

Unit 2: Body Systems, Genetics, Microorganisms and Health

B2.3 Reproduction, Fertility and Contraception

Content - CCEA Double Award Biology 2 - Fort Hill Integrated College	Got it	Nearly	Haven't a clue
B2.3 Reproduction, Fertility and Contraception			
Can you demonstrate knowledge and understanding of the structure and function of the male reproductive system, including the testes, urethra, scrotum, penis, sperm tube and prostate gland;			
Can you demonstrate knowledge and understanding of the structure and function of the female reproductive system, including the ovaries, oviducts, uterus, cervix and vagina;			
Sperm formation and pregnancy			
<p>Can you demonstrate knowledge and understanding that:</p> <ul style="list-style-type: none"> • sperm cells are specialised cells formed by meiosis and are adapted to their function by having a haploid nucleus, mitochondria for energy production and a flagellum for swimming; • fertilisation takes place in the oviducts when the haploid sperm and egg nuclei fuse to give a diploid zygote; • the zygote divides by mitosis many times to form a ball of cells as it travels down the oviduct to the uterus; • after implantation in the uterus lining, the embryo then differentiates to produce a variety of tissues and organs; • the placenta is adapted for diffusion by having a large surface area for exchanging dissolved nutrients, oxygen, carbon dioxide and urea and explain the role of villi in providing these adaptations; • these substances are carried to or from the foetus in the blood vessels in the umbilical cord; and • the amnion and amniotic fluid cushion the foetus. 			
Sex hormones			
Can you demonstrate knowledge and understanding that testosterone, produced by the testes, and oestrogen, produced by the ovaries, are sex hormones and recall the secondary sexual characteristics they cause to			

develop;			
Menstrual cycle			
Can you describe the events of the menstrual cycle, including menstruation, ovulation, the time when fertilisation is most likely to occur and the roles of oestrogen and progesterone;			
Infertility			
Can you explain some of the causes of infertility and the following developments in fertility treatment: <ul style="list-style-type: none"> • the use of hormones to produce multiple ova; • <i>in vitro</i> fertilisation; and • the transfer of several embryos into the uterus; and 			
Contraception			
Can you describe how different methods of contraception work and evaluate the advantages and disadvantages of each, including: <ul style="list-style-type: none"> • mechanical - the condom (male and female) as a barrier to prevent the passage of sperm and also prevent the spread of sexually transmitted infections (such as HIV leading to AIDS) some of which can lead to infertility if left untreated, for example chlamydia; • chemical - the contraceptive pill and implants, which change hormone levels and stop the development of the ovum; • surgical - male and female sterilisation to prevent the passage of sperm and ova respectively; and • an awareness that contraception can raise ethical issues for some people. 			

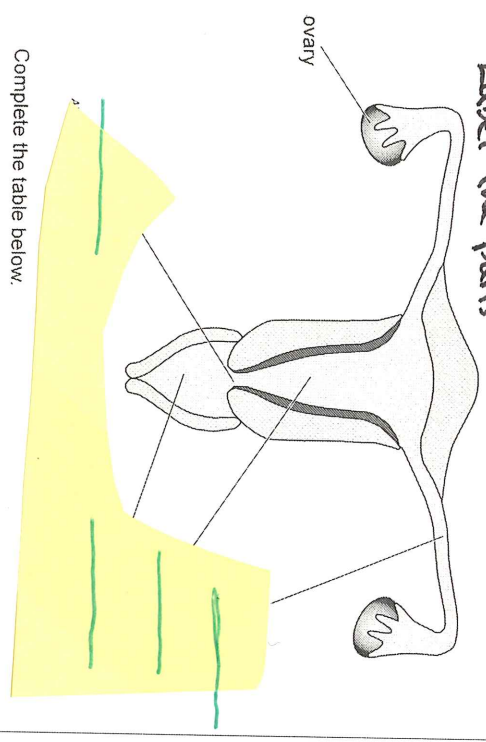
B2.3 Reproduction, Fertility & Contraception HLB booklet

A

In this section, students develop their understanding of human reproduction. They also address fertility issues and examine contraception as a mechanism for preventing pregnancy.

1 (a) The diagram below shows parts of the female reproductive system.

Label the parts



Complete the table below.

Choose from:

- cervix ovary uterus vagina oviduct

Part of female reproductive system	Function
	produces eggs (ova)
	where the baby develops
	where fertilisation takes place

[3]

Examiner Only
Marks Remark

(b) Contraceptives are used to prevent pregnancy.

(i) Using lines, link each method of contraception with its correct description.

Method	Description
condom	changes a woman's hormone levels and stops eggs being released
contraceptive pill	prevents eggs from reaching the uterus
	barrier to prevent sperm entering the female

[2]

(ii) Give one reason why some people do not approve of using contraceptives.

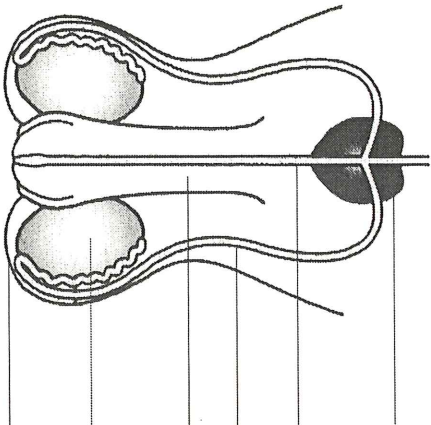
_____ [1]

Examiner Only
Marks Remark

B

2 The diagram below shows the male reproductive system.

Label the parts



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[6]

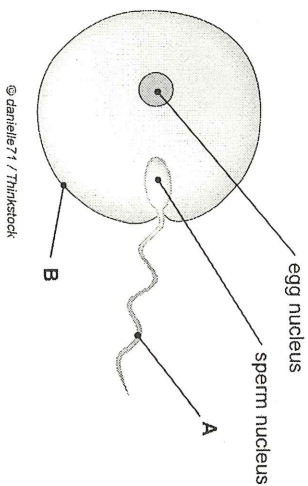
(a) Complete the table below about the male reproductive system.

Name of part	Function
	carries sperm to the penis
	makes sperm

[2]

C

1 The diagram shows an egg and a sperm just before fertilisation.



Look at the diagram.

(a) (i) Label parts A and B.

A _____ [1]

B _____ [1]

(ii) What is the function of part A?

_____ [1]

(b) In which part of the female reproductive system does fertilisation take place?

_____ [1]

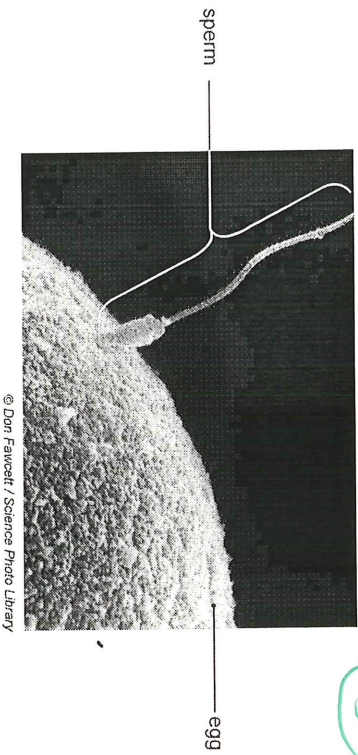
(c) Name the cell produced by fertilisation.

Put a circle around the correct answer.

foetus zygote embryo [1]

6 The photograph shows a sperm and an egg before fertilisation.

10



(a) Name two parts of the sperm visible in the photograph that adapt it to its function.

- 1. _____ [1]
- 2. _____ [1]

(b) (i) What evidence in the photograph suggests that this sperm is about to fertilise the egg?

_____ [1]

(ii) Describe what happens during fertilisation.

_____ [2]

(c) Where in the female reproductive system does fertilisation take place?

_____ [1]

(d) Name the cell produced by fertilisation.

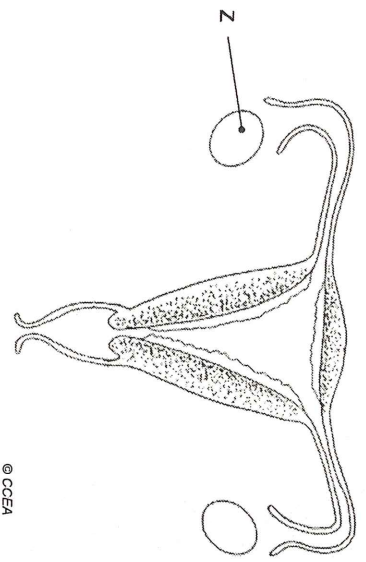
_____ [1]

(e) What happens to the cell produced by fertilisation before it implants in the uterus lining?

_____ [2]

4

6 (a) The diagram shows part of the female reproductive system.



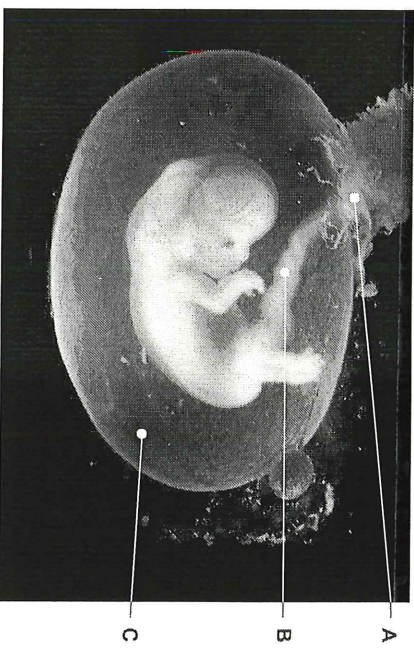
© CCEA

Look at the diagram.

- (i) Write the letter F on the diagram to show where fertilisation happens. [1]
- (ii) Write the letter M on the diagram to show where implantation occurs. [1]
- (iii) What is the function of part Z? [1]

Examine Only
Marks
Remark

(b) The photograph shows a developing foetus.



© Dr. G. Moscoso/ Science Photo Library

Look at the photograph.

(i) Name parts A, B and C.

- A _____ [1]
- B _____ [1]
- C _____ [1]

(ii) The foetus is **not** ready to be born.

Give two pieces of evidence from the photograph which suggest this.

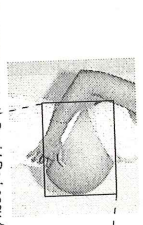
- 1. _____ [1]
- 2. _____ [1]

Examine Only
Marks
Remark

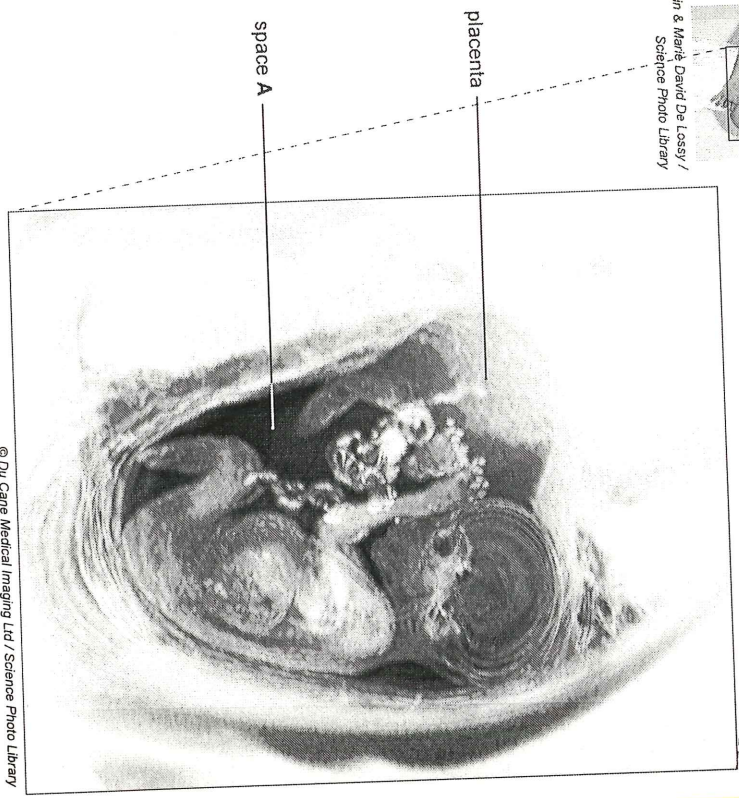
Turn over

(F)

13 The photographs show a pregnant woman and the scan of her foetus.



© Ghisain & Marie David De Loesky / Science Photo Library



© Du Cane Medical Imaging Ltd / Science Photo Library

Look at the photographs.

(a) (i) Name the liquid found in space A.

_____ [1]

(ii) Explain how the liquid in space A protects the foetus.

_____ [1]

(b) The function of the placenta is to exchange dissolved substances between the mother and the foetus.

(i) Explain how the structure of the placenta is adapted for this function.

_____ [1]

(ii) Name one substance that is exchanged from the foetus to the mother.

_____ [1]

5

6 Secondary sexual characteristics develop in girls and boys during puberty.

The development of these characteristics is caused by chemicals released from the reproductive organs.

(a) What type of chemical causes the development of secondary sexual characteristics?

_____ [1]

The chemical released in girls is oestrogen.

(b) Where in the girl's reproductive system is oestrogen produced?

_____ [1]

(c) Name the chemical which causes secondary sexual characteristics to develop in boys.

_____ [1]

(d) (i) Describe one secondary sexual characteristic which develops only in boys.

_____ [1]

_____ [1]

(ii) Describe one secondary sexual characteristic which develops only in girls.

_____ [1]

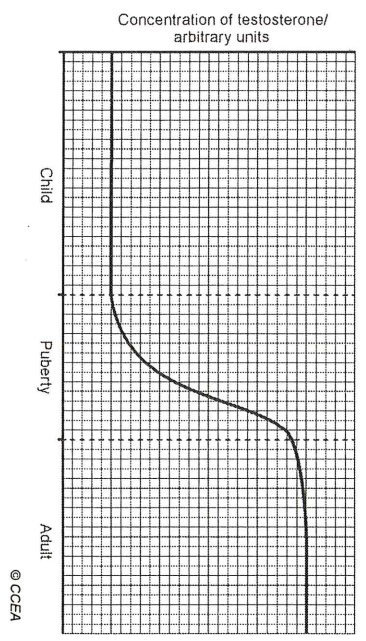
_____ [1]

3 Testosterone is a sex hormone found in males.

(a) Name the organ that produces testosterone.

_____ [1]

(b) The graph shows changes in the concentration of testosterone in a male.



Look at the graph.

(i) Describe the changes in the concentration of testosterone.

_____ [3]

_____ [3]

_____ [3]

(ii) During puberty testosterone brings about changes in a male's body.

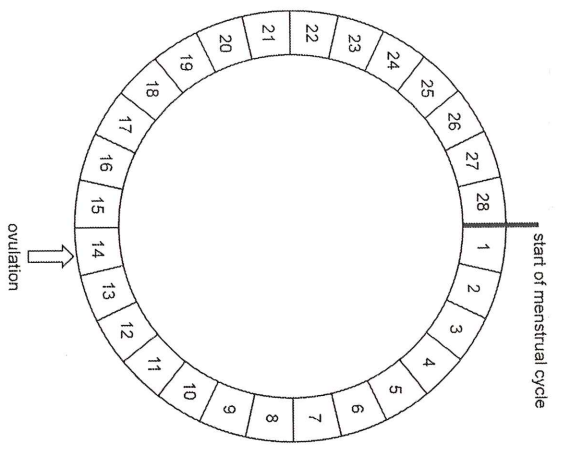
Describe one way the male body changes during puberty.

_____ [1]

_____ [1]

11

1 (a) The diagram shows the 28 days of a menstrual cycle.



I

Look at the diagram.

Menstruation lasts for five days.

(i) On the diagram, shade in the five days of menstruation. [1]

(ii) What happens during menstruation?

_____ [1]

(b) Sperm can live for three days.

A woman who has sexual intercourse on day 12 could become pregnant.

Explain why.

_____ [2]

Examiner Only
Mark Remark

Bio F June 2014

10 (a) Sterilisation is a reliable method of contraception in women.

(i) Explain why sterilisation in women is reliable.

_____ [2]

(ii) Give one other advantage of sterilisation as a method of contraception.

_____ [1]

(b) A condom is another method of contraception.

(i) Describe how condoms prevent pregnancy.

_____ [2]

(ii) Give one health advantage of using a condom.

_____ [1]

5

Examiner Only
Mark Remark



14 The table shows the chance of pregnancy occurring when using different types of contraception.

Type of contraception	Chance of pregnancy
Surgical	1 in 200
Mechanical	10 in 200
Chemical	2 in 200

An implant is a contraceptive device that works in a similar way to the pill.

It involves a small tube inserted under the skin in the upper arm of the woman.

This tube slowly releases chemicals.

- Use the information and your knowledge to answer the following questions.
- What type of contraceptive is the implant?
 - Describe how the chance of pregnancy using an implant compares to surgical and mechanical types of contraception given in the table.
 - Suggest **two** other advantages and **one** disadvantage of using this method when compared to the others.

In this question you will be assessed on your written communication skills, including the use of specialist scientific terms.

[6]

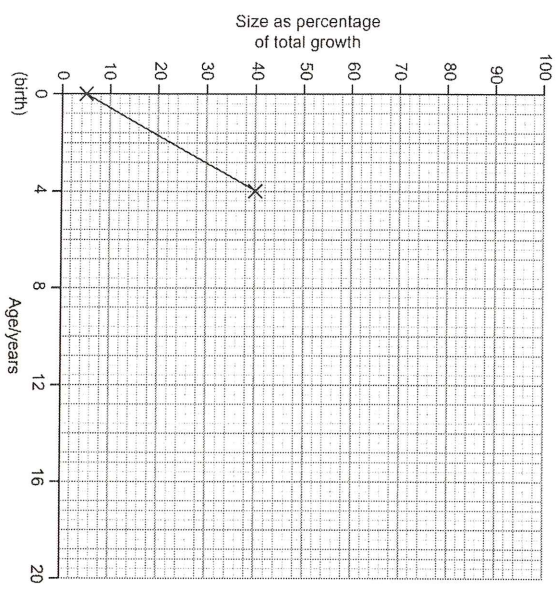
7

4 The table shows the growth of a child from birth to 20 years of age.

Age/years	Size of body as percentage of total growth
0 (birth)	5
4	40
8	44
12	56
16	85
20	100

(a) Complete the graph using the numbers in the table.

The first two points have been done for you.



[3]

Examiner Only
Marks Remark

Look at the graph.

(b) When is the growth of the child slowest?

Tick (✓) the box beside the correct answer.

between 0 and 4 years

between 4 and 8 years

between 8 and 12 years [1]

(c) When the child is 12 years old the rate of growth changes.

(i) How does the rate of growth change?

_____ [1]

(ii) What causes this change?

_____ [1]

Examiner Only
Marks Remark