LIFE SCIENCES

Grade 12

LIVE: REPRODUCTION

30 JUNE 2014

Lesson Description

In this lesson we:

- Answer questions on:
  - Different reproductive strategies of vertebrates
  - The structure and function of the male and female reproductive organs in humans
  - The processes involved in human reproduction

Summary

Paper 1

Topic	Time	Weighting	
		%	Marks
T 1			
• Meiosis	1 week	7	11
• Reproduction in Vertebrates	½ week	4	6
• Human Reproduction	3 weeks	21	31
T2			
• Responding to be environment (humans)	4 weeks	27	40
T3			
• Human endocrine system	1½ weeks	10	15
• Homeostasis in humans	1 week	7	11
• Responding to the Environment (plants)	1 week	7	11
T4			
• Human impact (Grade 11)	'2½ weeks'	17	25
Totals	14½weeks	100%	150

Test Yourself

Select the most correct answer from the options given. Write down only the correct letter

Question 1

Below is a set of events following fertilisation in humans.

1. The embryo is embedded in the uterine wall in humans.
2. A zygote is formed in the Fallopian tube.
3. Cell division occurs to form a ball of several hundred cells.
4. The blastocyst remains free for several days in the uterus.

Which ONE of the following represents the correct order in which the above events occur?

A 2, 3, 4, 1

B 2, 1, 3, 4

C 3, 2, 4, 1

D 1, 3, 2, 4

Question 2

The following blood vessels carry blood to or from the placenta in humans:

1. Mother's artery
2. Mother's vein
3. Umbilical artery
4. Umbilical vein

Which blood vessels contain blood with a larger amount of oxygen and nutrients?

A 1 and 3 as compared to 2 and 4

B 1 and 4 as compared to 2 and 3

C 2 and 3 as compared to 1 and 4

D 2 and 4 as compared to 1 and 3

Question 3

Which ONE of the following is an advantage of the testes being held in the scrotum, outside the body cavity?

A More sperm can be stored in the scrotum.

B Sperm formation is more efficient at temperatures below the normal body temperature.

C The testes are better protected in the scrotum than in the body cavity.

D There is more time for prostate secretions to be added to the sperm.

Question 4

Meiosis in a diploid cell results in …

A four identical gametes.

B four haploid gametes.

C two different diploid gametes.

D four gametes having the same chromosome number as the parent cell.

Question 5

The list below gives some of the stages involved in gamete and zygote formation.

1. Prophase I
2. Prophase II
3. Metaphase I
4. Fertilisation

Which ONE of the following combinations of the above stages contributes to genetic variation?

A 1, 2 and 3

B 1, 3 and 4

C 2 and 3

D 3 and 4

Question 6

Which part below forms part of the placenta?

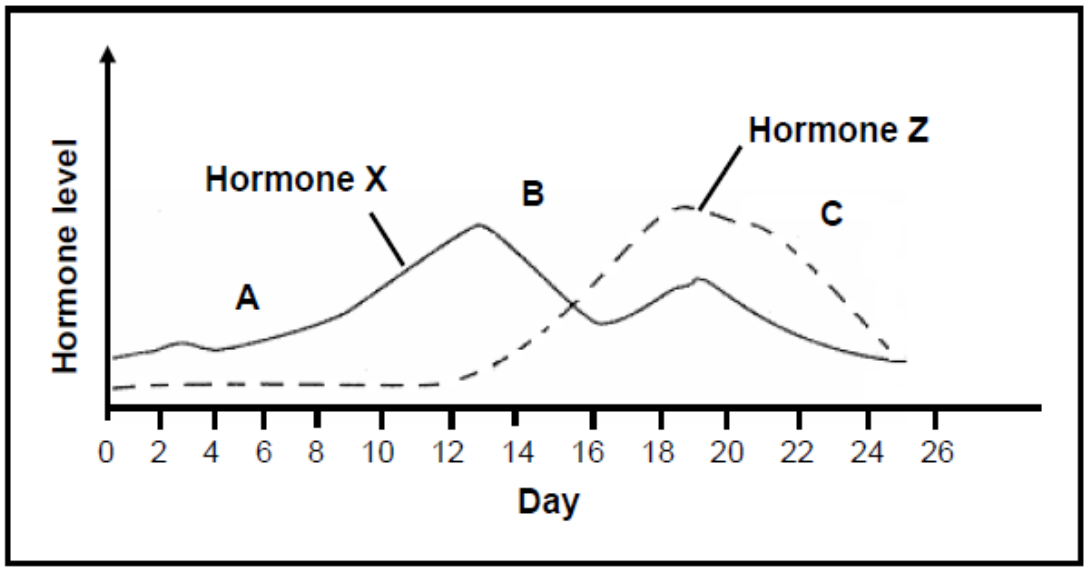
A Amnion

B Chorion

C Fallopian tube

D Cervix

QUESTIONS 7 AND 8 ARE BASED ON THE GRAPH BELOW.



Question 7

If fertilisation was to occur, the level of hormone Z from day 18 would ...

A decrease as shown in the graph.

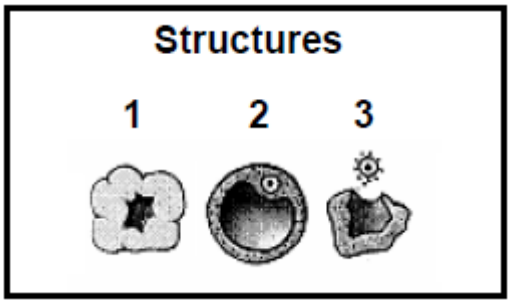
B first decrease and then increase.

C not decrease.

D follow the same pattern shown in the graph for hormone X.

Question 8

Structures 1, 2 and 3 below show different stages in the development of the follicle during the menstrual cycle.



The sequence of the structures that correspond to A, B and C on the graph above is …

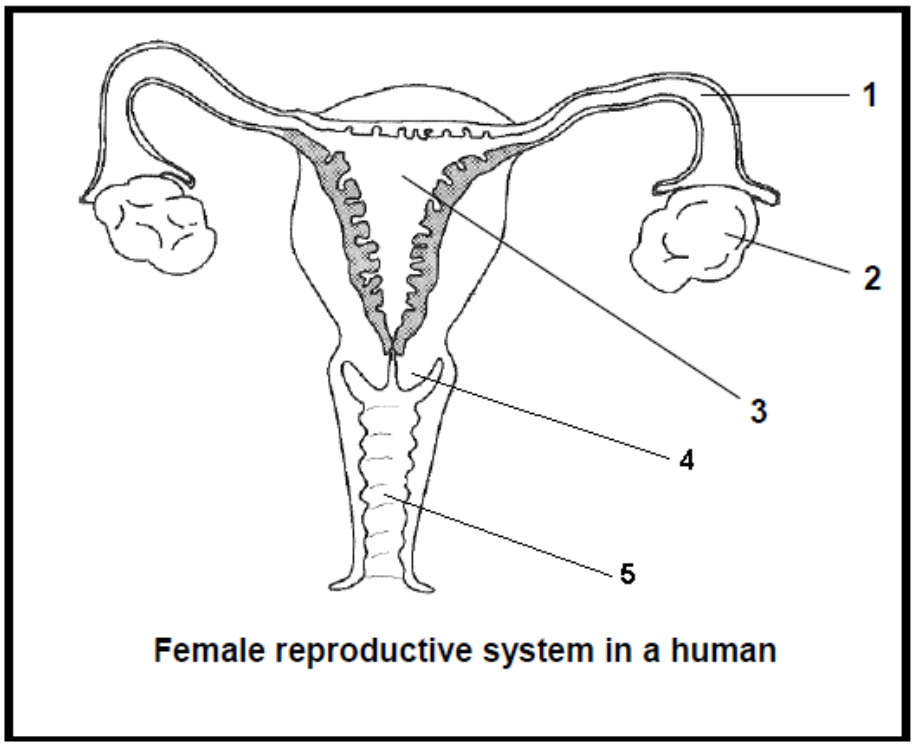
A 1, 2, 3.

B 2, 3, 1.

C 2, 1, 3.

D 3, 2, 1.

The diagram below represents the female reproductive system in humans.



Question 9

Which ONE of the following correctly represents the events that take place at the parts labelled 1, 2 and 3?

	1	2	3
A	Fertilisation	implantation	ovulation
B	Ovulation	implantation	fertilisation
C	Implantation	ovulation	fertilisation
D	Fertilisation	ovulation	implantation

Question 10

Which labelled part represents the cervix

A 1

B 2

C 4

D 5

Question 11

Give the correct biological term for each of the following descriptions. Write only the term next to the question number

11.1 The period of development of an embryo in the uterus between fertilisation and birth
11.2 A stage in the development of humans in which the embryo consists of a layer of cells surrounding a cavity
11.3 The structure at the tip of a sperm cell containing enzymes and which makes contact with the egg cell during fertilisation
11.4 The gland in the male reproductive system of humans that produces an alkaline fluid to counteract the acid environment of the vagina
11.5 The duct leading from the testis to the urethra in human males
11.6 The process by which the ovum is formed through meiosis in the ovary

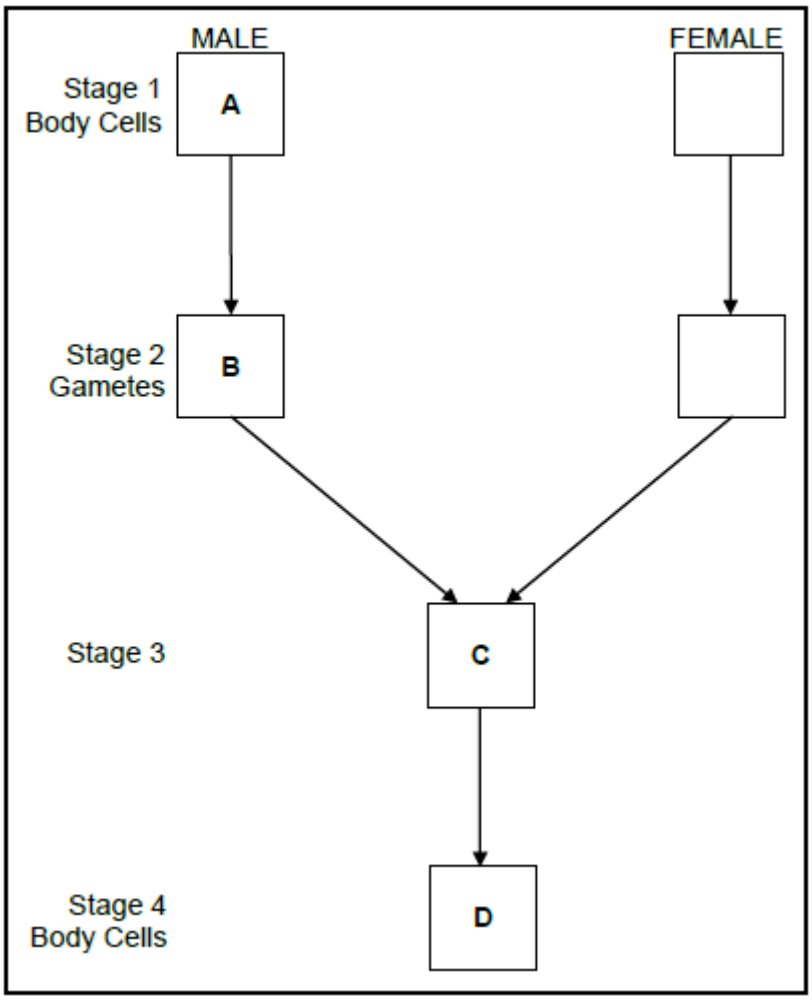
Question 12

Indicate whether each of the statements in COLUMN I applies to **A only**, **B only**, **both A and B** or **none** of the items in COLUMN II. Write **A only**,**B only**, **both A and B** or **none** next to the question number.

	COLUMN I	**COLUMN II**
1	Type of development resulting in offspring that are capable of moving around soon after hatching	A: Precocial B: Altricial
2	Provides greater chances for the fusion of sperm and egg	A: External fertilisation B: Internal fertilisation
3	Characteristic of vivipary	A: Placenta is formed B: Live offspring born
4	Amniotic fluid	A: Shock absorber B: Mechanical barrier

Question 13

The diagram below shows the various stages in the life cycle of a human.



13.1 State the chromosome number of the cells represented by A, B and C. (3)

13.2 Name the structure at Stage 3. (1)

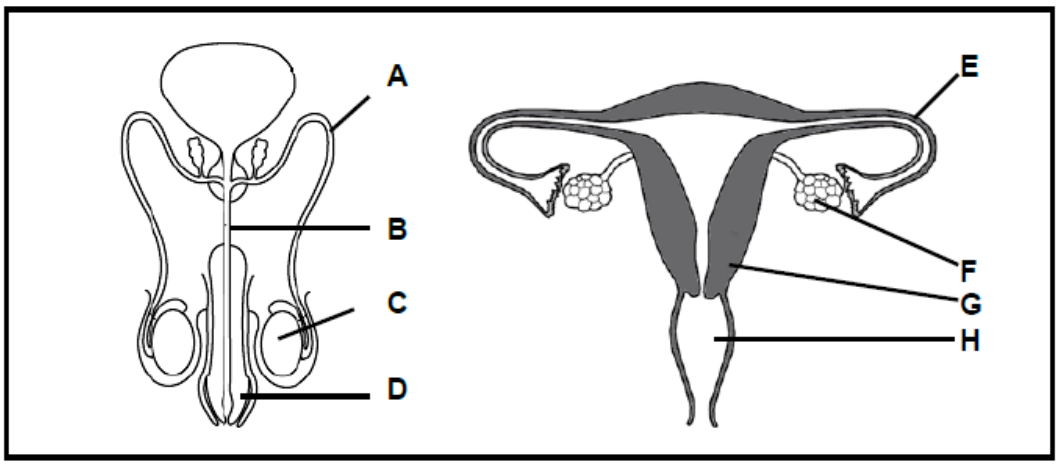
13.3 Between which two consecutive stages does meiosis occur in the life cycle? (1)

13.4 Between which two consecutive stages does mitosis occur in the life cycle? (1)

Exam Questions

Question 1

The diagrams below show the human male and female reproductive systems.



Write the LETTER (A–H) and NAME of the part:

1.1 Which transports sperm out of the body

1.2 Where ovulation occurs

1.3 Which houses the fertilised egg

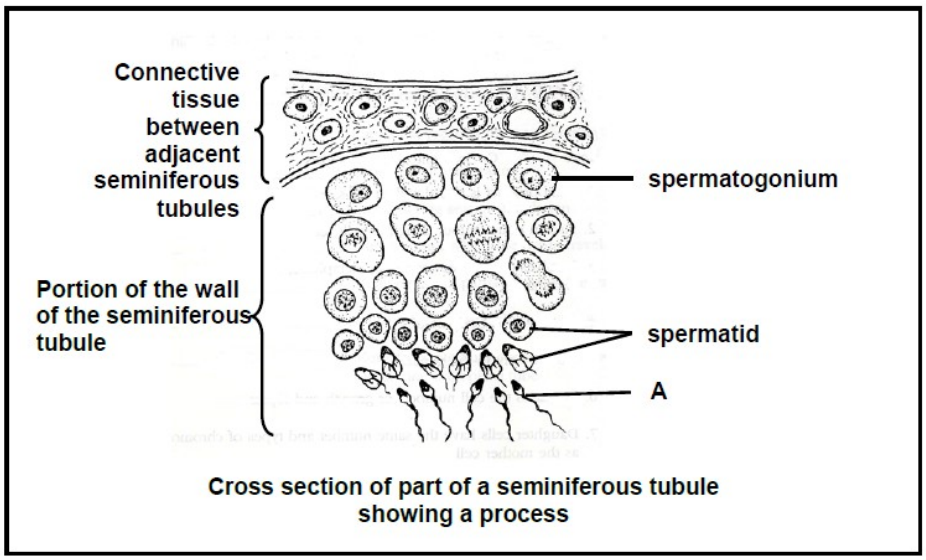
1.4 Which is the birth canal

1.5 Which produces testerone

1.6 Which transports sperm to the ejaculatory duct

Question 2

The diagram below represents a cross-section of a human seminiferous tubule in which a process is occurring.



Cross section of part of a seminiferous tubule showing a process

2.1 Name the specific process illustrated in the seminiferous tubule which leads to the formation of structure A.

2.2 Name the hormone produced by the organ containing seminiferous tubules.

2.3 Give ONE function of the hormone named in QUESTION 2.2.

2.4 How many chromosomes are there in each:

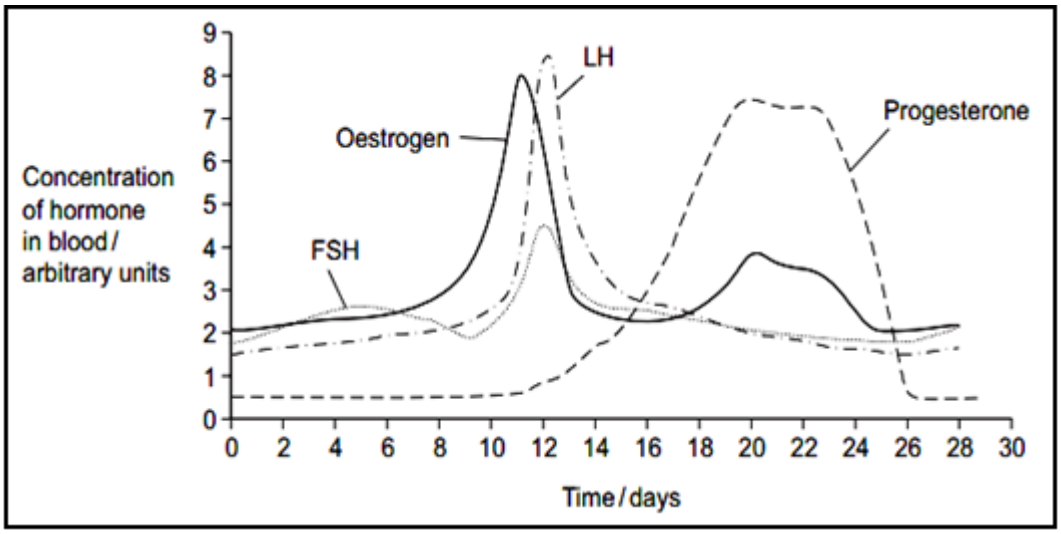
(a) Spermatogonium cell

(b) Spermatid

2.5 Make a labelled drawing to show the structure of the cell labelled A.

Question 3

The graph below shows the concentration of four hormones in a woman's blood during one menstrual cycle.



Explain how the graph supports the following statements.

(i) Oestrogen causes the release of LH.

(ii) The woman did not become pregnant during this cycle.

(iii) Name the hormone that triggers ovulation.

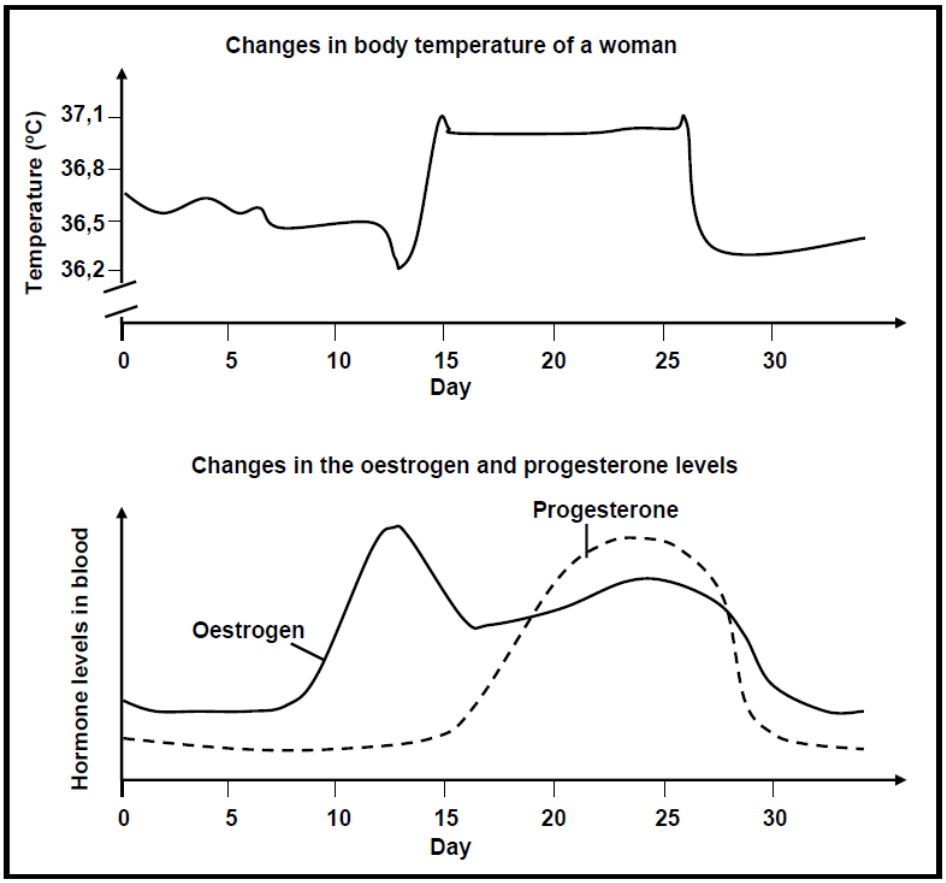
(iv) State when ovulation took place in this female.

(v) Explain the relationship between the hormones progesterone and FSH in the menstrual cycle.

Question 4

(Adapted from Feb/Mar 2012, Version 2, Paper 1)

The two graphs below show the changes in temperature in a woman's body and the levels of the hormones oestrogen and progesterone during the menstrual cycle. The release of the ovum takes place when there is a rise in body temperature.



4.1 What was the temperature of the woman on day 15? (2)

4.2 By how many degrees Celsius did her temperature vary between days 13 and 15? Show ALL working. (2)

4.4 From the graph, state TWO factors that indicate that ovulation occurred. (2)

4.5 Explain the importance of the higher level of progesterone from day 15 to day 20. (2)

Question 5

Name the hormones produced by the testes and ovaries and describe the role of each hormone in human reproduction.

Content: (17)

Synthesis: (3)

(20)