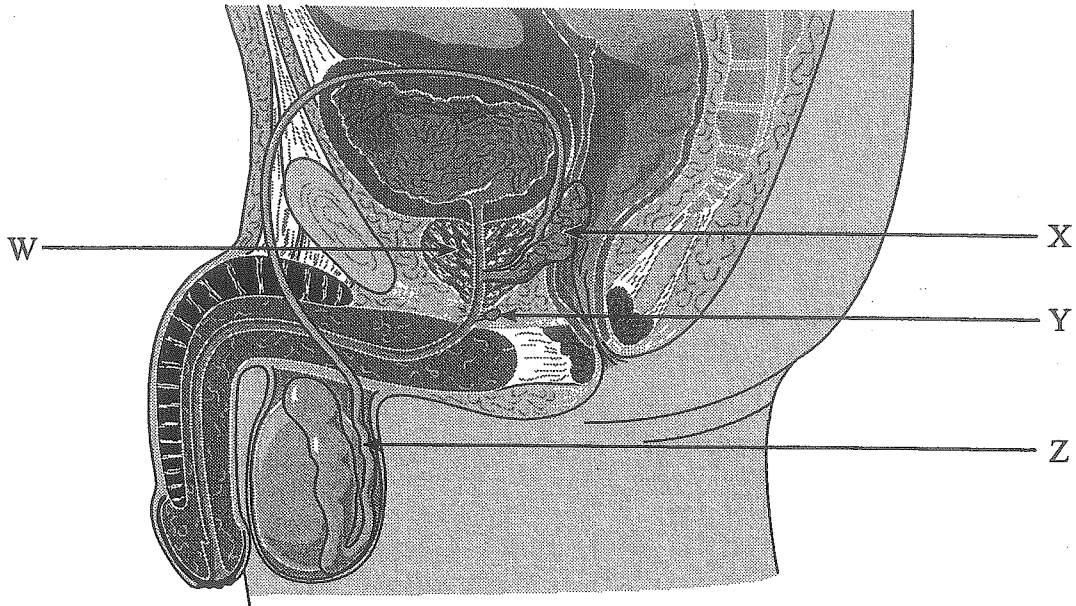
76 Which of the following is true of human chorionic gonadotropin (HCG)?

- A. It stimulates the corpus luteum.
- B. It causes progesterone levels to decrease.
- C. It causes degeneration of the endometrium.
- D. It stimulates the secretion of follicle-stimulating hormone (FSH).

77 If the vas deferens is cut and tied, which component of semen will be missing?

- A. sperm
- B. seminal fluid
- C. prostaglandins
- D. fructose (sugar)

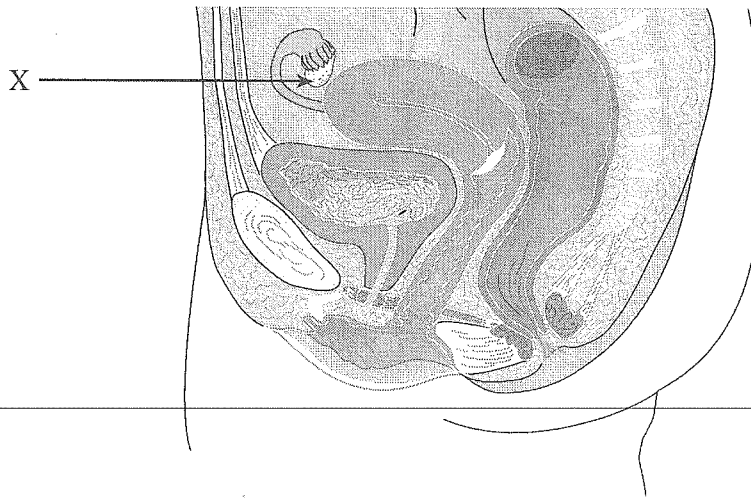
Use the following diagram to answer question 78



78 Which of the labelled structures represents the prostate gland?

- A. W
- B. X
- C. Y
- D. Z

Use the following diagram to answer question 79



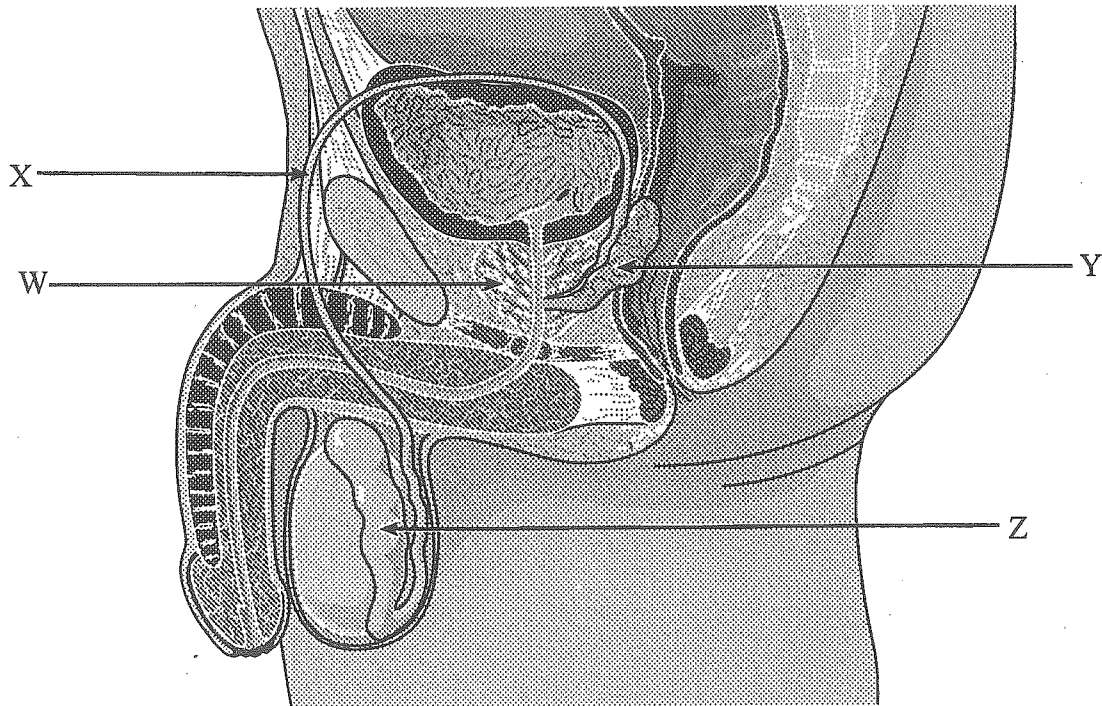
79 Which of the following structures is labelled X?

- A. ovary
- B. uterus
- C. cervix
- D. oviduct

80 Aldosterone is secreted by the

- A. testes.
- B. nephron.
- C. adrenal cortex.
- D. posterior pituitary.

Use the following diagram to answer questions 81-82



81 Which arrow points to the epididymis?

- A. W
- B. X
- C. Y
- D. Z

82 The function of the structure labelled W is to

- A. store urine.
- B. mature sperm.
- C. secrete testosterone.
- D. produce seminal fluid.

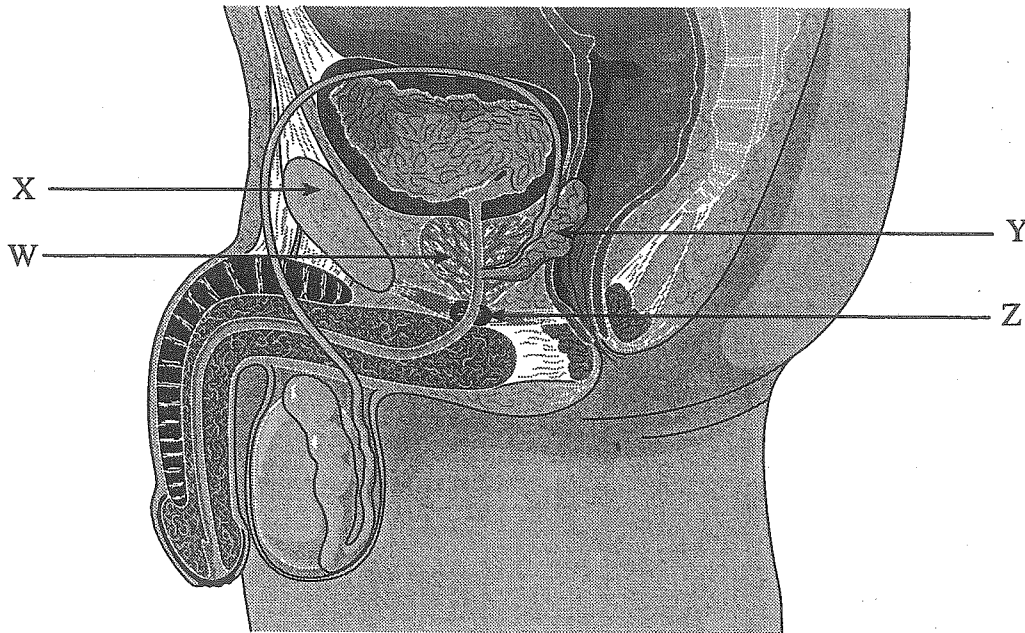
83 Low levels of estrogen and progesterone in the blood will result in

- A. fertilization.
- B. no ovulation.
- C. menstruation.
- D. destruction of the corpus luteum.

84. Which of the following occurs in the distal tubule to return acidic blood back to a normal pH?

- A. Both sodium and hydrogen ions are excreted.
- B. Bicarbonate ions are excreted and hydrogen ions are reabsorbed.
- C. Ammonia and hydrogen ions are excreted and sodium ions are reabsorbed.
- D. Ammonia and hydrogen ions are reabsorbed and bicarbonate ions are excreted.

Use the following diagram to answer question 85



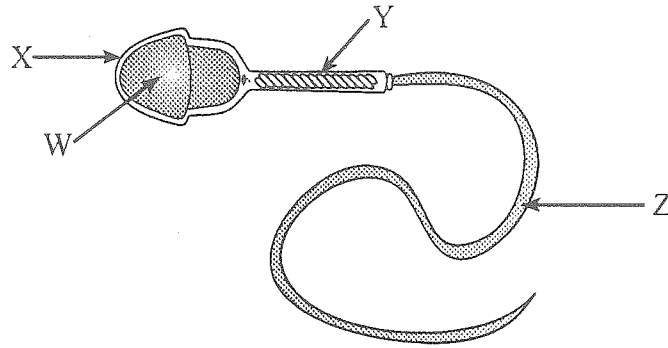
85. Which letter indicates the seminal vesicle?

- A. W
- B. X
- C. Y
- D. Z

86. The duct that is used by both the reproductive and excretory systems in males is the

- A. ureter.
- B. urethra.
- C. renal pelvis.
- D. vas deferens.

Use the following diagram to answer question 87.



87. Which structure would contain the greatest concentration of mitochondria?

- A. W
- B. X
- C. Y
- D. Z

88. The carbon dioxide produced by a developing fetus is removed by the

- A. cervix.
- B. placenta.
- C. oviducts.
- D. corpus luteum.

89. Which hormone triggers the release of the egg from the developing follicle?

- A. Estrogen.
- B. Progesterone.
- C. Luteinizing hormone (LH).
- D. Follicle stimulating hormone (FSH).

90. The function of the endometrium is to

- A. carry the egg to the uterus.
- B. release an egg once a month.
- C. produce hormones for the uterine cycle.
- D. provide nourishment for the developing embryo.

91. A rise in blood levels of FSH at the beginning of the ovarian cycle causes

- A. menopause.
- B. the release of the egg.
- C. the maturation of the follicle.
- D. the breakdown of the endometrium.

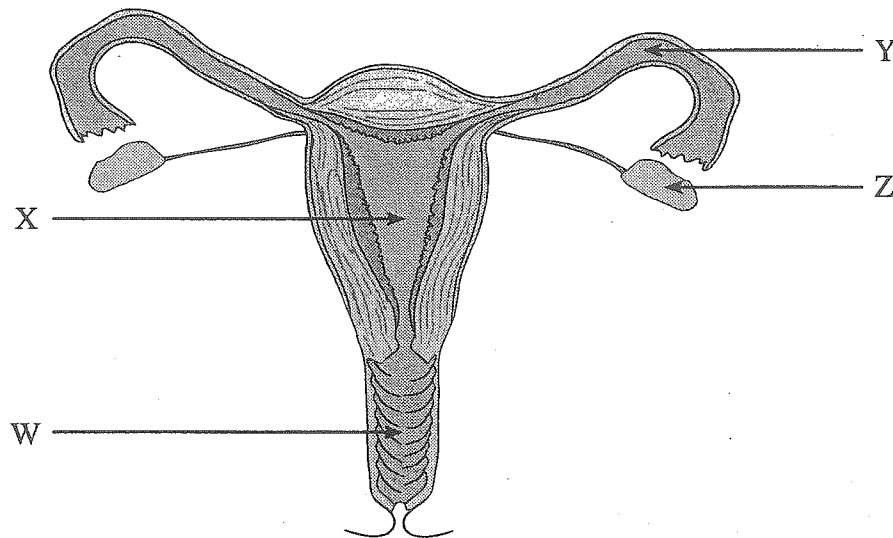
92. Which part of a sperm cell contains the enzymes that aid the penetration of an ovum?

- A. tail
- B. head
- C. acrosome
- D. mid-piece

93. Which hormone is responsible for increased musculature and body hair?

- A. estrogen
- B. testosterone
- C. follicle-stimulating hormone (FSH)
- D. human chorionic gonadotropin (HCG)

Use the following diagram to answer question 94.



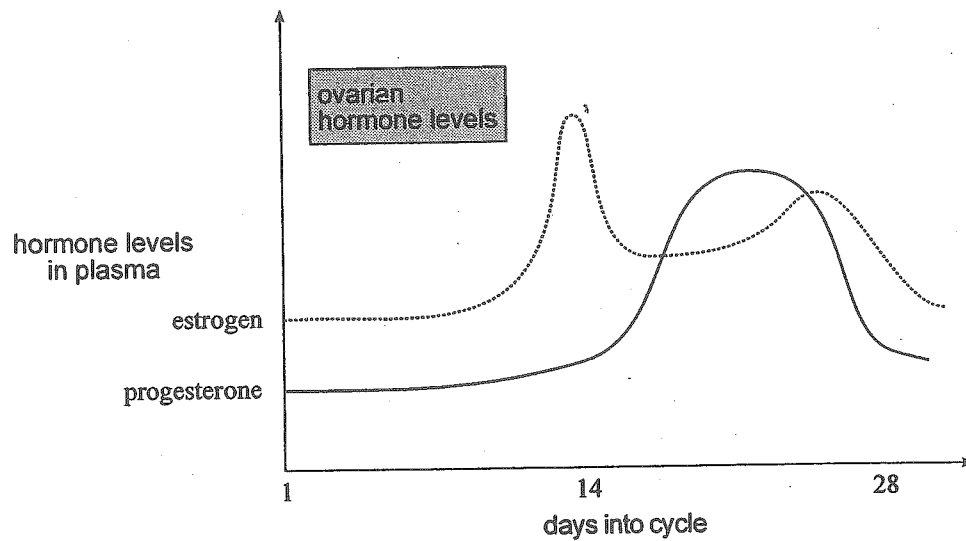
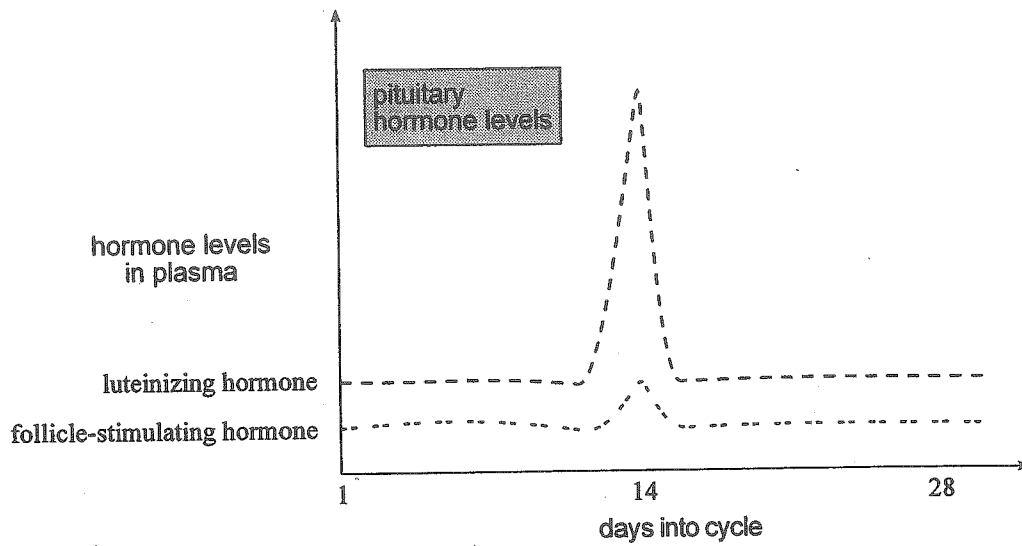
94. Which letter indicates the uterus?

- A. W
- B. X
- C. Y
- D. Z

95. Spermatogenesis occurs in the

- A. interstitial cells.
- B. seminal vesicles.
- C. seminiferous tubules.
- D. ductus (vas) deferens.

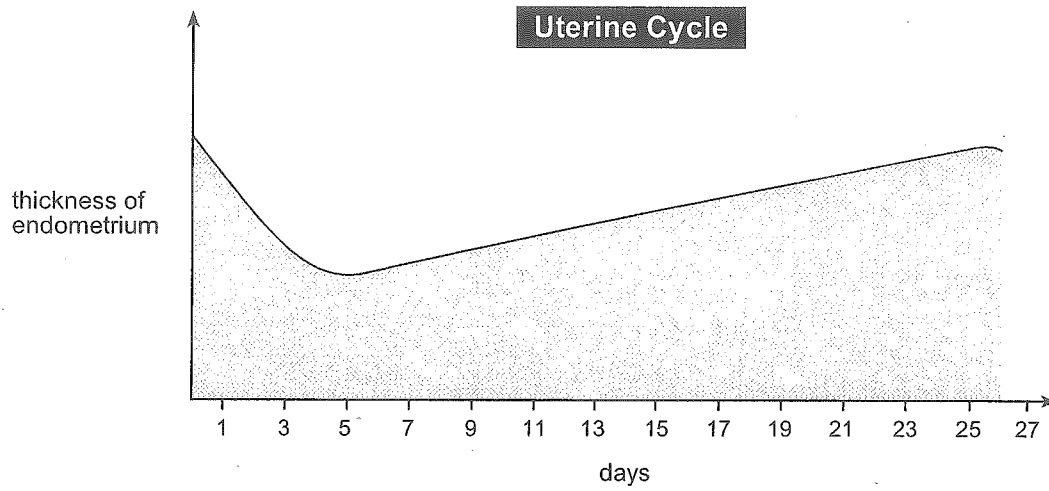
Use the following graphs to answer question 96.



96. The graphs show the levels of four different hormones in the blood plasma during the ovarian and uterine cycles. Which two hormones would have reduced levels if the corpus luteum fails to develop?

- A. progesterone and estrogen
- B. progesterone and luteinizing hormone
- C. estrogen and follicle-stimulating hormone
- D. luteinizing hormone and follicle-stimulating hormone

Use the following graph to answer question 97.



97. The increased production of what hormone causes the change shown in the graph on or about day 5?

- A. estrogen
- B. oxytocin
- C. progesterone
- D. luteinizing hormone (LH)

98. Give one function of each of the following hormones.

(6 marks: 1 mark each)

testosterone:

follicle-stimulating hormone:

luteinizing hormone:

estrogen:

progesterone:

oxytocin:

99. a) Give two functions of each of the following hormones.

Estrogen: (2 marks)

i) _____

ii) _____

LH (luteinizing hormone): (2 marks)

i) _____

ii) _____

b) Describe two hormonal changes that occur in the mother as a result of implantation.

(2 marks)

i) _____

ii) _____

100. State the effects that each of the following hormones has on the body during puberty. (8 marks)

Testosterone: (three effects)

- i) _____
- ii) _____
- iii) _____

Estrogen: (three effects)

- i) _____
- ii) _____
- iii) _____

Follicle stimulating hormone: (two effects)

- i) _____
- ii) _____

101. a) Describe any two events that occur during days 15 to 28 of the ovarian or uterine cycles. (2 marks)

- i) _____

- ii) _____

b) During days 1 to 13 of the ovarian cycle, what would occur if follicle-stimulating hormone (FSH) was not secreted? (2 marks)

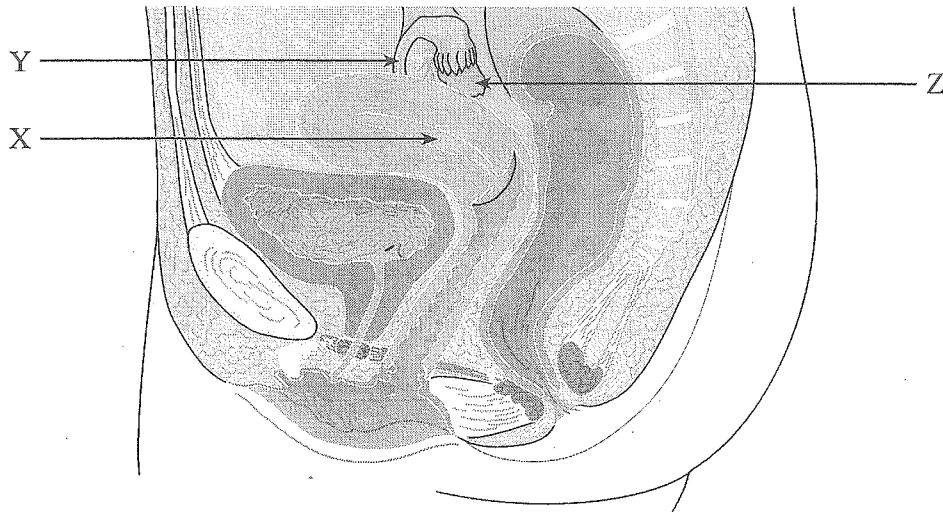
102. Identify the structure in a female that (3 marks)

produces an egg.

provides nourishment for the developing embryo.

enables the egg to travel to the uterus.

Use the following diagram to answer question 103.



103. Identify and give one function of each of the following structures.
(6 marks: 1 mark each for name; 1 mark each for function)

Structure X:

Name: _____

Function: _____

Structure Y:

Name: _____

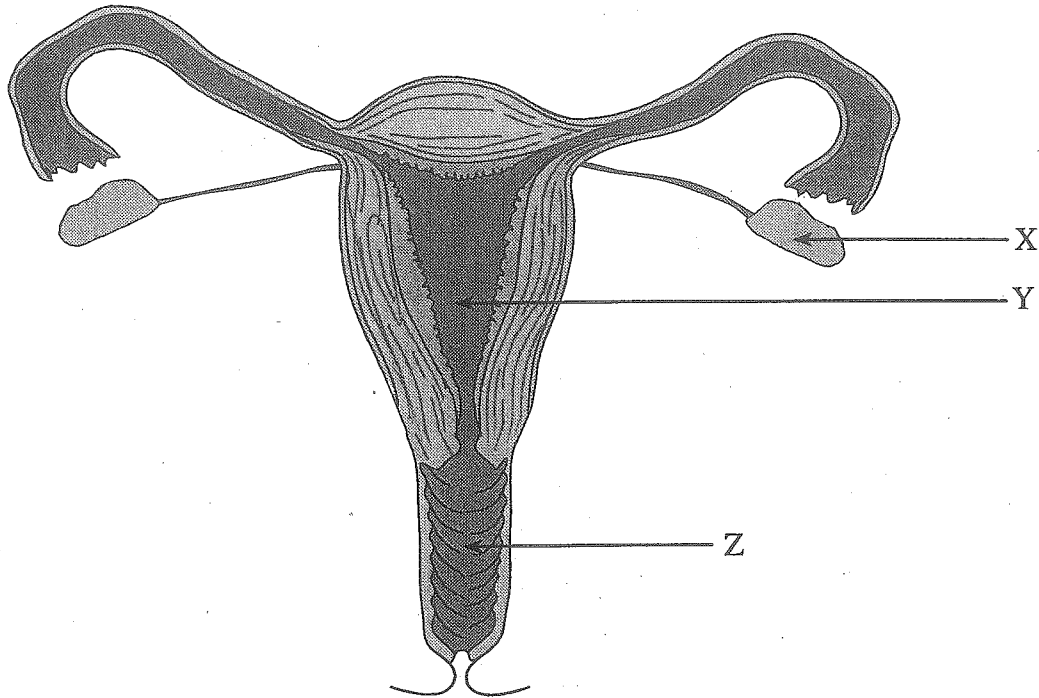
Function: _____

Structure Z:

Name: _____

Function: _____

Use the following diagram to answer question 104.



104. Identify the following structures indicated in the diagram and give one function of each.
(6 marks: 1 mark each for structure; 1 mark each for function)

Structure X:

Name: _____

Function: _____

Structure Y:

Name: _____

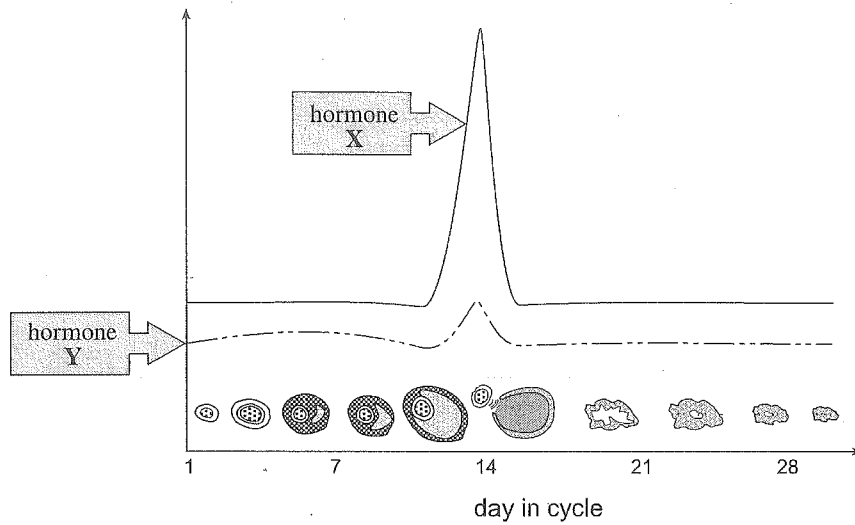
Function: _____

Structure Z:

Name: _____

Function: _____

Use the following diagram to answer question 105.



105.a) On what day does ovulation take place? (1 mark)

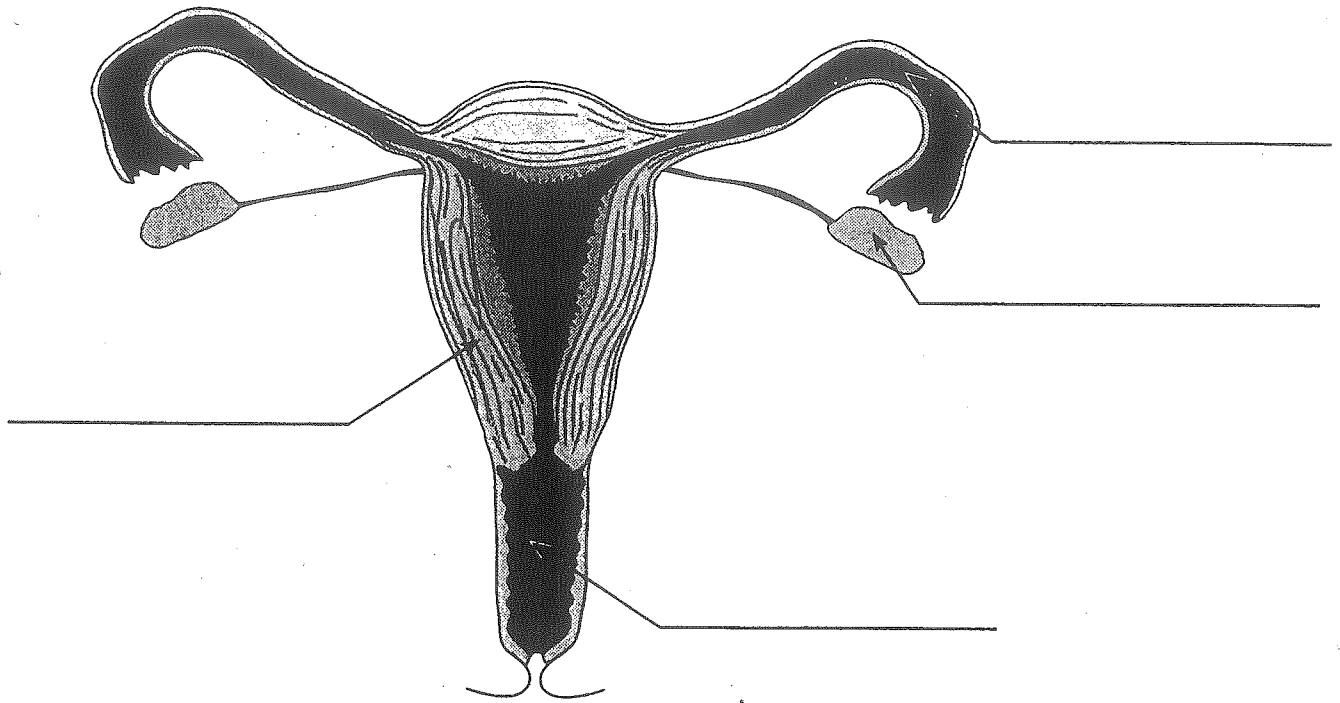
b) i) Identify hormone X. (1 mark)

ii) What structure secretes hormone X? (1 mark)

c) Describe the effects on the body caused by the release of hormone Y between days 1 and 14. (2 marks)

106. Label the following diagram in the blanks provided.

(4 marks)



107. Identify three components of seminal fluid and give one function of each component.
(6 marks: 1 mark each for name; 1 mark each for function)

Component	Function

108. a) Complete this summary table of the ovarian cycle.

(4 marks)

	HORMONE WHICH INITIATES PHASE	HORMONE PRODUCED BY OVARY
Phase 1 Days 1 to 14		
Phase 2 Days 15 to 28		

b) i) What is the event that occurs on Day 14?

(1 mark)

ii) What causes this event to occur?

(1 mark)

c) What causes Phase 2 to end?

(1 mark)

d) Describe the effects of implantation (pregnancy) on the ovarian cycle.

(2 marks)
