Biology · Structure and Function in Living Organisms · Reproduction in Living Organisms

Reproduction in Humans

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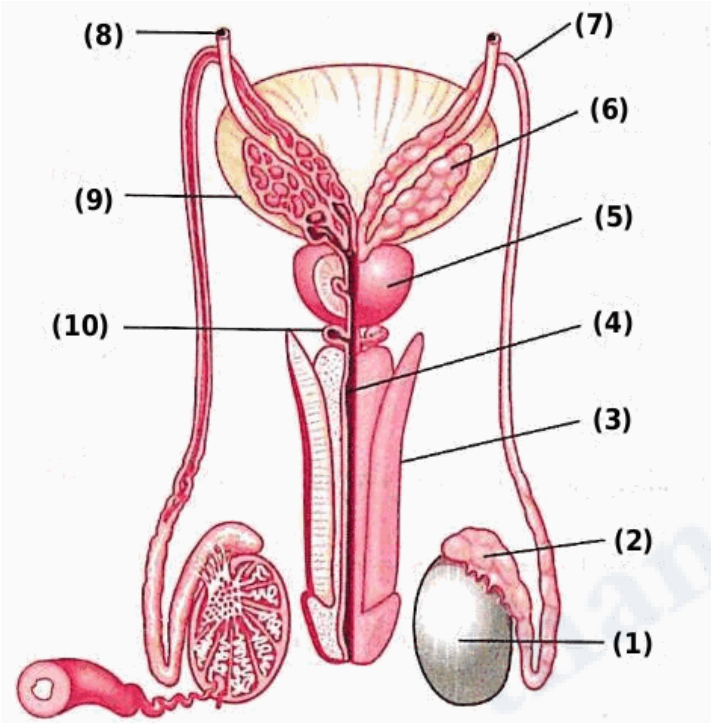
Click a question number to jump to its answer, and an answer number to go back to the question.

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Multiple choice questions — 93 questions

1 The opposite figure shows a front view of the male reproductive system in humans. Study it, then answer:

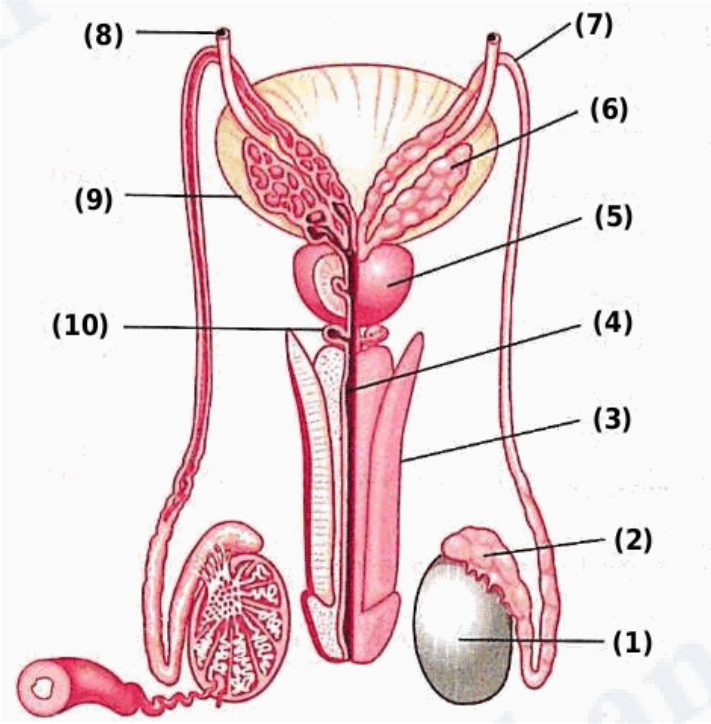
Which of the following parts have no role in reproduction?



A (1) B (4) , (5) C (7) D (8) , (9)

2 The opposite figure shows a front view of the male reproductive system in humans. Study it, then answer:

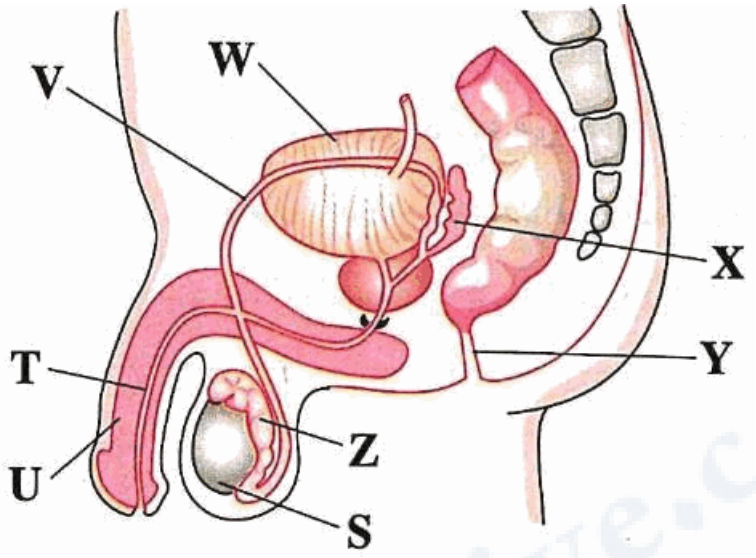
Which structure is shared by the reproductive system and the urinary system in humans?



(A) (2) (B) (4) (C) (6) (D) (8)

3 The opposite figure shows a side view of the male reproductive system in humans. Study it, then answer:

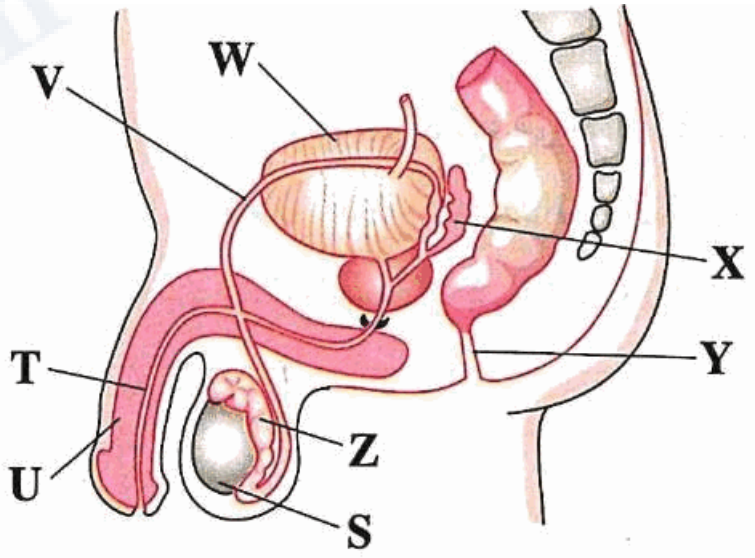
Which of the following shows the correct path of the sperms from where they are produced until they leave the body?



(A) Z → X → V → T (B) Z → S → W → X (C) S → Z → X → V (D) S → Z → V → T

4 The opposite figure shows a side view of the male reproductive system in humans. Study it, then answer:

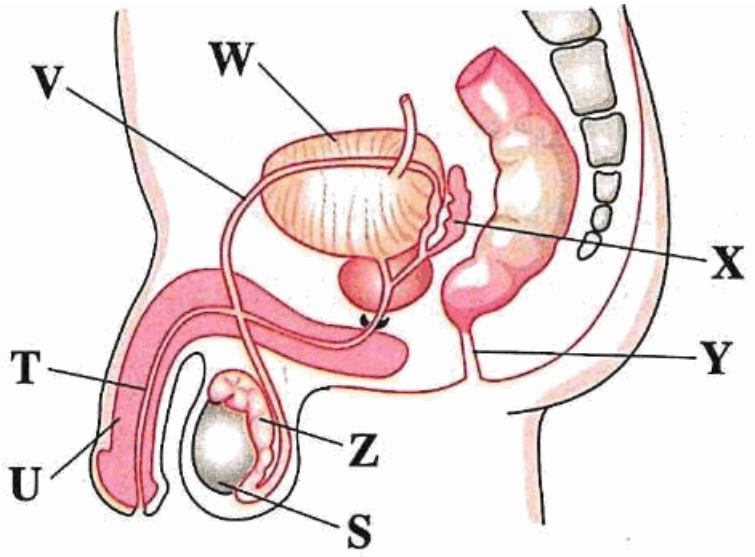
Which of the structures shown in the figure secretes a nourishing substance for the sperms?



(A) X (B) Z (C) V (D) T

5 The opposite figure shows a side view of the male reproductive system in humans. Study it, then answer:

Which of the following structures contains an acidic fluid?



(A) W (B) X (C) S (D) Z

6 Which of the following is a reason why a sperm cannot move to reach the ovum?

(A) Absence of the contents of the acrosome

(B) Damage of the middle piece

(C) Increased secretion of the prostate gland

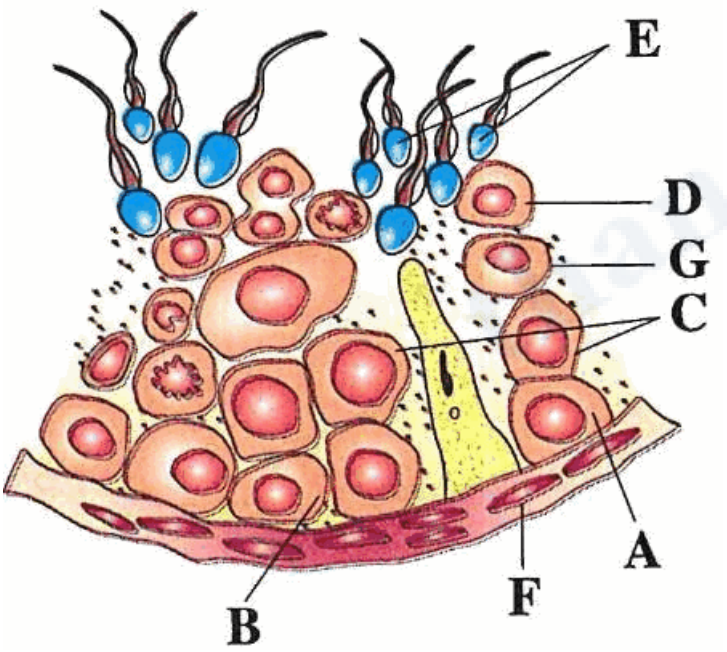
(D) Absence of the neck

7 How many male gametes are produced from 10 secondary spermatocytes?

(A) 10 (B) 20 (C) 30 (D) 40

8 From the opposite figure, answer:

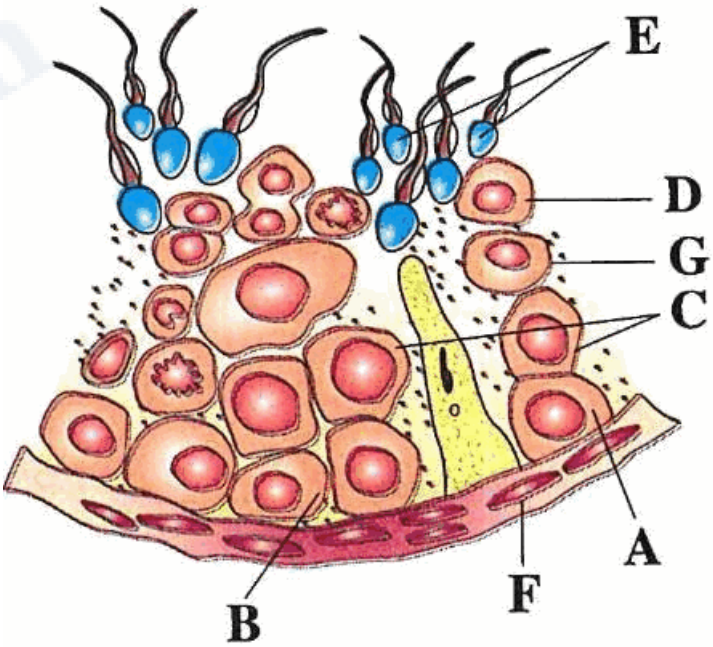
Which of the following cells divides by mitosis?



(A) E (B) F (C) D (D) G

9 From the opposite figure, answer:

Which of the following cells do not divide?



(A) D , F (B) G , F (C) C , G (D) E , D

10 In which of the following phases does the number of chromosomes change during sperm formation?

(A) Final differentiation (B) Growth

(C) Multiplication (D) Maturation

11 Which choice in the opposite table represents the correct sequence of divisions during the formation of both pollen grains and sperms?

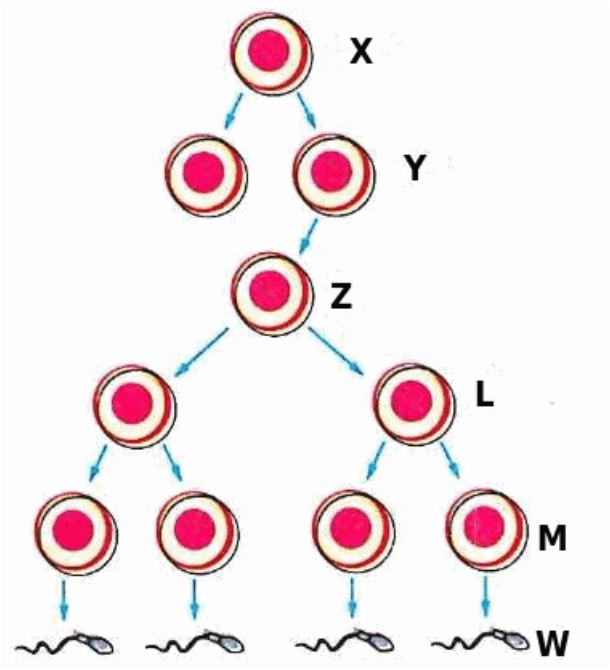
(A) Pollen grains: mitosis then meiosis, sperms: meiosis then mitosis

(B) Pollen grains: meiosis then mitosis, sperms: mitosis then meiosis

(C) Pollen grains: mitosis then meiosis, sperms: mitosis then meiosis

(D) Pollen grains: meiosis then mitosis, sperms: meiosis then mitosis

12 The opposite figure shows the stages of sperm formation in an adult human male. Which of the following is correct about the number of chromosome sets in cells (Z), (L), (M)?



(A) (Z) n, (L) n, (M) n
(B) (Z) 2n, (L) n, (M) n
(C) (Z) 2n, (L) 2n, (M) n
(D) (Z) 2n, (L) 2n, (M) 2n

13 Some newborn babies have one testis that does not descend into the scrotum, a condition called undescended testis. What happens if these children are not treated?

(A) No sperms are produced at puberty, causing sterility
(B) Fewer sperms are produced at puberty
(C) The accessory reproductive glands stop working
(D) Seminal fluid production stops

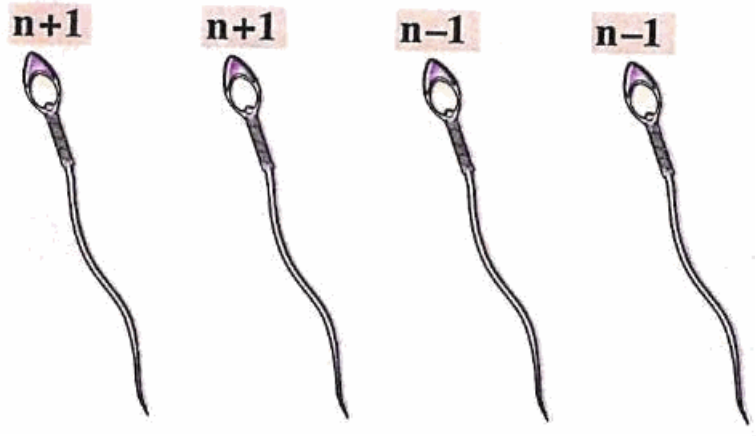
14 How correct are the following two statements: «Sperms cannot live without a nutritive medium», «Sperms do not store food inside them»?

(A) Both statements are correct
(B) Both statements are wrong
(C) The first statement is correct and the second is wrong
(D) The first statement is wrong and the second is correct

15 Which of the following has no direct role in helping the formed sperms reach the ovum?

(A) Prostate gland
(B) The two seminal vesicles
(C) Interstitial cells
(D) Cowper's glands

16 The opposite figures show abnormal sperms produced because of a defect during their formation. In which phase could this defect happen?

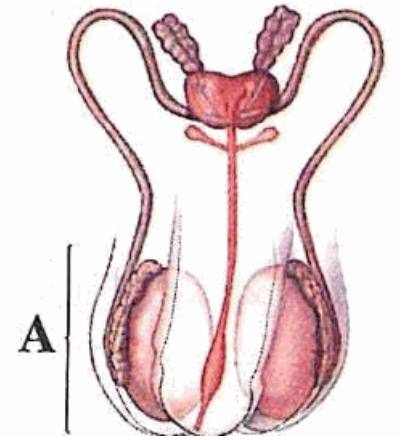


(A) Multiplication
(B) Growth
(C) Maturation
(D) Final differentiation

17 How many sperms are produced from the division of 10 spermatogonia?

(A) 10
(B) 20
(C) 40
(D) 80

18 What explains the presence of the testes in region (A) in the opposite figure?



(A) Storing the sperms alive for a long time
(B) Reducing their blood supply
(C) Lowering their temperature
(D) Increasing hormone secretion

19 In which of the following phases does the number of chromosomes of the cells stay the same as in the original cells during sperm formation?

(A) Multiplication phase and growth phase

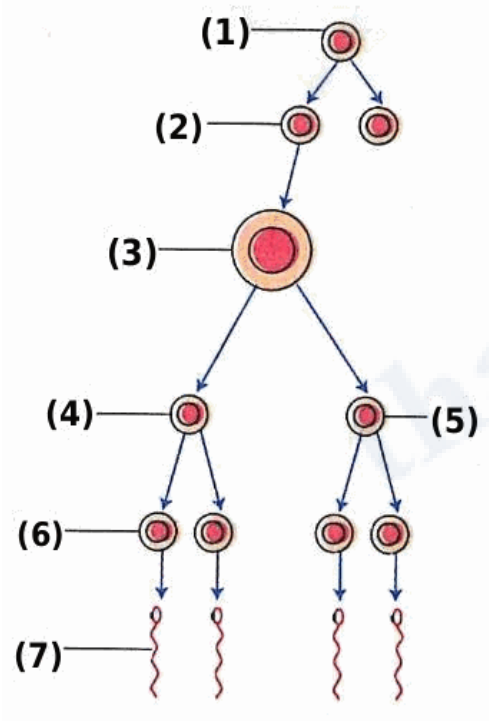
(B) Growth phase and maturation phase

(C) Multiplication phase and maturation phase

(D) Maturation phase and final differentiation phase

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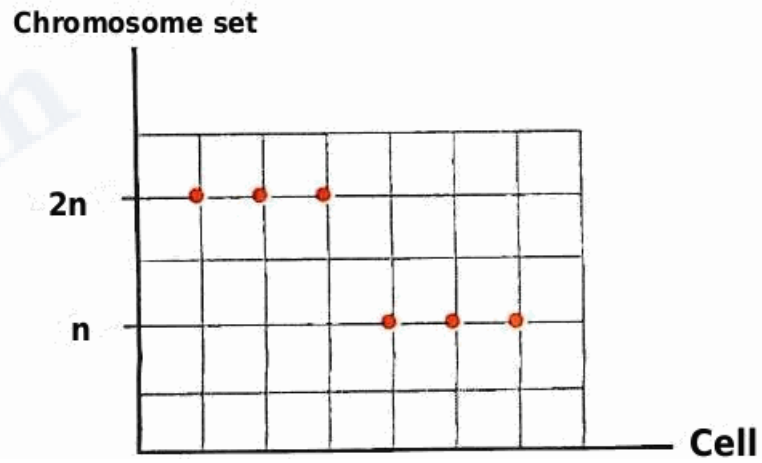
20 The opposite figure shows the stages of sperm formation in humans. Which of the following cells are genetically different from each other?



(A) (1) , (2) (B) (2) , (3) (C) (4) , (5) (D) (6) , (7)

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21 Which of the following could the opposite graph represent?



(A) Artificial parthenogenesis in the frog
(B) Natural parthenogenesis in the honey bee
(C) Sperm formation in the human male
(D) Ovum formation in the human female

22 In normal cases, what is the average number of ova produced by each ovary of an unmarried girl every year?

(A) 6 (B) 13 (C) 28 (D) 56

23 Which of the following organisms has the smallest ova?

(A) The sparrow (B) The frog (C) The turtle (D) The elephant

24 Which of the following human cells could have the chromosomal formula $(22 + X)$?

(A) Oogonia (B) Spermatogonia
(C) Secondary spermatocyte (D) Primary oocyte

25 In normal cases, how does the ovum differ from the sperm in humans?

(A) Number of autosomes (B) Presence of mitochondria
(C) Number of sex chromosomes (D) Storing food

26 Which of the following organisms produces ova in small numbers?

(A) The monkey (B) The tilapia (C) The crocodile (D) The frog

27 Which of the following is correct about gamete production in humans?

(A) It takes place in the embryonic stages in males

(B) It continues throughout life in females

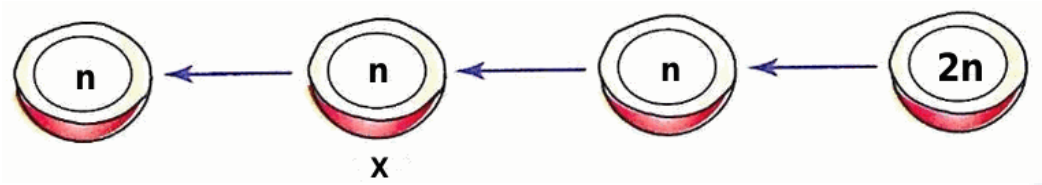
(C) It happens periodically in adult females

(D) It happens periodically in males

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28 Study the following diagram, then answer:

What does the previous diagram show?



(A) Formation of a female gamete in a plant

(B) Formation of a male gamete in a plant

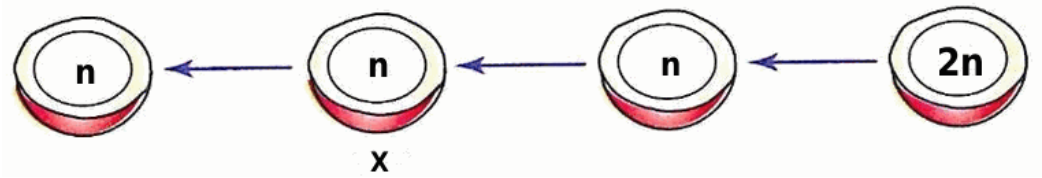
(C) Formation of a female gamete in humans

(D) Formation of a male gamete in humans

---

29 Study the following diagram, then answer:

What does cell (X) represent?



(A) Secondary oocyte

(B) Secondary spermatocyte

(C) Spermatid

(D) Germ cell

---

30 When are primary oocytes formed in the human female?

(A) At fertilization

(B) During embryonic development

(C) Before puberty

(D) After puberty

---

31 Starting with four oogonia in the ovary of a cat, what is the maximum number of fertilized ova and polar bodies formed, respectively, right after fertilization is completed?

(A) 12 / 4

(B) 4 / 12

(C) 4 / 4

(D) 6 / 12

32 If the number of chromosomes in a body cell of a female mammal is 28, how many chromosomes are there in each of the primary oocytes and the secondary oocytes, respectively?

(A) 28 / 28 (B) 28 / 14 (C) 14 / 28 (D) 14 / 14

33 In which of the following cases is cell division equal in the number of chromosomes but unequal in the cytoplasm?

(A) Formation of bread mould spores

(B) Formation of the secondary oocyte in the human female

(C) Formation of spermatids

(D) Formation of amoebae in suitable conditions

34 Which of the following cells is genetically similar to the oogonia but different in size?

(A) The primary oocyte (B) The secondary oocyte

(C) The ovum (D) The polar body

35 Which of the following pairs are analogous in function in the male and the female?

(A) Ovary – Sertoli cells

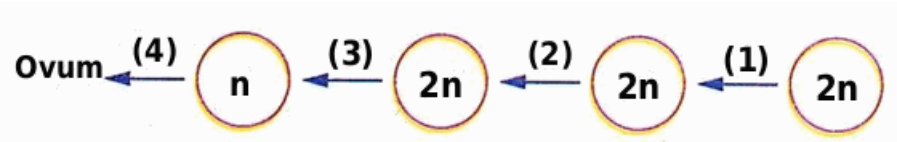
(B) Graafian follicle – interstitial cells

(C) Secondary oocyte – primary spermatocyte

(D) Uterus – testes

36 The following diagram shows the stages of gamete formation in the human female. Study it, then answer:

What is the purpose of process (1)?



(A) Storing an amount of food

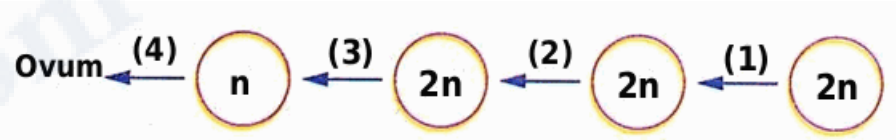
(B) Doubling the volume of cytoplasm in the cells

(C) Doubling the number of chromosomes

(D) Doubling the number of cells

37 The following diagram shows the stages of gamete formation in the human female. Study it, then answer:

When does process (3) take place?

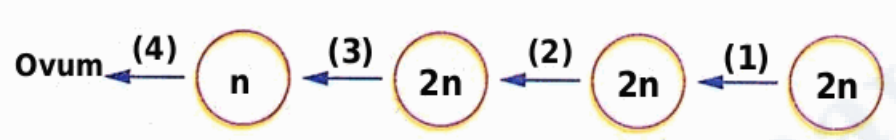


(A) In the embryonic stage
(B) At puberty
(C) At fertilization
(D) After fertilization

---

38 The following diagram shows the stages of gamete formation in the human female. Study it, then answer:

What distinguishes process (4) from process (3)?



(A) The chromosome set of the produced cells
(B) The number of nuclei in each produced cell
(C) The condition for it to happen
(D) The number of chromosomes in each produced cell

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39 Where does the first meiotic division take place during ovum formation in the human female?

(A) Graafian follicle (B) Endometrium (C) Fallopian tube (D) Uterine cavity

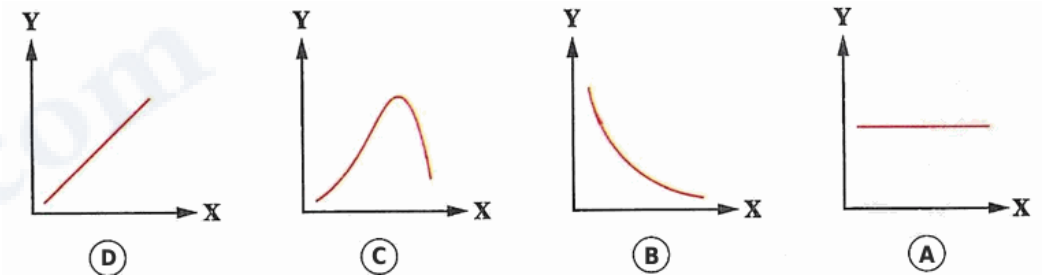
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40 Which of the following is a similarity between the polar body and a body cell of the human female?

(A) Cell size
(B) Volume of cytoplasm
(C) Chromosome number
(D) Presence of an (X) chromosome

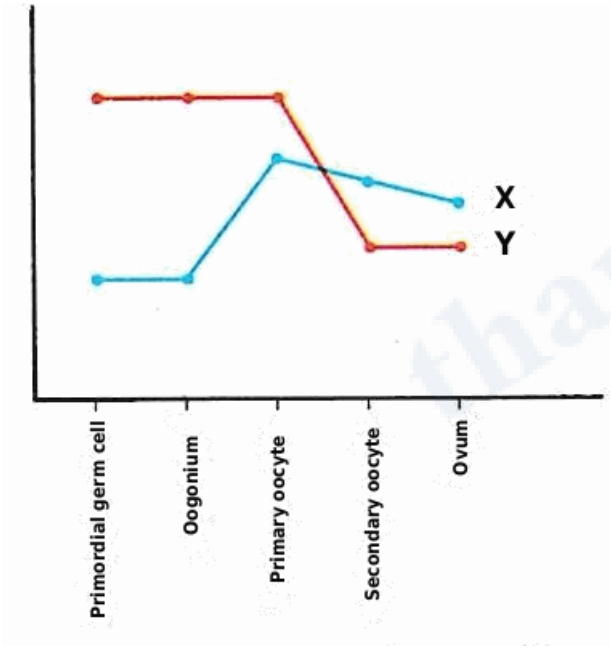
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41 Which of the following graphs represents the relation between the number of primordial germ cells (X) and the number of oogonia (Y) in the embryonic stage?



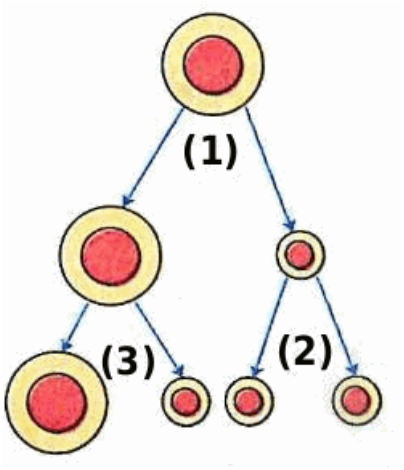
(A) Graph (A) (B) Graph (B) (C) Graph (C) (D) Graph (D)

42 In the opposite graph, which of the following correctly describes (X) and (Y), respectively?



(A) Chromosome set / cell size
(B) Cell size / chromosome set
(C) Number of cells / chromosome set
(D) Chromosome set / number of cells

43 The opposite figure shows some stages of ovum formation in the human female. Which of the following statements applies to the divisions shown in the figure?

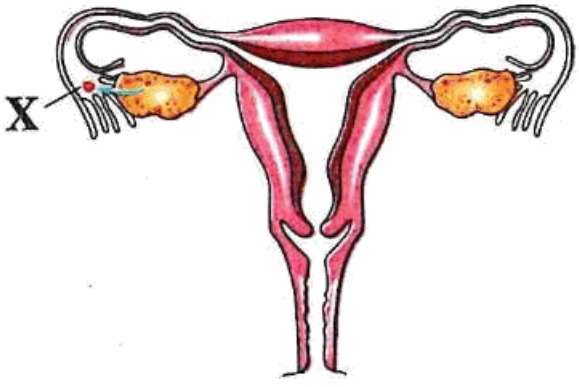


(A) (1) , (2) can happen in married and unmarried women
(B) (1) , (3) happen in married and unmarried women
(C) (3) is a division linked to the entry of the sperm into the ovum
(D) (1) , (2) , (3) are mitotic divisions

44 Which of the following cells divides without any condition?

(A) The secondary oocyte
(B) The zygospore
(C) Spores
(D) The zygote

45 In the opposite figure, how is structure (X) formed?

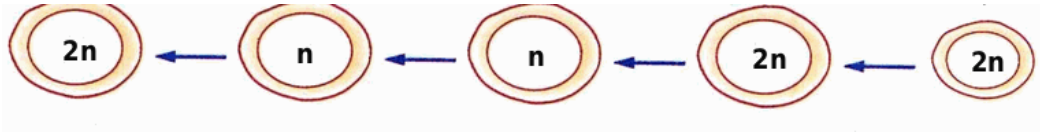


(A) By the first meiotic division of the primary oocyte
(B) By the second meiotic division of the secondary oocyte
(C) By mitosis of the oogonia
(D) By the first meiotic division of the secondary oocyte

46 Which of the following gonads depends on more than one type of division to produce its gametes?

(A) Archegonia
(B) The ovary of the human female
(C) Antheridia
(D) The testis of the male bee

47 Using the following diagram:
Which of the following applies to this diagram?



(A) Formation of a female gamete in a plant, then fertilization
(B) Formation of a male gamete in a plant
(C) Formation of a female gamete in humans, then fertilization
(D) Formation of a male gamete in humans

48 Which of the following statements is correct?

(A) At fertilization the secondary oocyte turns into a primary one
(B) The hormone that turns the primary oocyte into a secondary one is estrogen
(C) The endometrium of the adult human female is renewed every 28 days
(D) The primary oocyte and the secondary oocyte have the same number of chromosomes

49 Which of the following is correct about the menstrual cycle in the human female?

(A) The levels of progesterone and estrogen rise from day 1 to day 14 of the start of the menstrual cycle
(B) The endometrium breaks down from day 5 to day 10 of the start of the menstrual cycle
(C) The corpus luteum shrinks from day 12 to day 18 of the start of the menstrual cycle
(D) Renewal and growth of the endometrium start on the fifth day of the start of the menstrual cycle

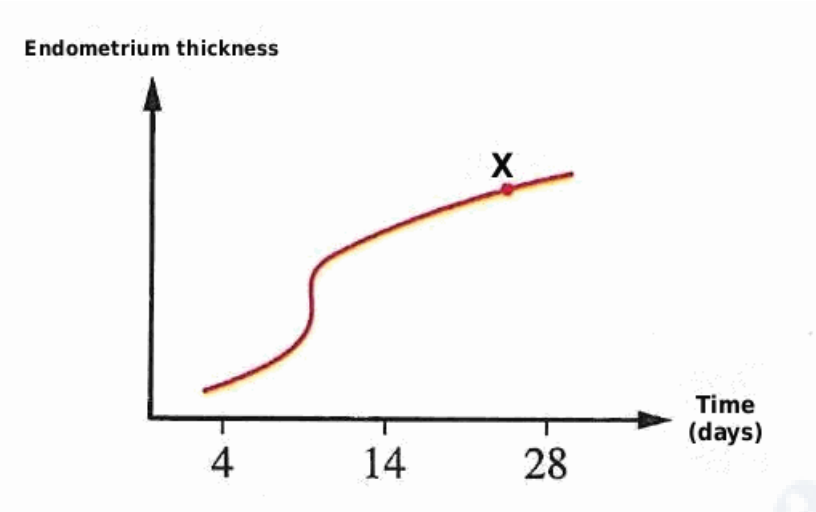
50 What are the secretory cells left in the ovary after ovulation called?

(A) Graafian follicle (B) Oogonia (C) Polar cells (D) Corpus luteum

51 What does the Graafian follicle contain on the thirteenth day from the start of menstruation?

(A) A primary oocyte
(B) A secondary oocyte
(C) Oogonia
(D) A primordial germ cell

52 From the opposite graph, what is the source of the hormones secreted at point (X)?



(A) Graafian follicle
(B) Corpus luteum
(C) Endometrium
(D) Placenta

53 An operation was done on an adult female mammal in which both ovaries were moved from their place to another place in the body, but they stayed connected to the blood circulation. Which of the following processes will not happen?

(A) Formation of the secondary oocyte
(B) Ovulation
(C) Fertilization of the secondary oocyte
(D) Growth of the endometrium

54 One ovary releases an ovum every .....

(A) 10 days
(B) 14 days
(C) 28 days
(D) 56 days

55 In which of the following phases are the ovarian hormones at their lowest level in a woman?

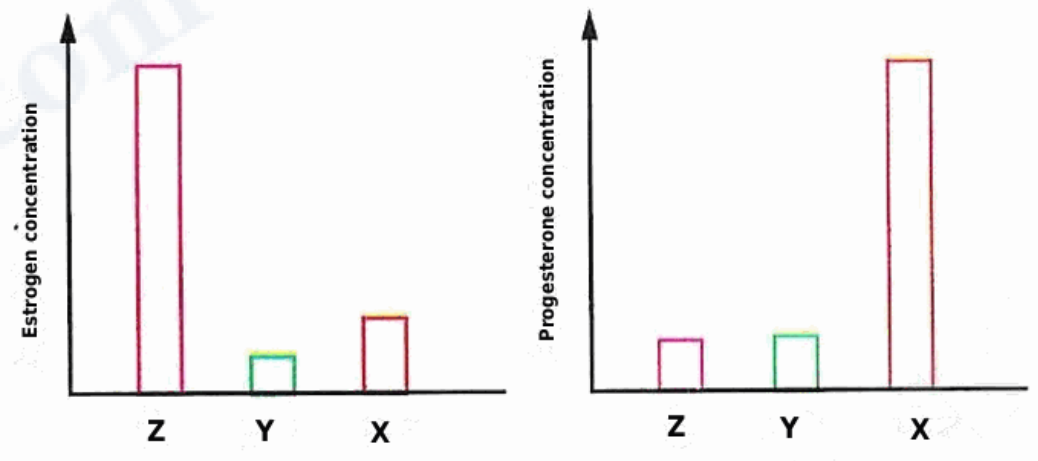
(A) Ovulation
(B) Maturation of the ovum
(C) Menstruation
(D) Fertilization

56 What is the source of progesterone in the fifth month of pregnancy?

(A) The pituitary gland
(B) The Graafian follicle
(C) The corpus luteum
(D) The placenta

57 The two opposite graphs show the concentration of estrogen and progesterone in three women (X), (Y), (Z). Answer:

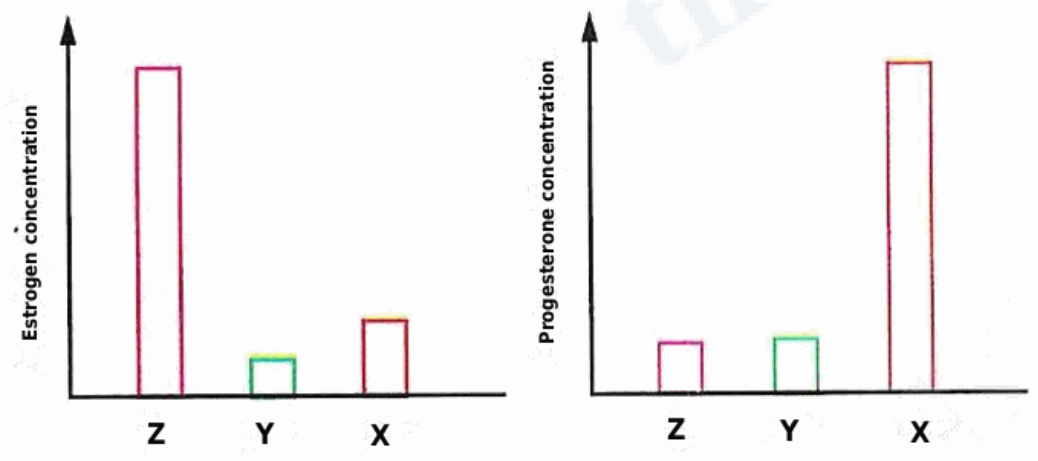
Which of them is in the menstruation phase?



(A) (X) only (B) (Y) only (C) (X) , (Z) (D) (Y) , (Z)

58 The two opposite graphs show the concentration of estrogen and progesterone in three women (X), (Y), (Z). Answer:

Which of them is in the ovum maturation phase?



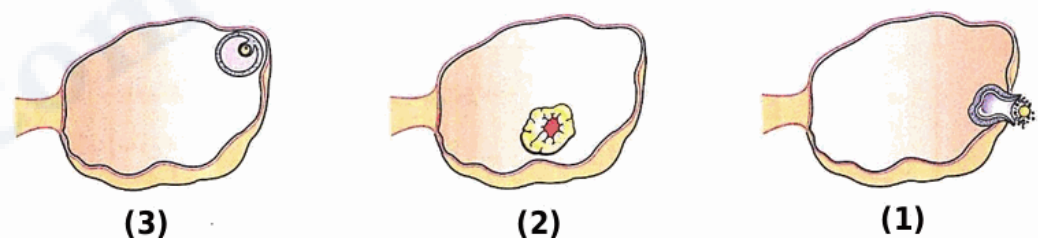
(A) (X) only (B) (Z) only (C) (X) , (Z) (D) (Y) , (Z)

59 If menstruation in an adult human female started on 20 September, when will the secondary oocyte be released from the ovary?

(A) 25 September (B) 30 September (C) 3 October (D) 10 October

60 The following figures show three sections in the ovary of an adult human female at different phases of the menstrual cycle:

Which of the following shows the correct order of these figures by their phases?



(A) (1) → (3) → (2)
(B) (2) → (1) → (3)
(C) (3) → (1) → (2)
(D) (3) → (2) → (1)

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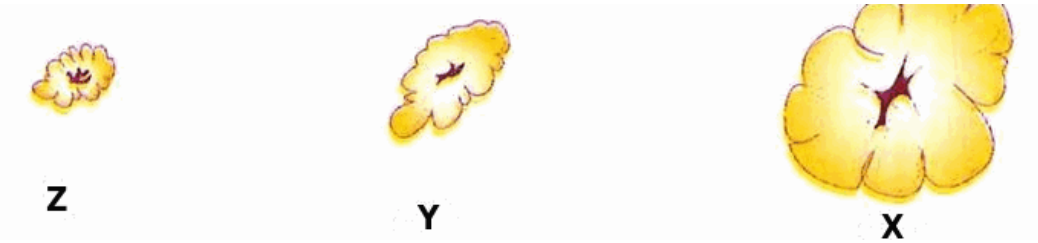
61 Which of the following statements about the relation between the female hormones is NOT correct?

(A) The increase of FSH causes the increase of estrogen in the ovum maturation phase
(B) The increase of estrogen causes the decrease of LH in the ovum maturation phase
(C) The decrease of LH causes the increase of progesterone and estrogen in the ovulation phase
(D) The decrease of progesterone and estrogen causes the increase of FSH in the menstruation phase

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62 The following figures show the change in the size of the corpus luteum during the menstrual cycle. Answer:

Which of the following happens at the same time as what figures (X), (Z) show, respectively?



(A) Less thickness of the endometrium / more blood supply to it
(B) More growth of the endometrium / breakdown of the endometrium
(C) More secretions of the endometrium / more blood supply to it
(D) Less growth of the endometrium / breakdown of the endometrium

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63 Which of the following is a sign of pregnancy in a woman?

(A) Increase of progesterone and decrease of FSH

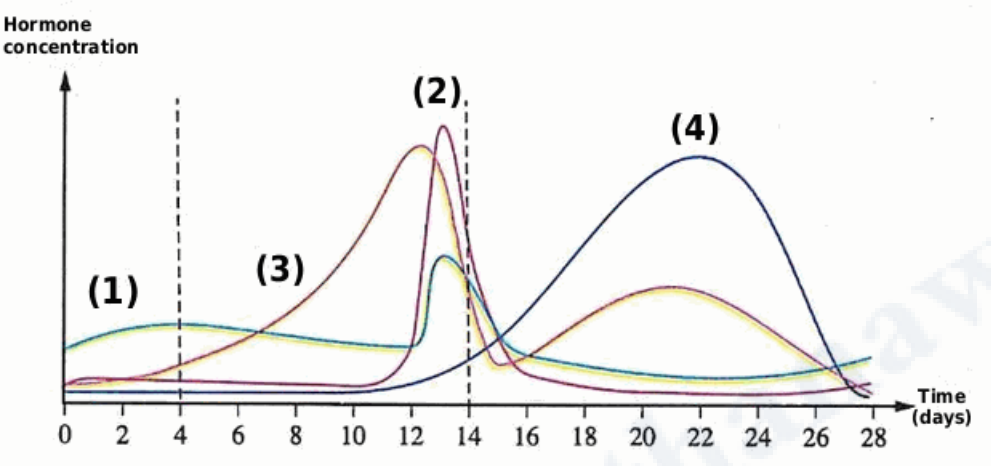
(B) Decrease of progesterone and increase of FSH

(C) Decrease of progesterone and decrease of FSH

(D) Increase of progesterone and increase of FSH

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64 The opposite graph shows the levels of the hormones (FSH, LH, estrogen, progesterone) in a woman's blood. Which of the following statements is correct?



(A) Hormones (3) and (4) regulate the work of the ovary

(B) Hormones (1) and (2) have receptors in the endometrium

(C) The secretion of hormone (4) is affected by hormone (2)

(D) Hormones (3) and (4) are proteins

---

65 Which of the following statements is correct about the menstruation phase?

(A) It takes longer than the ovulation phase

(B) During menstruation the whole endometrium is shed

(C) The absence of menstruation always shows that there is pregnancy

(D) It happens because of the decrease of progesterone

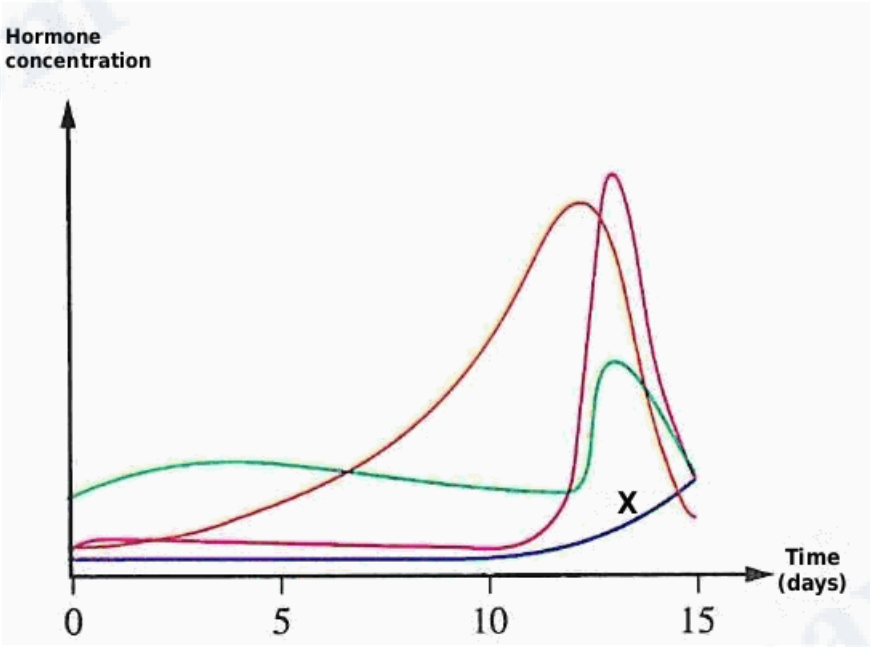
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66 In which of the following periods of the menstrual cycle does the arrival of sperms into the female reproductive system increase the chance of pregnancy?

(A) Days (1 : 5) (B) Days (12 : 16) (C) Days (17 : 21) (D) Days (22 : 28)

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67 The opposite graph shows the concentration of hormones in the blood of a human female in the first fifteen days of the menstrual cycle. Which of the following hormones does the letter (X) refer to?



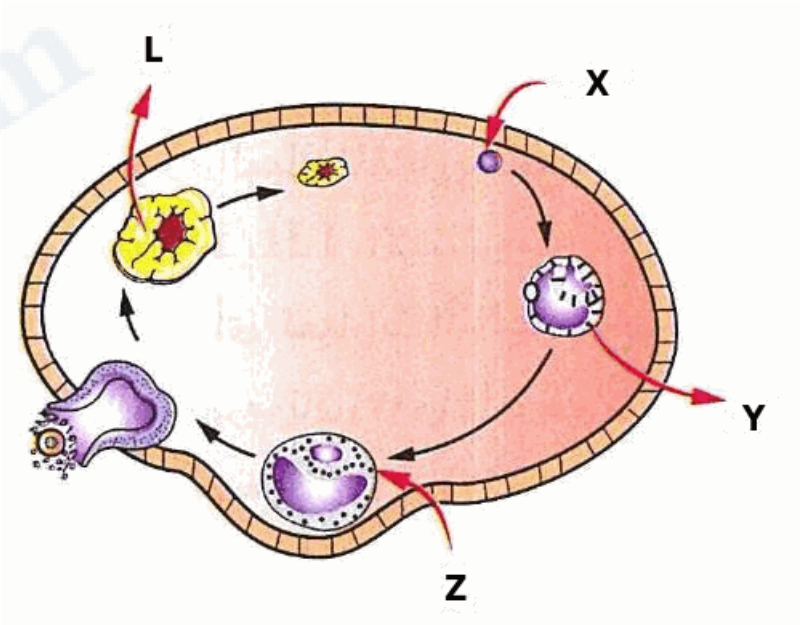
(A) FSH (B) LH (C) Estrogen (D) Progesterone

68 In an experiment on mice, the ovaries of some females were removed right after mating. They were then divided into two groups (1) and (2), and the members of both groups were injected daily with hormone (X). The following table shows the injection dose for each group and the results obtained. Based on the data in this table, what does hormone (X) represent?

Group (2)	Group (1)	
2.0	0.25	Hormone amount (mg / day)
100%	0%	% of females that kept the embryo until birth

(A) FSH (B) Progesterone (C) Oxytocin (D) Relaxin

69 The opposite figure shows a section in the ovary. Which of the following choices represents the hormones (X), (Y), (Z), (L)?



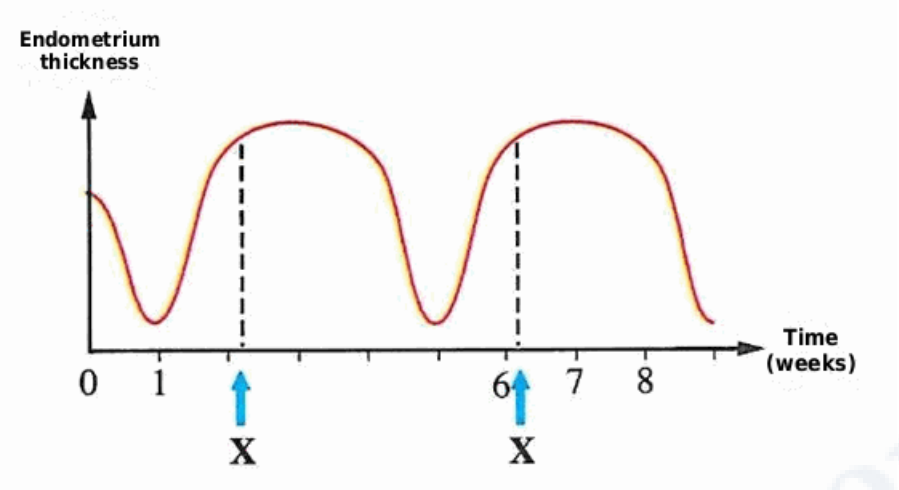
(A) X: estrogen, Y: FSH, Z: progesterone, L: LH

(B) X: FSH, Y: estrogen, Z: LH, L: progesterone

(C) X: progesterone, Y: LH, Z: FSH, L: estrogen

(D) X: FSH, Y: LH, Z: progesterone, L: estrogen

70 The opposite graph shows the change in the thickness of the endometrium in a woman. What happens at time (X)?



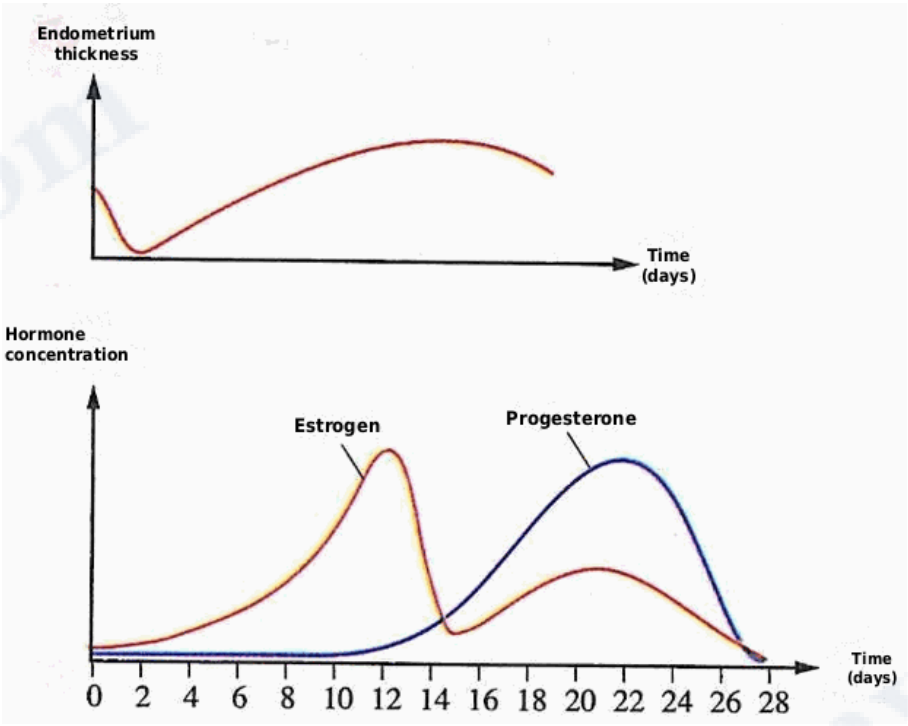
(A) Ovulation

(B) Start of menstruation

(C) Pregnancy

(D) Formation of a Graafian follicle

71 Which of the following statements can be concluded from the two opposite graphs?



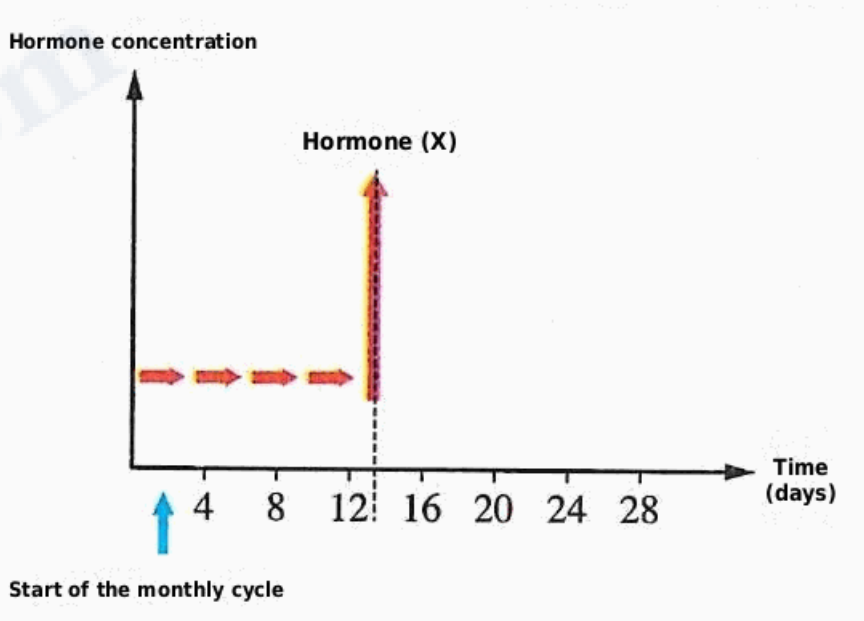
(A) The more estrogen there is, the thinner the endometrium

(B) The thickness of the endometrium is at its highest at ovulation

(C) The increase in the concentration of progesterone and estrogen leads to an increase in the thickness of the endometrium

(D) The thickness of the endometrium decreases within 5 days from the start of ovulation

72 From the opposite graph, which of the following is the direct effect of the increase in hormone (X)?



(A) Secretion of progesterone

(B) Rupture of the Graafian follicle

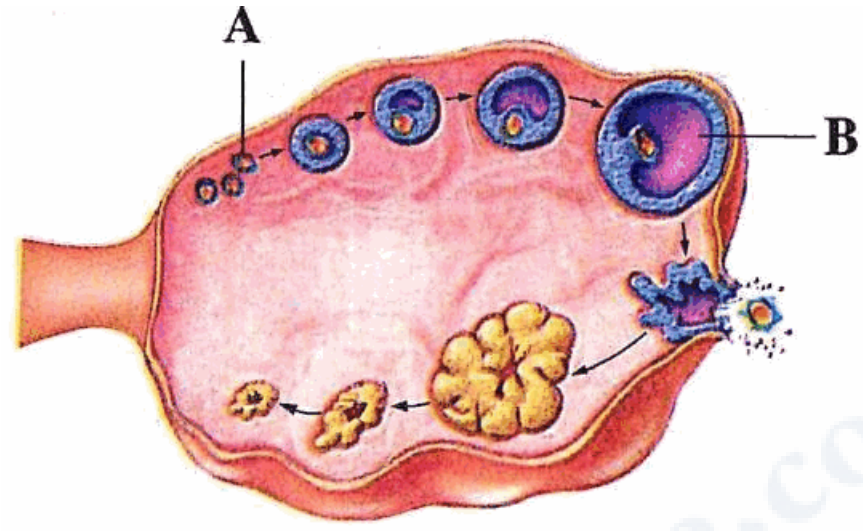
(C) Increase of the blood supply to the endometrium

(D) Growth of the mammary glands

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73 From the opposite figure, which shows the stages of maturation and release of the ovum during one month in the human female, answer:

Which of the following affects the stage between structure (A) and structure (B)?

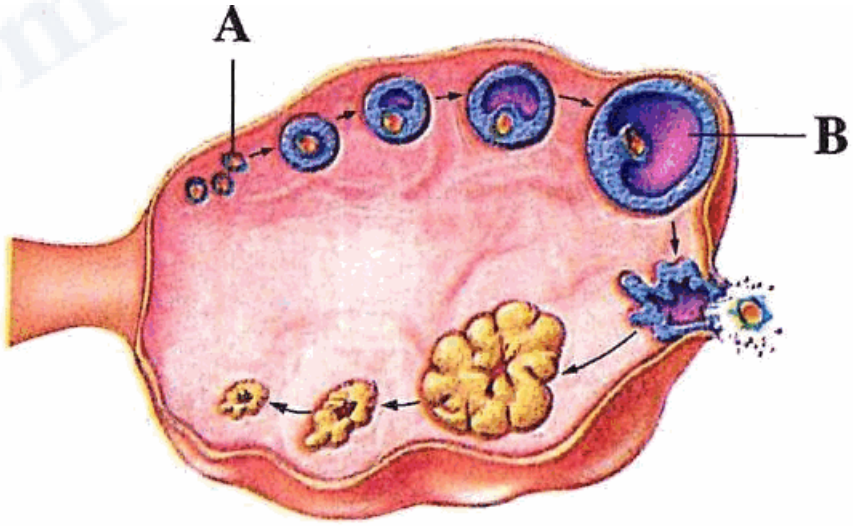


(A) LH (B) Estrogen (C) FSH (D) Oxytocin

---

74 From the opposite figure, which shows the stages of maturation and release of the ovum during one month in the human female, answer:

What does the figure represent?



(A) The ovary of a pregnant woman

(B) The ovary of a little girl

(C) The ovary of an adult female when no pregnancy happens

(D) The ovary of a female in the embryonic stage

---

75 The direct cause of an irregular menstrual cycle in a female is a disorder in the secretion of the two hormones .....

(A) FSH and LH

(B) Estrogen and relaxin

(C) Oxytocin and LH

(D) Relaxin and FSH

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76 What is the best time for fertilization of the ovum?

(A) The start of menstruation

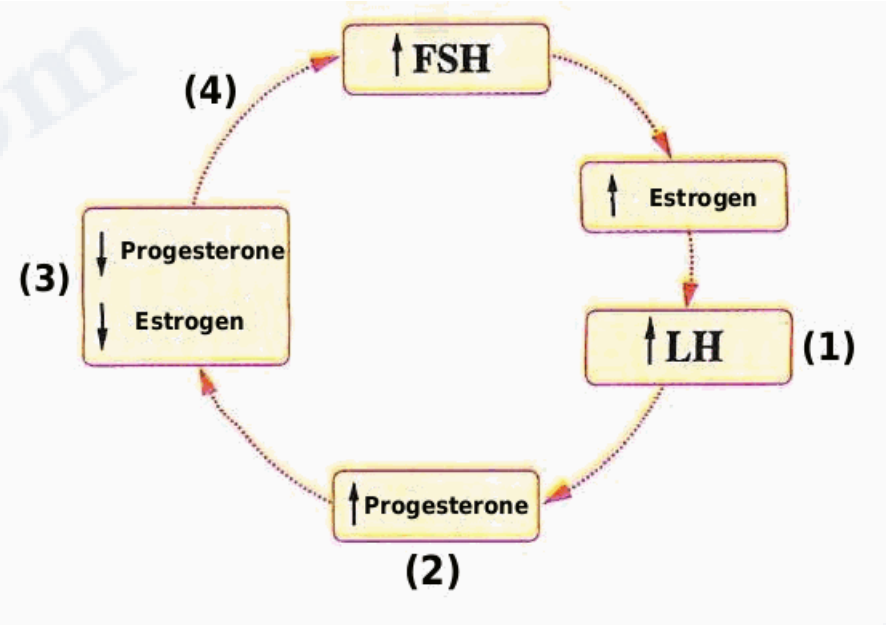
(B) The tenth day from the end of menstruation

(C) The end of menstruation

(D) The fourteenth day from the end of menstruation

---

77 The opposite diagram shows the hormones of the menstrual cycle. Which of the following choices is correct?



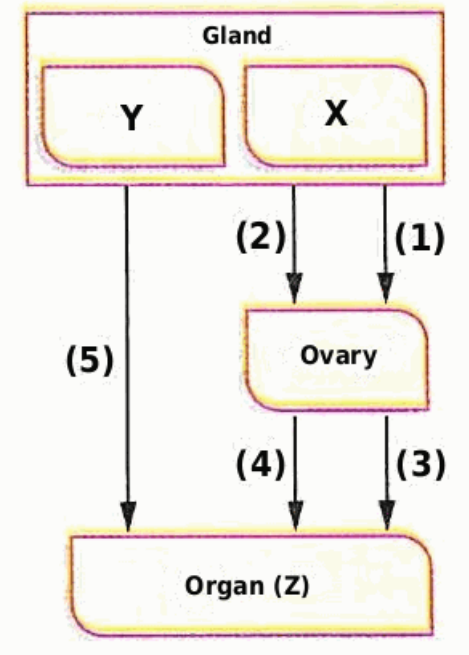
A (1) represents ovulation

B (2) represents menstruation

C (3) represents the growth of the Graafian follicle

D (4) represents the formation of the corpus luteum

78 The opposite diagram represents a group of hormones secreted by two different glands of a married woman. What could the numbers (1) to (5) represent, respectively?



(A) Estrogen / FSH / progesterone / LH / oxytocin

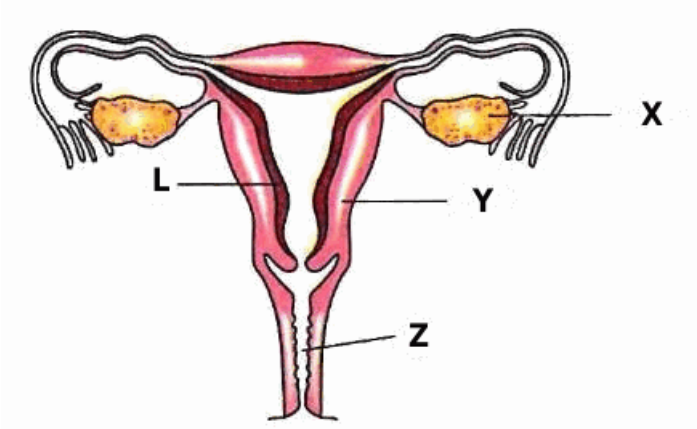
(B) FSH / LH / estrogen / progesterone / oxytocin

(C) FSH / estrogen / LH / progesterone / oxytocin

(D) LH / FSH / estrogen / oxytocin / progesterone

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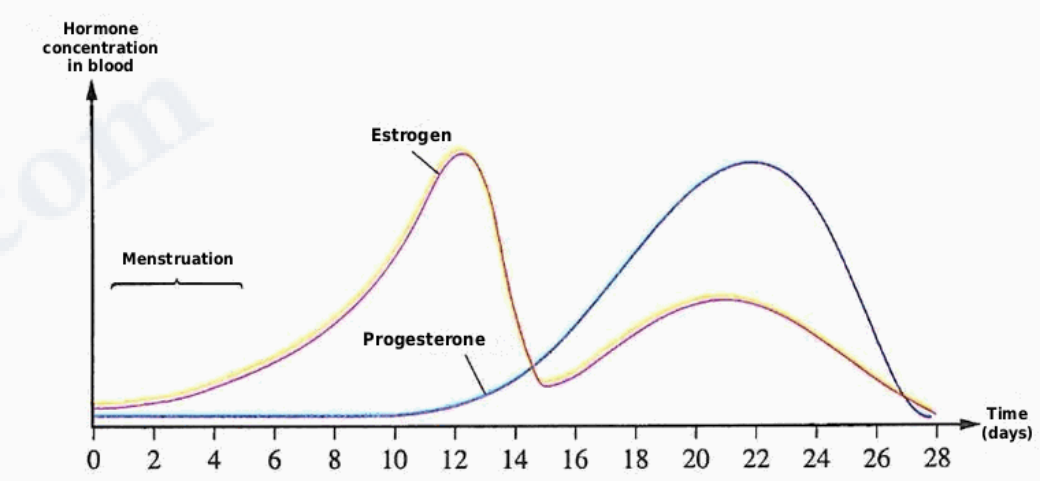
79 The opposite figure shows a front view of the female reproductive system. Which part is directly affected by the increase in the level of estrogen and progesterone in the blood?



(A) X (B) Y (C) Z (D) L

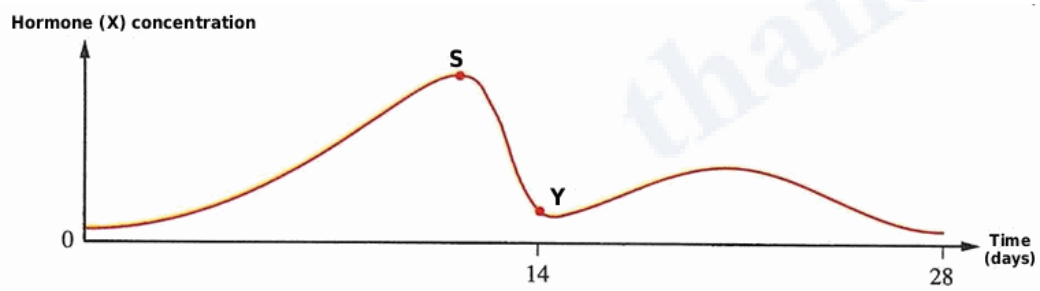
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80 From the opposite graph, on which of the following days does ovulation take place?



(A) 12 (B) 13 (C) 15 (D) 16

81 The following graph shows the concentration of one of the menstrual cycle hormones: Which of the following hormones increases in secretion when the concentration of hormone (X) changes from point (S) to point (Y)?



(A) FSH (B) LH (C) Estrogen (D) Progesterone

82 Which of the following does NOT cause a miscarriage in a pregnant woman?

(A) Removing both ovaries in the second month of pregnancy

(B) Removing both Fallopian tubes in the first month of pregnancy

(C) Degeneration of the corpus luteum in the first month of pregnancy

(D) Degeneration of the corpus luteum in the second month of pregnancy

83 The opposite table shows the events of the menstrual cycle,

Which of the following shows their correct sequence?

FSH secretion	X
Growth of the endometrium	Y
Growth of one or more ovarian follicles	Z
Ovulation takes place	L
Estrogen secretion	K
LH secretion	M

(A) X → Y → Z → K → M → L

(B) X → Z → K → L → M → Y

(C) X → K → Y → Z → M → L

(D) X → Z → K → Y → M → L

84 When does the secretion of progesterone increase?

(A) When the level of FSH in the blood increases

(B) When the level of oxytocin in the blood decreases

(C) When the level of LH in the blood decreases

(D) When the level of LH in the blood increases

85 The opposite table shows the concentration of one of the hormones during five different periods of the menstrual cycle:

Which of the following could this hormone be?

Hormone concentration	Days of the menstrual cycle	Period
1.85	1 : 9	(1)
1.84	10 : 14	(2)
12.28	15 : 17	(3)
35.27	18 : 23	(4)
17.11	24 : 28	(5)

(A) FSH (B) LH (C) Relaxin (D) Progesterone

86 The opposite table shows the concentration of one of the hormones during five different periods of the menstrual cycle:

Which of the following statements is correct?

Hormone concentration	Days of the menstrual cycle	Period
1.85	1 : 9	(1)
1.84	10 : 14	(2)
12.28	15 : 17	(3)
35.27	18 : 23	(4)
17.11	24 : 28	(5)

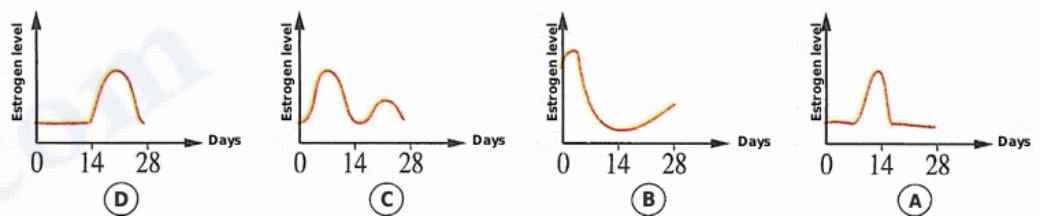
(A) Period (1) confirms pregnancy because the level of the hormone is low

(B) Period (4) confirms pregnancy because the level of the hormone is higher than in the next period

(C) Period (5) confirms that there is no pregnancy because the level of the hormone is lower than in the previous period

(D) Period (5) confirms pregnancy because the level of the hormone in it is higher than in period (1)

87 Which of the following graphs shows the level of estrogen during the menstrual cycle of the human female?



(A) Graph (A) (B) Graph (B) (C) Graph (C) (D) Graph (D)

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88 Which of the following describes the levels of these hormones on day 13 compared with their levels on the fifth day of the menstrual cycle?

(A) Follicle stimulating hormone (FSH): high, luteinizing hormone (LH): high

(B) Follicle stimulating hormone (FSH): low, luteinizing hormone (LH): high

(C) Follicle stimulating hormone (FSH): low, luteinizing hormone (LH): low

(D) Follicle stimulating hormone (FSH): high, luteinizing hormone (LH): low

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89 Which of the following hormones, when it decreases, leads to an increase in the secretion of FSH?

(A) LH (B) Oxytocin (C) Progesterone (D) Relaxin

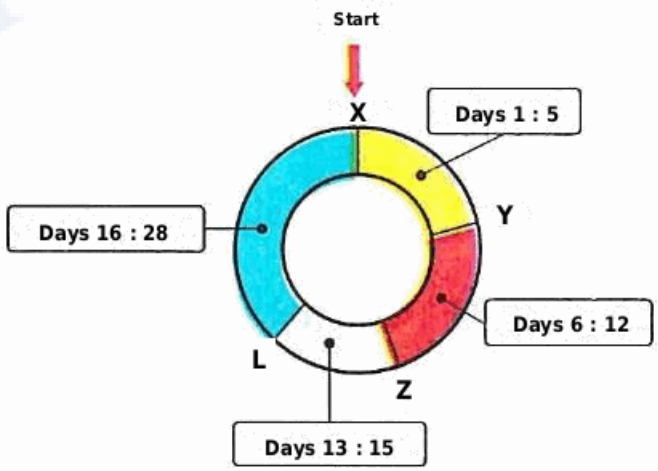
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90 At the end of the menstruation phase, which of the following hormones increases in concentration in the blood?

(A) Progesterone (B) LH (C) Estrogen (D) FSH

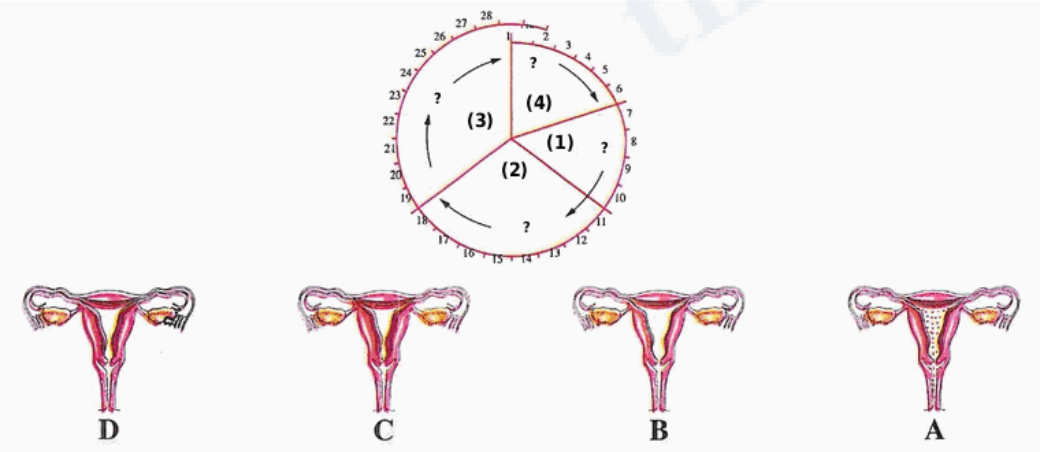
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91 The opposite figure is a diagram of the phases of the menstrual cycle in the human female. At which of the following is the endometrium expected to be in the same physiological state as when the ovum is fertilized?



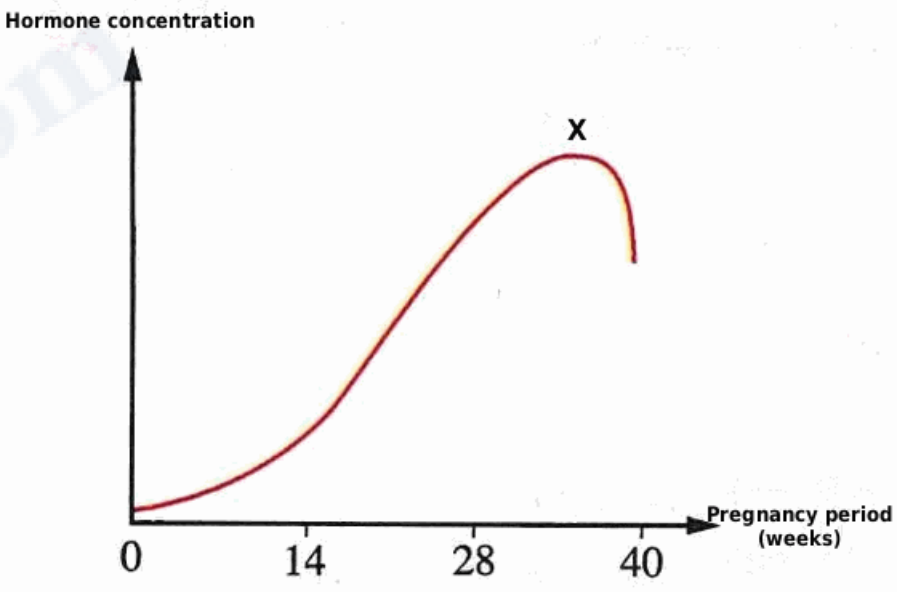
(A) The middle of phase (L - X)
(B) The start of phase (Y - Z)
(C) The start of phase (X - Y)
(D) The middle of phase (Z - L)

92 Which of the following shows the correct order of the figures (A) to (D) for the stages (1) to (4) in the opposite diagram, respectively?



(A) C → D → B → A
(B) C → A → B → D
(C) B → D → C → A
(D) A → D → C → B

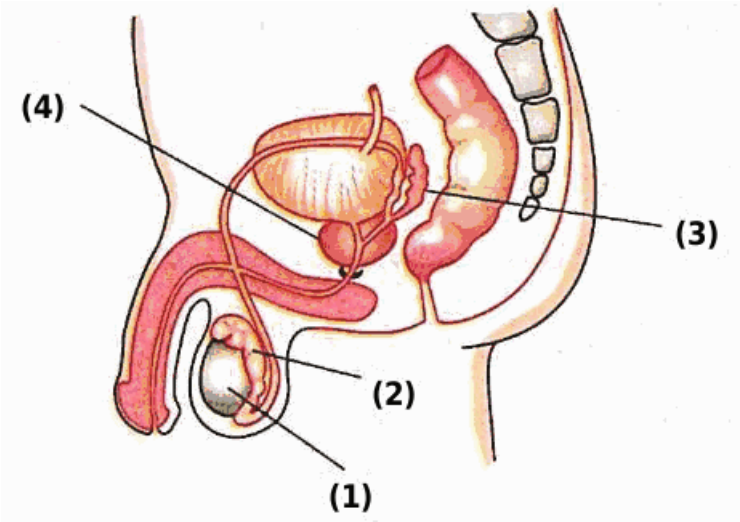
93 The opposite graph shows the concentration of a type of hormone secreted during pregnancy. Why does the secretion of hormone (X) increase after the fourteenth week?



(A) A different structure of the hormone
(B) A different source of secretion
(C) A different function of the hormone
(D) Different target cells

Essay questions — 14 questions

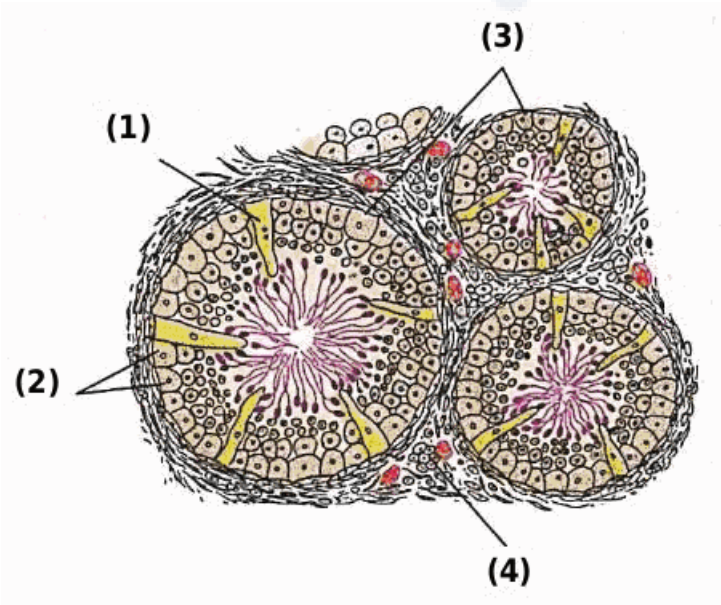
1 From the opposite figure, give the number and name of the structure that pours some of its secretions into the blood and others into a duct, and explain your answer.



2 The opposite figure shows a section in the testis of an adult. Give the number of:

(1) the cells that secrete hormones.

(2) the cells that are affected by the follicle stimulating hormone.



3 Primary spermatocytes divide in the human testis, and human skin cells divide when the skin is torn or cut:

(1) State the type of division in both cases.

(2) What is the importance of the type of division in both cases?

(3) What is the number of chromosomes in each cell produced at the end of the division in both cases?

4 How many sperms are produced when a primordial germ cell divides by mitosis three times in a row in the human male?

5 The following figures represent animal and plant gametes. Study them, then answer:

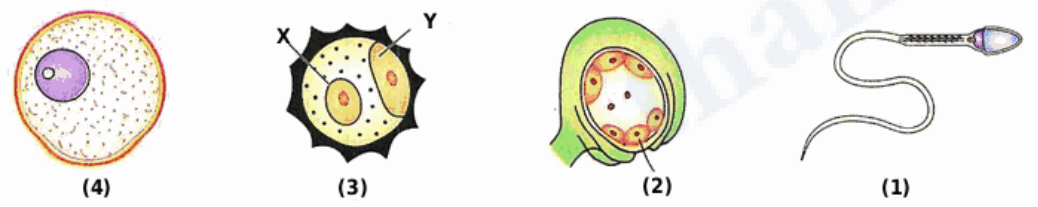
(1) What are the cells from which gametes (1) and (4) are formed called?

(2) In which phase of the formation of gamete (1) does meiosis take place?

(3) Where do meiosis and mitosis take place during the formation of gamete (2)?

(4) What is the role of the hormones that stimulate the formation of gamete (4)?

(5) What is the relation between the chromosome numbers of (X) and (Y)?



6 Sperm formation has the following features:

X: they gain the ability to move at the end of their formation stages.

Y: the number of chromosomes is reduced to half.

Z: the cytoplasm is distributed equally among the produced gametes.

L: hormones affect the formation of the gametes.

Which of the previous features also happen during ovum formation?

7 What is the smallest number of polar bodies produced from 10 oogonia? Explain your answer.

8 In some mammals the nucleus of a body cell contains 58 chromosomes. After mating, the fertilized ovum fused with one of the polar bodies. How many chromosomes are there in the resulting cell?

9 The opposite graph shows the main events that take place during the menstrual cycle in the human female:

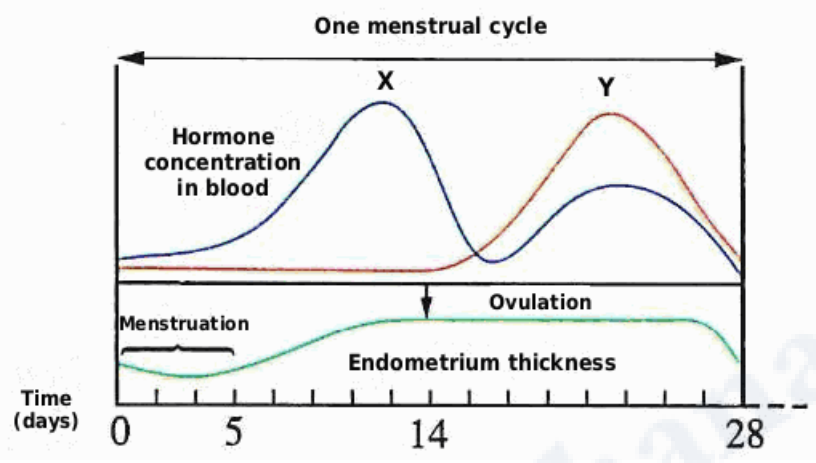
(1) Name the hormones that prepare the uterus for pregnancy.

(2) What is the source of these hormones? How do they reach the uterus?

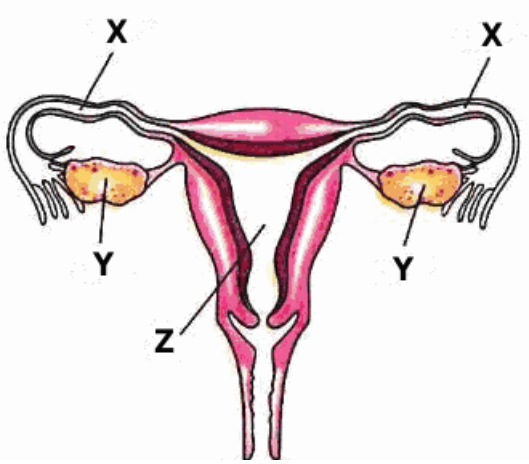
(3) During which phase of the menstrual cycle is the concentration of (Y) high? Explain its effect on the uterus during that period.

(4) What happens when the concentrations of both (X) and (Y) start to decrease?

(5) Which process is prevented by the increase of hormone (Y)?

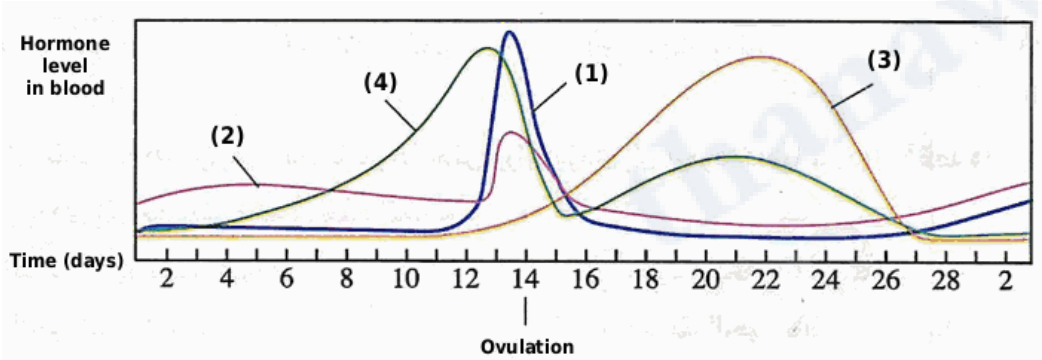


10 From the opposite figure, which shows the structure of the reproductive system in the human female, which structures, if surgically removed, stop the menstrual cycle permanently?

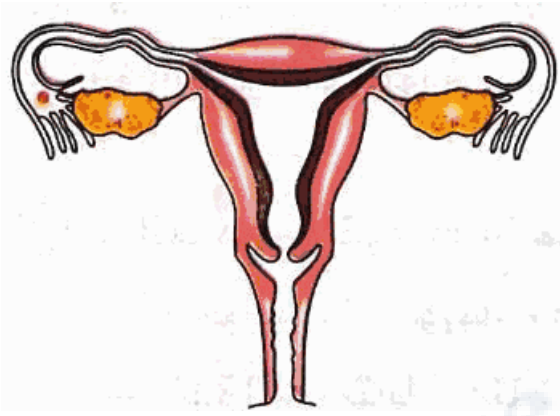


11 (1) A first meiotic division takes place. (2) The oogonium grows in size. (3) The endometrium grows.
(4) A second meiotic division takes place. (5) The level of progesterone in the blood rises.
(6) The thickness of the endometrium increases.
Which of the previous events go with:
(1) the growth phase of the Graafian follicle? Explain your answer.
(2) the fertilization phase of the ovum? Explain your answer.

12 The following graph shows the concentration of hormones (1), (2), (3), (4) in the blood during the monthly cycle of the human female:
Explain the following events in the previous figure:
(1) Hormone (1) is at its peak of secretion on day 14 from the start of menstruation.
(2) The level of hormone (2) falls before ovulation.
(3) The level of hormone (3) rises after ovulation.



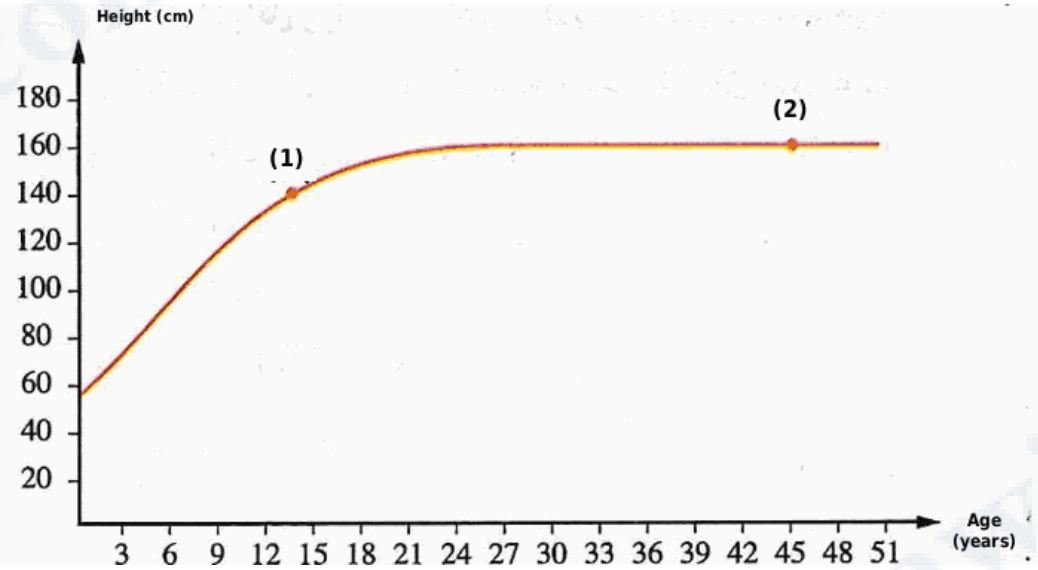
13 The opposite figure shows the state of a woman's reproductive system in one of the phases of the menstrual cycle. Which hormones have the highest concentration in the woman's blood in this phase? Explain.



14 The opposite graph shows the growth rate of a female from birth until the age of 50 years:

(1) What is the reason for the sharp rise in the growth rate before the age of 21 years?

(2) Name the hormones whose secretion increases at point (1) and decreases at point (2), and give the source of these hormones and their effects on the body.



Past exam questions — 24 questions

1 A couple were late in having children. Tests on the husband showed that the sperms die before leaving the body because they do not get nutrients. Which part of the male reproductive system is responsible for this problem? (Trial exam / June 2021)

(A) Interstitial cells (B) Sertoli cells (C) Spermatogonia (D) Prostate gland

2 «Sertoli» syndrome is caused by a genetic defect that leads to the presence of Sertoli cells only inside the seminiferous tubules of the testis. Which of the following leads to sterility in this case? (2nd session 2022)

(A) A low number of sperms
(B) Death of the sperms inside the testis
(C) Absence of sperms
(D) Death of the sperms inside the urethra

3 What prevents the sperms from leaving the body of the human male? (1st session 2024)

(A) Removal of the prostate
(B) Blockage of the two ureters
(C) Removal of one testis
(D) Blockage of the two vasa deferentia

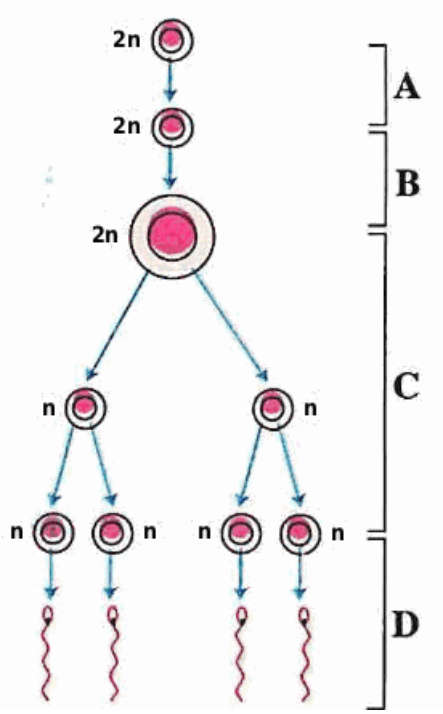
4 Which of the following is the structural unit of the testis in humans? (2nd session 2024)

(A) Sperms
(B) Seminiferous tubules
(C) Primordial germ cells
(D) Sertoli cells

5 Which glands secrete an alkaline fluid that neutralizes the acidity of urine in the human male? (2nd session 2024)

(A) The two seminal vesicles, Cowper's glands
(B) The prostate gland, the two seminal vesicles
(C) The prostate gland, Cowper's glands
(D) The two seminal vesicles, the prostate gland, Cowper's glands

6 The opposite figure shows the stages of sperm formation in humans. Which of the stages shown in the figure start when the male reaches puberty? (1st session 2025)



(A) (A) only
(B) (A) and (B)
(C) (A) and (B) and (C)
(D) All the stages

7 The presence of the scrotum outside the body cavity leads to ..... (Sample exam 2026)

(A) Higher activity of the seminiferous tubules
(B) Higher activity of the two epididymides
(C) More secretion by the interstitial cells
(D) Easier exit of the sperms from the body

8 The secretions of the accessory glands of the human male reproductive system are alkaline because the alkaline medium ..... (Sample exam 2026)

(A) Gives the sperms immunity against microbes
(B) Raises the levels of testosterone
(C) Helps the sperms stay alive
(D) Nourishes the sperms

9 What is the longest time between two successive divisions in the following human cells? (Trial exam / June 2021)

(A) Formation of a secondary oocyte and formation of the mature ovum

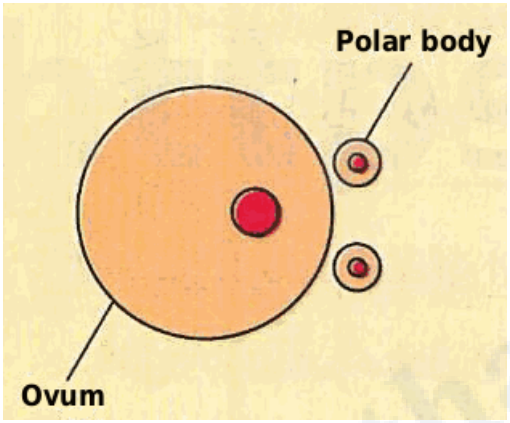
(B) Formation of an oogonium and formation of a secondary oocyte

(C) A primordial germ cell and formation of an oogonium

(D) Formation of an oogonium and formation of a primary oocyte

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10 The opposite figure shows an ovum of the human female. Which of the following made this ovum look like this? (1st session 2022)



(A) Fertilization then a first meiotic division

(B) A first meiotic division

(C) Fertilization then a second meiotic division

(D) A second meiotic division then fertilization

---

11 Which of the following describes the normal state of the Fallopian tube? (Trial exam 2023, Sample exam 2025)

(A) The cilia of the tube move towards the ovary

(B) The end of the tube is wider than its start

(C) The start of the tube is attached to the ovary

(D) The cilia of the tube move towards the uterus

---

12 Which organ / organs are a safe place for the formation and growth of the embryo in humans? (1st session 2023)

(A) The uterus and the vagina
(B) The uterus only
(C) The Fallopian tube and the uterus
(D) All the organs of the female reproductive system

13 Where does the first meiotic division take place in the human female and male, respectively? (Sample exam 2025)

(A) Graafian follicle / seminiferous tubules
(B) Fallopian tube / seminiferous tubules
(C) Lining of the ovary / seminiferous tubules
(D) Uterine cavity / the two epididymides

14 What is the maximum number of cells produced from each primary oocyte when meiosis is completed? (2nd session 2025)

(A) Two secondary oocytes
(B) A secondary oocyte and a first polar body
(C) An ovum and a second polar body
(D) An ovum and three polar bodies

15 The thick muscular wall of the uterus is functionally suitable because it ..... (Sample exam 2026)

(A) Helps to shelter and protect the embryo and push it out during birth
(B) Allows the blastocyst to be implanted and supplies it with food and oxygen
(C) Takes part in the fertilization of the ova
(D) Takes part in the secretion of the sex hormones

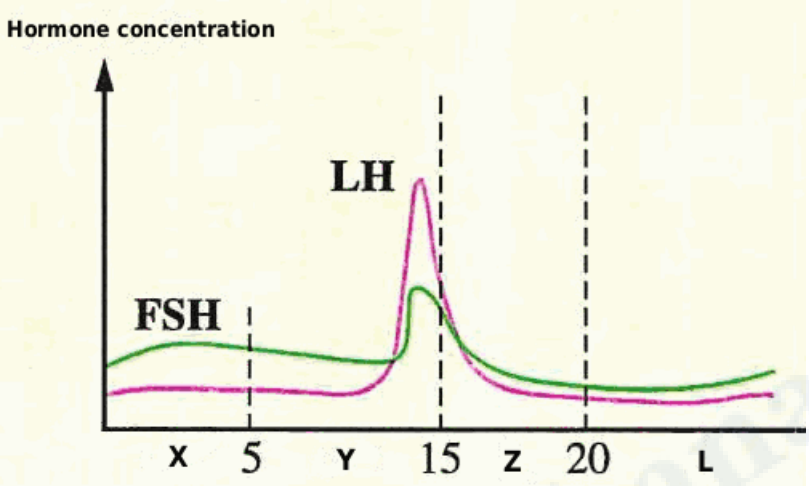
16 The first meiotic division in the ovary of the human female starts ..... (Sample exam 2026)

(A) At puberty (B) During childhood (C) After birth (D) At fertilization

17 What is the reason for the low fertility rate in a 25-year-old female? (Trial exam / May 2021)

(A) Continued secretion of estrogen
(B) Low secretion of FSH
(C) Low secretion of progesterone
(D) High secretion of LH

18 Study the opposite graph, which shows the concentration of two hormones in a human female over 28 days, then state what happens if sperms reach the Fallopian tube at the start of period (Y). (1st session 2021)



(A) Fusion of the gametes happens
(B) The enzyme hyaluronidase is secreted on the coat of the ovum
(C) No fusion of the gametes happens
(D) The second meiotic division of the ovum happens

19 Which structures or cells can be seen together when the ovary of a female is examined under the microscope during the menstrual cycle? (1st session 2024)

(A) A Graafian follicle and the corpus luteum
(B) A primary oocyte and a secondary oocyte
(C) A primary oocyte and the first polar body
(D) Immature follicles and Graafian follicles

20 What type of cell is found inside an immature Graafian follicle? (Sample exam 2025)

(A) A primary oocyte
(B) An oogonium
(C) A secondary oocyte
(D) A primordial germ cell

21 When is progesterone at its highest level? And why? (Sample exam 2025)

(A) Between ovulation and menstruation - to keep the endometrium

(B) Between maturation of the ovum and ovulation - to rebuild the endometrium

(C) Between ovulation and menstruation - to stimulate maturation of the ovum

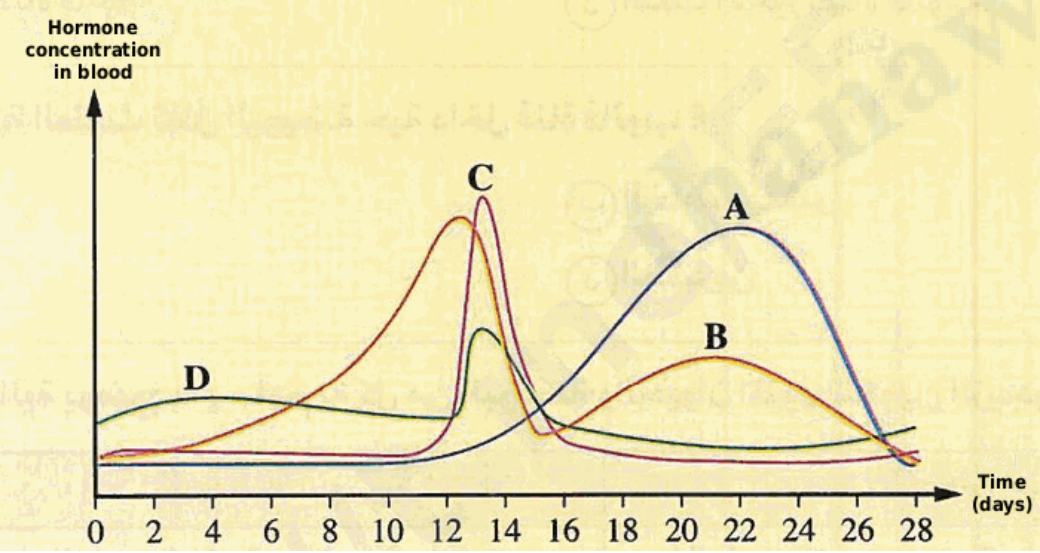
(D) Between menstruation and maturation of the ovum - to stimulate maturation of the ovum

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22 Study the following graph, which shows the changes in the concentration of 4 hormones (A), (B), (C), (D) during the menstrual cycle of a human female, then deduce: (Trial exam 2023)

(1) How does the change in the concentration of hormone (B) affect the change in the concentration of hormone (C) during days 13 and 14 of the cycle?

(2) When does the clear increase in the concentration of hormone (C) on day 13 of the cycle affect the activity of the ovary? Explain your answer.

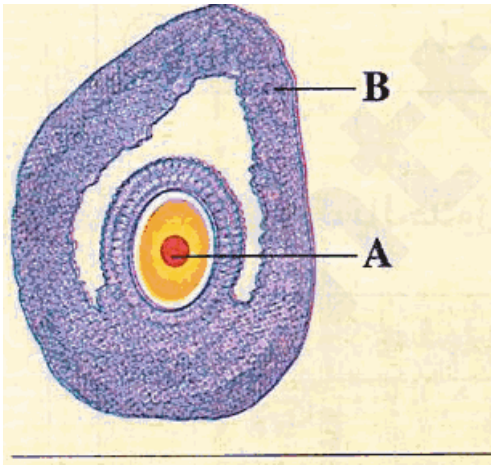


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23 Study the opposite figure, which shows a structure inside the ovary of an adult human female, then deduce: (1st session 2023, Sample exam 2025)

(1) What type of division takes place in cell (A)? What is its purpose?

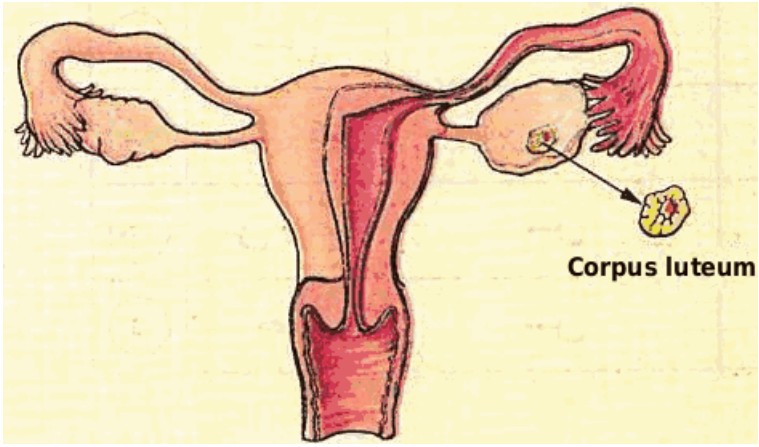
(2) What type of division takes place in cell (B)? What is its purpose?



24 Study the opposite figure, which shows the reproductive system of an adult female, then deduce: (2nd session 2023)

(1) What is the name of the phase of the menstrual cycle that the female is going through, as shown in the figure?

(2) What role does LH play during this phase?



Answer key and solutions

Multiple choice questions

1 D	2 B	3 D	4 A	5 A	6 B	7 B	8 B	9 D	10 D
11 B	12 B	13 B	14 A	15 C	16 C	17 C	18 C	19 A	20 C
21 C	22 A	23 D	24 C	25 D	26 A	27 C	28 D	29 C	30 B
31 B	32 B	33 B	34 A	35 B	36 D	37 B	38 C	39 A	40 D
41 D	42 B	43 C	44 D	45 A	46 B	47 C	48 C	49 D	50 D
51 B	52 B	53 C	54 D	55 C	56 D	57 B	58 B	59 C	60 C
61 B	62 B	63 A	64 C	65 D	66 B	67 D	68 B	69 B	70 A
71 C	72 B	73 C	74 C	75 A	76 B	77 A	78 B	79 D	80 B
81 B	82 B	83 D	84 C	85 D	86 C	87 C	88 B	89 C	90 D
91 A	92 C	93 B							

1 **Answer (D)**

(8) is the ureter and (9) is the urinary bladder. They belong to the urinary system and have no role in reproduction.

2 **Answer (B)**

(4) is the urethra, a common duct through which both semen and urine pass.

3 **Answer (D)**

Testis S → epididymis Z → vas deferens V → urethra T.

4 **Answer (A)**

The seminal vesicle X secretes a nourishing fluid for the sperms.

5 **Answer (A)**

W is the urinary bladder. It contains urine, which is acidic.

6 **Answer (B)**

The middle piece contains the mitochondria that supply the tail with energy, so its damage prevents movement.

7 **Answer (B)**

Each secondary spermatocyte gives two sperms: $10 \times 2 = 20$.

8 **Answer (B)**

F is a spermatogonium, which divides by mitosis.

9 **Answer (D)**

D is a spermatid and E is a sperm. Neither of them divides.

10 **Answer (D)**

In the maturation phase the cells divide by meiosis, so the number of chromosomes is reduced to half.

11 **Answer (B)**

Pollen grains form by meiosis then mitosis, and sperms by mitosis (spermatogonia) then meiosis.

12 **Answer (B)**

Z is a primary spermatocyte (2n). After meiosis, L and M are n cells.

13 **Answer (B)**

Only one testis is affected, so sperm production decreases while the other testis works normally.

14 **Answer (A)**

Sperms do not store food, so they need a nourishing fluid.

15 **Answer (C)**

The interstitial cells secrete testosterone and do not take part directly in the sperms reaching the ovum.

16 **Answer (C)**

The change in the number of chromosomes (n+1, n−1) is caused by a defect in meiosis, in the maturation phase.

17 **Answer (C)**

Each spermatogonium gives 4 sperms: $10 \times 4 = 40$.

18 **Answer (C)**

The scrotum is outside the body, so the temperature of the testes is lower than body temperature.

19 **Answer (A)**

In multiplication and growth the cells stay 2n, while in maturation the number is reduced to half.

20 **Answer (C)**

Cells (4) and (5) are secondary spermatocytes produced by the first meiotic division, so genetic variation occurs between them.

21 **Answer (C)**

The graph represents sperm formation: 2n cells, then n cells after meiosis.

22 **Answer (A)**

The two ovaries alternate in ovulation, so each ovary releases an ovum every 56 days, about 6 a year.

23 **Answer (D)**

The elephant is a mammal and its embryo grows inside the uterus, so its ovum does not need much stored food.

24 **Answer (C)**

The secondary spermatocyte is produced by the first meiotic division, so its formula is $n = 22 + X$.

25 **Answer (D)**

The ovum stores food, while the sperm does not.

26 **Answer (A)**

The monkey is a mammal, and only a small number of ova are released.

27 **Answer (C)**

Ova are produced in adult females periodically, one ovum each cycle.

28 **Answer (D)**

The cells end with a sperm, so the diagram shows the formation of a male gamete in humans.

29 **Answer (C)**

Cell (X) is the spermatid.

30 **Answer (B)**

Primary oocytes are formed during embryonic development.

31 **Answer (B)**

Each oogonium gives one ovum and 3 polar bodies: 4 ova and 12 polar bodies.

32 **Answer (B)**

The primary oocyte is 2n = 28, and the secondary oocyte is n = 14.

33 **Answer (B)**

The first meiotic division of the primary oocyte gives a large secondary oocyte and a small polar body.

34 **Answer (A)**

The primary oocyte is 2n, genetically like the oogonia, but it is larger in size.

35 **Answer (B)**

The Graafian follicle secretes estrogen and the interstitial cells secrete testosterone.

36 **Answer (D)**

Process (1) is mitosis, which doubles the number of cells.

37 **Answer (B)**

Process (3) is the first meiotic division, which takes place at puberty.

38 **Answer (C)**

Process (4) is the second meiotic division, which happens only when a sperm enters.

39 **Answer (A)**

The first meiotic division takes place inside the Graafian follicle in the ovary.

40 **Answer (D)**

Both the polar body and a female body cell contain an X chromosome.

41 **Answer (D)**

Each primordial germ cell gives oogonia by mitosis, so the numbers increase in direct proportion.

42 **Answer (B)**

X is the cell size, which increases in the primary oocyte, and Y is the chromosome set: 2n then n.

43 **Answer (C)**

Division (3) is the second meiotic division, which happens only after the sperm enters.

44 **Answer (D)**

The zygote divides directly, while the division of the others depends on fertilization or on suitable conditions.

45 **Answer (A)**

X is a secondary oocyte, formed by the first meiotic division of the primary oocyte.

46 **Answer (B)**

The human ovary produces the gametes by mitosis (oogonia) then meiosis.

47 **Answer (C)**

2n → 2n → n → n → 2n: formation of an ovum in humans, then fertilization.

48 **Answer (C)**

The endometrium is renewed about every 28 days.

49 **Answer (D)**

From day 5 to day 14 the endometrium is renewed and grows.

50 **Answer (D)**

After ovulation the follicle cells turn into the corpus luteum.

51 **Answer (B)**

On day 13 the Graafian follicle contains a secondary oocyte.

52 **Answer (B)**

The corpus luteum secretes progesterone, which increases the thickness of the endometrium after ovulation.

53 **Answer (C)**

Moving the ovaries prevents the ovum from reaching the Fallopian tube, so it is not fertilized.

54 **Answer (D)**

The two ovaries alternate in ovulation every 28 days, so each ovary releases an ovum every 56 days.

55 **Answer (C)**

The lowest level of the ovarian hormones is during menstruation.

56 **Answer (D)**

In the fifth month the placenta secretes progesterone.

57 **Answer (B)**

In Y both estrogen and progesterone are low, which happens during menstruation.

58 **Answer (B)**

Z has high estrogen and low progesterone, which happens during ovum maturation.

59 **Answer (C)**

Ovulation is on day 14 from the start of menstruation. 20 September is day 1, so ovulation is on 3 October.

60 **Answer (C)**

(3) a mature follicle, then (1) ovulation, then (2) the corpus luteum.

61 **Answer (B)**

The rise of estrogen stimulates the secretion of LH; it does not reduce it.

62 **Answer (B)**

The large corpus luteum (X) increases the growth of the endometrium, and its small size (Z) goes with the breakdown of the endometrium.

63 **Answer (A)**

During pregnancy progesterone increases and FSH decreases.

64 **Answer (C)**

LH (2) stimulates the corpus luteum, which secretes progesterone (4).

65 **Answer (D)**

Menstruation happens because of the decrease of progesterone.

66 **Answer (B)**

The chance of pregnancy increases around ovulation, between day 12 and day 16.

67 **Answer (D)**

Progesterone stays low in the first 15 days and starts rising after ovulation.

68 **Answer (B)**

The hormone keeps the pregnancy after the ovaries are removed, so it is progesterone.

69 **Answer (B)**

X is FSH, which stimulates follicle growth; Y is estrogen; Z is LH; L is progesterone from the corpus luteum.

70 **Answer (A)**

At X it is about day 14 of the cycle, so ovulation happens.

71 **Answer (C)**

The increase of progesterone and estrogen together increases the thickness of the endometrium.

72 **Answer (B)**

The sudden rise of LH on day 14 causes the rupture of the Graafian follicle.

73 **Answer (C)**

FSH stimulates the growth of the follicles between A and B.

74 **Answer (C)**

The figure shows the ovary of an adult female in a menstrual cycle without pregnancy.

75 **Answer (A)**

A disorder of FSH and LH upsets follicle growth and ovulation, so the cycle becomes irregular.

76 **Answer (B)**

Ovulation is on day 14 from the start of menstruation, which is about the tenth day from its end.

77 **Answer (A)**

LH (1) causes ovulation.

78 **Answer (B)**

The pituitary secretes FSH and LH to the ovary, the ovary secretes estrogen and progesterone, and oxytocin goes directly to organ (Z).

79 **Answer (D)**

The endometrium (L) is directly affected by estrogen and progesterone.

80 **Answer (B)**

Ovulation happens right after the estrogen peak, at about day 13.

81 **Answer (B)**

LH secretion increases around ovulation, then estrogen falls after it.

82 **Answer (B)**

After the embryo is implanted, the Fallopian tube does not affect the pregnancy, while losing progesterone causes a miscarriage.

83 **Answer (D)**

FSH → growth of the follicles → estrogen → growth of the endometrium → LH → ovulation.

84 **Answer (C)**

After the LH peak, LH decreases and the corpus luteum forms, which secretes progesterone.

85 **Answer (D)**

The hormone rises after ovulation (from day 15), so it is progesterone.

86 **Answer (C)**

In period (5) the concentration is lower than in period (4), so there is no pregnancy.

87 **Answer (C)**

Estrogen rises before ovulation, then falls, then rises a little after the corpus luteum forms.

88 **Answer (B)**

On day 13 LH is high and FSH is low compared with day 5.

89 **Answer (C)**

Progesterone inhibits the secretion of FSH, so its decrease increases FSH.

90 **Answer (D)**

At the end of menstruation progesterone and estrogen are low, so FSH increases.

91 **Answer (A)**

After ovulation the endometrium is at its greatest thickness, ready for the implantation of the embryo.

92 **Answer (C)**

The order by the phases of the cycle: B, then D, then C, then A.

93 **Answer (B)**

After week 14 the placenta takes over the secretion of the hormone from the corpus luteum.

Essay questions

1 **Model answer**

(1) The testis. It releases the sperms into the epididymis duct (duct secretion) until they leave the body through the urethra, and the interstitial cells of the testis secrete the hormones testosterone and androsterone into the blood (ductless secretion).

2 **Model answer**

(1) (4).
(2) (2).

3 **Model answer**

(1) Division of the primary spermatocytes: meiosis. Division of the skin cells: mitosis.
(2) The division of the primary spermatocytes reduces the number of chromosomes to half (n) during the formation of the male gametes (sperms).
The division of the skin cells heals wounds and replaces the torn or cut tissues of the skin (regeneration).
(3) Number of chromosomes in the cells produced by the division of the primary spermatocytes (secondary spermatocytes): 23 chromosomes (n).
Number of chromosomes in the cells produced by the division of the skin cells: 46 chromosomes (2n).

4 **Model answer**

Each primordial germ cell divides by mitosis to give two spermatogonia.

Number of spermatogonia produced when the primordial germ cell divides by mitosis three times in a row = 8 spermatogonia.

Each spermatogonium finally gives 4 sperms.

Number of sperms produced = 8 × 4 = 32 sperms.

5 **Model answer**

(1) Primordial germ cells (2n).

(2) The maturation phase.

(3) Meiosis takes place inside the ovule, and mitosis takes place inside the embryo sac.

(4) The follicle stimulating hormone (FSH) stimulates the ovary to mature the Graafian follicle that contains gamete (4) «the ovum».

(5) They have the same chromosome number.

6 **Model answer**

Y , L

7 **Model answer**

10 polar bodies. The smallest number of polar bodies is produced when the ovum is not fertilized, so the final result of the division of each oogonium is one polar body and one secondary oocyte.

8 **Model answer**

Number of chromosomes in the nucleus of a body cell (2n) = number of chromosomes in the nucleus of the fertilized ovum (2n) = 58 chromosomes.

Number of chromosomes in the polar body (n) = 29 chromosomes.

Number of chromosomes in the nucleus of the cell produced by the fusion of the fertilized ovum with one of the polar bodies (3n) = 58 + 29 = 87 chromosomes.

9 **Model answer**

(1) Estrogen (X) and progesterone (Y).

(2) (X) is secreted by the Graafian follicle, the corpus luteum and the placenta in the uterus; (Y) is secreted by the corpus luteum in the ovary and the placenta in the uterus.

These hormones reach the uterus through the blood.

(3) During the ovulation phase. It increases the thickness of the endometrium and its blood supply.

(4) The endometrium breaks down and the blood capillaries are torn by the contractions of the uterus, and the blood that comes out is known as menstruation.

(5) It prevents ovulation.

10 **Model answer**

Y: «the two ovaries».

11 **Model answer**

(1) (1) , (3). During the growth of the Graafian follicle, the first meiotic division (1) of the primary oocyte (2n) takes place, giving a secondary oocyte (n) and a polar body (n). Meanwhile the Graafian follicle secretes estrogen, which makes the endometrium grow (3).

(2) (4) , (5) , (6). During fertilization of the ovum, the second meiotic division of the secondary oocyte (4) takes place the moment the sperm enters the ovum and before fertilization is completed. Also, the corpus luteum forms from the remains of the Graafian follicle after the secondary oocyte is released from it, and it secretes progesterone and estrogen, so the level of progesterone in the blood rises (5). Progesterone increases the thickness of the endometrium (6) and its blood supply to prepare the uterus to receive the embryo.

12 **Model answer**

(1) Because hormone (1) «LH» causes the rupture of the Graafian follicle, the release of the secondary oocyte and the first polar body, and the formation of the corpus luteum from the remains of the Graafian follicle on the fourteenth day from the start of menstruation.

(2) Because hormone (2) «FSH» stimulates the ovary to mature the Graafian follicle in which the ovum matures. Its growth takes about 10 days, that is before ovulation, so its secretion decreases and its level in the blood falls, which allows more estrogen to be secreted.

(3) Because the remains of the Graafian follicle turn after ovulation into the corpus luteum, which secretes hormone (3) «progesterone», so its level in the blood rises after ovulation.

13 **Model answer**

Progesterone and estrogen. The figure shows that the secondary oocyte has been released and that the endometrium has become thicker, which confirms the presence of the corpus luteum that formed from the remains of the Graafian follicle.

14 **Model answer**

(1) Because the body grows more under the effect of the growth hormone (GH) secreted by the anterior lobe of the pituitary gland, which controls metabolism, especially protein synthesis.

(2) The hormones whose secretion increases at point (1) and decreases at point (2) are:

FSH: secreted by the anterior lobe of the pituitary gland. It makes the follicles in the ovary grow and turn into a Graafian follicle, in which the ovum matures.

LH: secreted by the anterior lobe of the pituitary gland. It causes ovulation and the formation of the corpus luteum.

Estrogen: secreted by the Graafian follicle and the corpus luteum in the ovary, and by the placenta in the uterus (if pregnancy happens). It causes the appearance of the secondary sexual characteristics in the female, such as the growth of the mammary glands, and regulates menstruation (the monthly cycle).

Progesterone: secreted by the corpus luteum in the ovary and by the placenta in the uterus (if pregnancy happens). It regulates pregnancy by regulating the blood changes in the endometrium to prepare it to receive and implant the ovum, and regulates the changes that happen in the mammary glands during pregnancy.

Past exam questions

1	2	3	4	5	6	7	8	9	10
B	C	D	B	C	D	A	C	B	D
11	12	13	14	15	16	17	18	19	20
D	C	A	D	A	A	B	C	D	A
21	22	23	24						
A	—	—	—						

1 **Answer (B)**

Sertoli cells nourish the sperms during their formation inside the seminiferous tubules.

2 **Answer (C)**

Sertoli cells alone do not form sperms, because there are no germ cells, so sperms are absent.

3 **Answer (D)**

The two vasa deferentia carry the sperms from the epididymis, so their blockage prevents the sperms from leaving.

4 **Answer (B)**

The testis is made of a large number of seminiferous tubules, so they are its structural unit.

5 **Answer (C)**

The prostate gland and Cowper's glands secrete an alkaline fluid that neutralizes the acidity of the urethra.

6 **Answer (D)**

Sperm formation, with all its stages, starts at puberty.

7 **Answer (A)**

The scrotum outside the body keeps the temperature of the testis lower, which is the suitable temperature for the activity of the seminiferous tubules.

8 **Answer (C)**

The alkaline medium neutralizes the acidity of the urethra and the vagina, which helps the sperms stay alive.

9 **Answer (B)**

Oogonia form before birth, and the secondary oocyte forms only after puberty, so this is the longest time.

10 **Answer (D)**

The mature ovum has two polar bodies: the first from the first meiotic division and the second from the second meiotic division, which takes place when the sperm enters.

11 **Answer (D)**

The cilia of the Fallopian tube move towards the uterus and push the ovum into it.

12 **Answer (C)**

Fertilization and the start of embryo formation are in the Fallopian tube, and the embryo grows in the uterus.

13 **Answer (A)**

The first meiotic division of the primary oocyte takes place inside the Graafian follicle, and in the male inside the seminiferous tubules.

14 **Answer (D)**

The primary oocyte gives a secondary oocyte and a first polar body, and the first polar body may divide.

So the maximum number is an ovum and three polar bodies.

15 **Answer (A)**

The thick muscular wall of the uterus protects the embryo, and its contractions push it out during birth.

16 **Answer (A)**

The primary oocyte starts its first meiotic division at puberty.

17 **Answer (B)**

Low FSH reduces the maturation of the Graafian follicles, so fertility decreases.

18 **Answer (C)**

Period (Y) is before ovulation, so there is no ovum in the Fallopian tube and no fusion of the gametes happens.

19 **Answer (D)**

During the menstrual cycle the ovary contains immature follicles beside the mature Graafian follicle.

20 **Answer (A)**

The immature Graafian follicle contains a primary oocyte.

21 **Answer (A)**

Progesterone is at its highest level between ovulation and menstruation, when the corpus luteum secretes it to keep the endometrium.

22 **Model answer**

(1) The graph shows that when hormone (B) «estrogen» reaches its highest concentration, the secretion of hormone (C) «LH» increases.

(2) On day 14 from the start of menstruation. The increase of «LH» causes the rupture of the Graafian follicle, the release of the secondary oocyte and the first polar body, and the formation of the corpus luteum from the remains of the Graafian follicle, which secretes progesterone and estrogen «ovulation phase». This shows the increased activity of the ovary.

23 **Model answer**

(1) First meiotic division. It reduces the number of chromosomes to half to form the secondary oocyte.

(2) Mitosis. It makes the Graafian follicle grow so that it secretes estrogen.

24 **Model answer**

(1) The ovulation phase.

(2) It causes the rupture of the Graafian follicle, the release of the secondary oocyte and the first polar body, and the formation of the corpus luteum from the remains of the Graafian follicle.