Western Cape Government
Education

Directorate: Curriculum FET

LIFE SCIENCES

REVISION BOOKLET
2020 TERM 2

Grade 12

This revision program is designed to assist you in revising the critical content and skills covered during the 2nd term. The purpose is to prepare you to understand the key concepts and to provide you with an opportunity to establish the required standard and the application of the knowledge necessary to succeed in the NCS examination.

The revision program covers the following topics:

- Evolution
- Human reproduction
- Reproduction in vertebrates

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TERM 2 CONTENT

Study the core content below on the topics evolution, human reproduction and reproduction in vertebrates.

1. EVOLUTION

1.1. *Name* the sources of variation in a population:

1. **Mutations** – involves a change in the structure of a genes.

2. Variation as a result of **meiosis** is due to:

   - **Crossing over**: during prophase I there is an exchange of genetic material between homologous chromosomes
   - **Random arrangement of chromosomes** – chromosomes arrange randomly at the equator during metaphase 1 and metaphase 2.

3. **Random fertilisation of gametes –** random fertilisation of the sperm cells and ova leading to different combinations of genetic material in the offspring

4. **Random mating** of individuals in a species leads to variation within the species.

1.2. Theories of evolution:

You should know the generic account of the evolutionary theories but you should also be able to apply the generic account on any given example.

Lamarck explained evolution using the following two 'laws':

- **The inheritance of acquired characteristics**: Characteristics developed during the life of an individual (acquired characteristics) can be passed on to their offspring.

- **The law of use and disuse:** As an organism uses a structure or organ more regularly, it becomes better developed or enlarged. If an organism does not use a structure or organ frequently, it becomes less developed or reduced in size and may disappear altogether.

Reasons why Lamarck's theory was rejected:

- There is no evidence that acquired characteristics are inherited/do not cause any change to the DNA of an organism's gametes (sperms or ova)
- Organisms did not evolve because they want to evolve/Lamarck's theory is deterministic

Darwin's theory of evolution by natural selection:

- There is a great deal of **variation** amongst the offspring.
- Some have favourable characteristics and some do not.
- When there is a change in the environmental conditions or if there is competition,
- then organisms with characteristics, which make them more suited, survive
- whilst organisms with unfavourable characteristics, which make them less suited, die.
- The organisms that survive, reproduce and thus pass on the **allele** for the favourable characteristic to their offspring.
- The next generation will therefore have a higher proportion of individuals with the favourable characteristic.

Punctuated equilibrium:

- Evolution involves long periods of time where species do not change or change gradually through natural selection (known as equilibrium).
- This alternates with (is punctuated by) short periods of time where rapid changes occur through natural selection
- during which new species may form in a short period of time.

1.3. Speciation:

You should know the generic account of speciation but you should also be able to apply the generic account on any given example.

- If a **POPULATION** of a single species
- becomes separated by a geographical barrier (sea, river, mountain, lake)
- then the population splits into two.
- There is now no gene flow between the two populations.
- Since each population may be exposed to different environmental conditions/the selection pressure may be different
- natural selection occurs independently in each of the two populations
- such that the individuals of the two populations become very different from each other

- genotypically and phenotypically.
- Even if the two populations were to mix again
- they will not be able to interbreed.
- The two populations are now different species.

NOTE: It is a POPULATION and not a SPECIES that becomes separated by a geographical barrier. Refer to the definitions of a population and a species.

Explain how speciation and extinction affect biodiversity:

- **Speciation increases biodiversity** since there is an increase in the number of species
- **Extinction** results in the loss of the number of species and therefore results in a **decrease in biodiversity**

1.4. Artificial selection:

Humans select organisms with a particular **desirable characteristic** and interbreed them with other organisms that also have the same desirable characteristic to improve this characteristic further in the offspring. They may also choose organisms with different desirable characteristics to get offspring with a combination of these desirable characteristics.

***Table 1: Tabulate* the differences between natural and artificial selection:**

Natural selection	Artificial selection
The environment or nature is the selective force	Humans represent the selective force
Selection is in response to suitability to the environment	Selection is in response to satisfying human needs
Occurs within a species	May involve one or more species (as in cross-breeding)

1.5. Reproductive isolating mechanisms:

You should be able to name and describe the following **FIVE reproductive isolation mechanisms** that keep species separate.

- Breeding at different times of the year
- Species-specific courtship behaviour
- Adaptation to different pollinators
- Infertile offspring
- Prevention of fertilization

1.6. Evolution in present times:

You should be able to use ANY example and describe the role of mutations in evolution in present times.

- In a population of insects/bacteria/HI viruses/Galápagos finches
- mutations are a source of variation
- which may make some organisms more resistant
- to insecticides/antibiotics/antiretroviral medication.
- Those individuals that are not resistant will die, whereas
- those that are resistant, will survive
- to pass the resistant allele/resistance on to their offspring.
- This is known as natural selection
- As a result, individuals of the future generations will be resistant to the insecticides/ antibiotics/antiretroviral medication

1.7. Human evolution

Figure1: **Characteristics that humans share with African apes (links with human skeleton in Grade 10)**

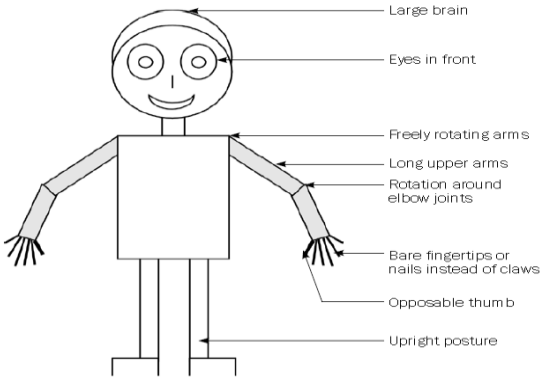


Table 2: Tabulate **the differences between humans and African apes (links with human skeleton in Grade 10):**

Feature	Humans	African apes
Foramen magnum	Foramen magnum in a forward position	Foramen magnum in a backward position
Cranium	Larger cranium size	Smaller cranium size
Spine	More curved/S-shaped	Less curved/C-shaped
Teeth	Smaller teeth/canines	Larger teeth/canines
Jaws	Less protruding jaws/non-prognathous	More protruding jaws/prognathous **(Note: NOT less prognathous)**
Palate shape	Small and semi-circular	Long and rectangular
Cranial ridges	No cranial ridges	Cranial ridges across the top of the cranium
Brow ridges	Brow ridges less pronounced	Brow ridges pronounced

1.8. *State* the Out of Africa hypothesis:

All modern humans/*Homo sapiens* originated in Africa and migrated to other parts of the world.

***Describe* the evidence for the 'Out of Africa' hypothesis:**

Fossil evidence:

- Fossils of *Ardipithecus* were found ONLY in Africa/Rift Valley/Ethiopia/South Africa
- Fossils of *Australopithecus* were found ONLY in Africa/Rift Valley/Ethiopia/South Africa
- The fossils of *Homo habilis* were ONLY found in Africa
- The OLDEST fossils of *Homo erectus* were found in Africa
- The OLDEST fossils of *Homo sapiens* were found in Africa

Genetic evidence:

- Mitochondrial DNA is inherited only from the maternal line.
- Analysis of mutations on this mitochondrial DNA shows that the oldest female ancestor was located in Africa and that all humans descended from her.

2. HUMAN REPRODUCTION:

2.1 Structure of male and female reproductive systems

***Figure 2:* Structure of male reproductive system**

You should be able to *label and give* the functions of the different parts.

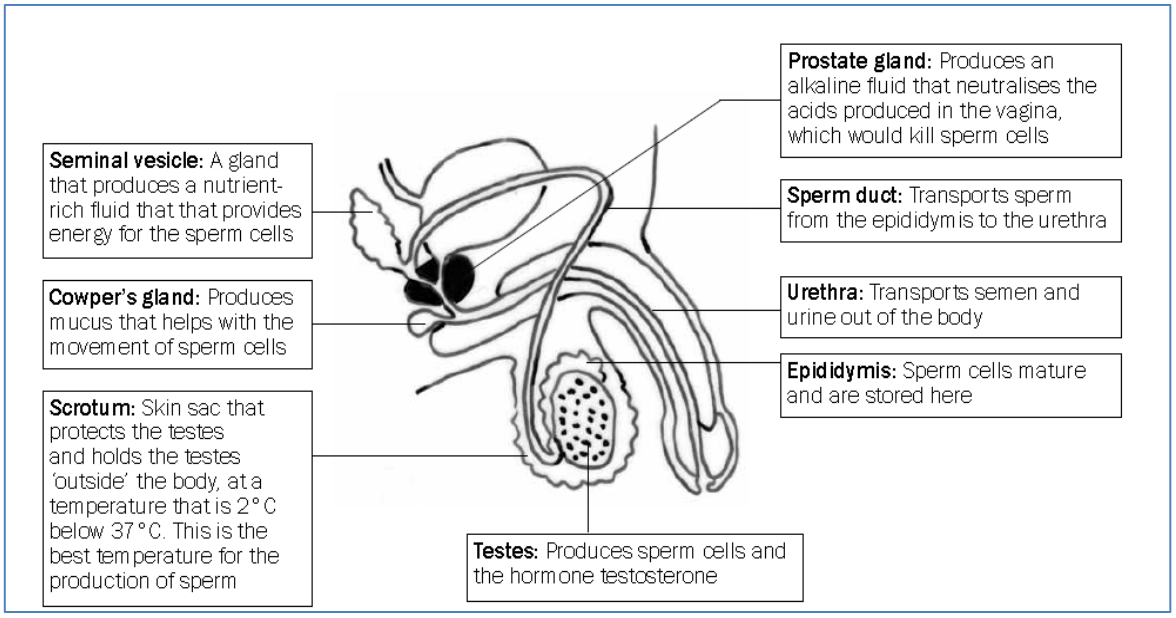


***Figure 3:* <u>Structure of a sperm cell:</u>**

You should be able to *draw a sperm cell and label* and *give* the functions of the different parts. Note: The following labels are required according to the National Examination Guideline document: **acrosome, head, haploid nucleus, middle portion/neck, mitochondrion, tail.**

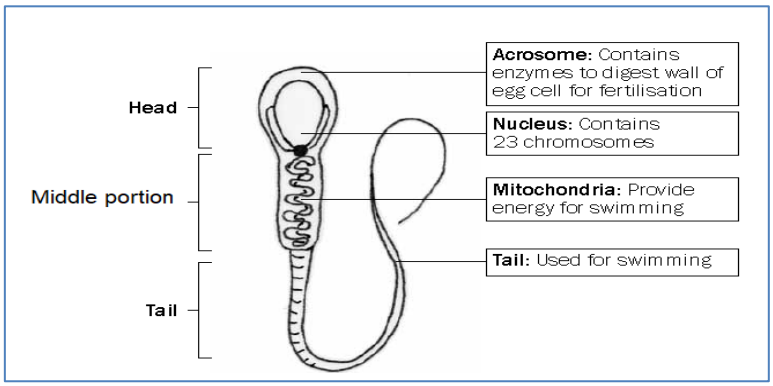


***Figure 4:* <u>Structure of female reproductive system:</u>**

You should be able to *label and give* the functions of the different parts.

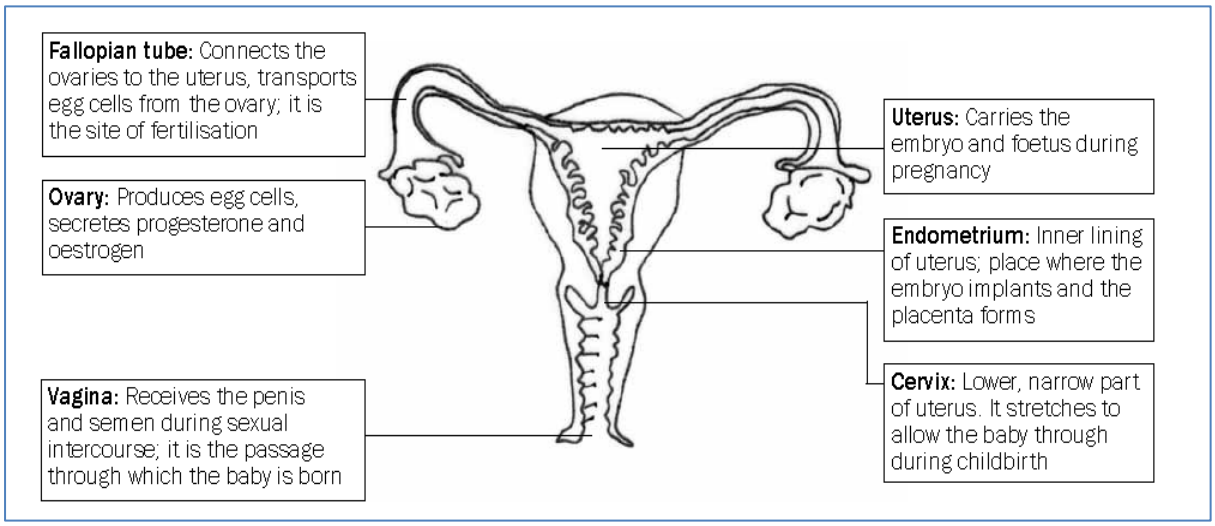
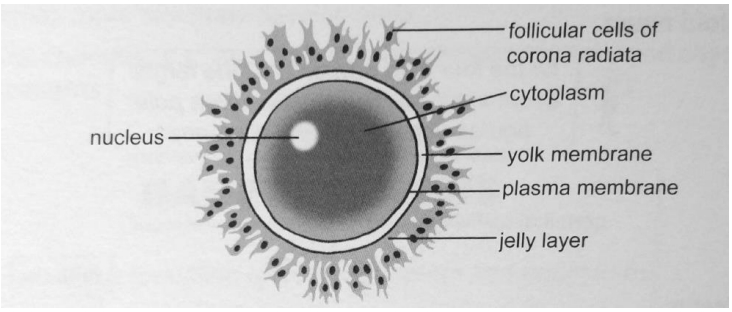


***Figure 5:* <u>Structure of an ovum:</u>**

You should be able to *draw an ovum and label* and *give* the functions of the different parts. Note: The following labels are required according to the National Examination Guideline document: **jelly layer, haploid nucleus, cytoplasm**.



2.2 *Define* puberty?

Puberty is the stage when secondary characteristics develop in males and females.

2.3 *Define* gametogenesis (links with meiosis):

- Gametogenesis is the formation of gametes by meiosis
- Male gametes formed by **spermatogenesis**
- Female gametes formed by **oogenesis**

***Describe* the process of spermatogenesis:**

- Diploid cells in the seminiferous tubules of the testes undergo meiosis under the influence of the hormone, **testosterone,** to form haploid sperm cells

***Describe* the process of oogenesis:**

- Diploid cells in the ovary undergo mitosis under the influence of the hormone, **FSH** to form numerous follicles.
- One cell inside a follicle enlarges and undergoes meiosis.
- Of the four cells that are produced, only one survives to form a mature, haploid **ovum**.

2.4 *Describe* the menstrual cycle (ovarian and uterine cycles) and how it is influenced by different hormones (note the structures and names and functions of different hormones)

- The menstrual cycle is a series of events that occur in the female body to prepare it for possible pregnancy.
- The pituitary gland/hypophysis secretes **FSH** which stimulates the development of a primary follicle into a **Graafian follicle** in the ovary
- The **Graafian follicle** secretes **oestrogen** which stimulates the thickening of the lining of the uterus/endometrium
- Around day 13/14 pituitary gland/hypophysis secretes **LH which** cause **ovulation** to occur
- The remains of the Graafian follicle develop into the **corpus luteum** which secretes the hormone, **progesterone** which continues to stimulate the thickening of the uterus
- High levels of progesterone inhibit the production of FSH so that the ovaries are no longer stimulated to produce another follicle (**negative feedback mechanism**).
- If fertilisation does not occur, the corpus luteum degenerates and stops producing progesterone

- The pituitary gland/hypophysis is no longer inhibited in its production of FSH and a new follicle develops
- The thick endometrium is no longer maintained and it degenerates and is shed together with blood and menstruation takes place
- If fertilisation does occur the corpus luteum continuous to function until the 12th week of pregnancy.

2.5 *Describe* the <u>development of a zygote</u> until implantation occurs:

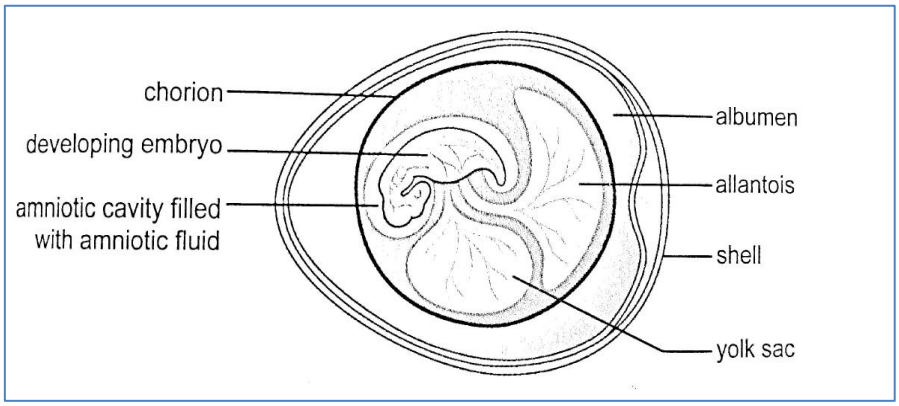
- **Zygote** divides by mitosis to form a ball of cells called the **morula**
- The morula further divides to form a hollow ball of cells called the **blastula.**

3. <u>DIVERSITY OF REPRODUCTIVE STRATEGIES:</u>

You should be able to ***differentiate*** between the different reproductive strategies.

- **External fertilisation -** takes place outside the female's body e.g. in fish and amphibians. Large number of gametes are produced. More energy is used to produce a large number of gametes.
- **Internal fertilisation** – takes place inside the female's body. Fewer gametes are produced. Less energy used to produce a small number of gametes.
- **Ovipary** – The embryo develops in an egg outside the female's body e.g. in fish, some birds and reptiles. Large number of gametes are produced which requires a lot of energy
- **Ovovivipary** – The egg is retained/hatched in the female body and the young are born live. Female produces few eggs, which requires less energy.
- **Vivipary –** Internal fertilization takes place and the fertilized egg develops into an embryo which is directly connected to the mother as it receives nutrients through a placenta e.g. mammals. The female produces few gametes which requires less energy.
- **Amniotic egg** - The type of egg produced by reptiles, birds that has extra-embryonic membranes. After internal fertilization the embryo is enclosed in an egg with a hard shell.

***Figure 6:* <u>Structure of an amniotic egg</u>**



- **Precocial development** - The type of development in some animals e.g. birds where the hatchlings' eyes are open and their bodies are covered with feather. Most of the energy is used for prenatal development.
- **Altricial development** – The type of development in some animals where the young are not fully developed and cannot move around immediately after being born or hatched.
- **Parental care** – a behavioural pattern where parents spend time and energy on the feeding and protection of their offspring.

4. REVISION QUESTIONS

- Answer the questions below.

- The **instructional verbs (in italics)** e.g. name, give, describe, explain etc. and the **mark allocation per question** give an indication of what and how much information you should provide in your answer.

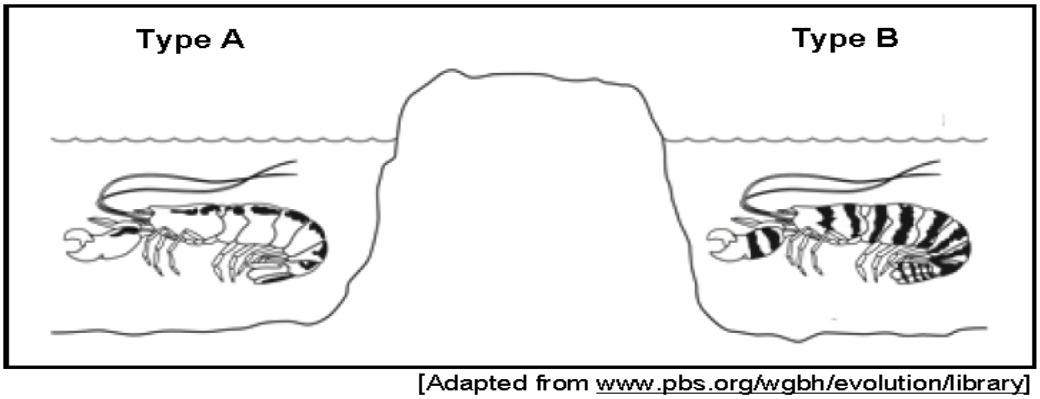
Table 3: **Examples of some of the instructional verbs used in test and examination questions:**

Instructional verb	Meaning
Name	Give the name of something
Differentiate	Use differences to qualify between two or more categories
Tabulate	Draw a table and indicate the answers as direct pairs.
Describe	State in sentences the main points of a process
Explain	Give your answer in a cause-effect or statement and reason sequence
Compare	Give similarities and differences between concepts

- Please note that **HIGHER ORDER questions** are in **BOLD** and marked with a **(*)**

Topic: Evolution:

1. The diagram below represents two types of shrimp. Each type lives in shallow seas on opposite sides of a strip of land.
   In an investigation to determine whether the two types of shrimp were from one species, scientists placed type **A** shrimps and type **B** shrimps together in a tank of seawater.
   Although the shrimps mated with their own types, the two types of shrimp did not mate with each other. The scientists repeated the investigation several times and obtained the same result each time.

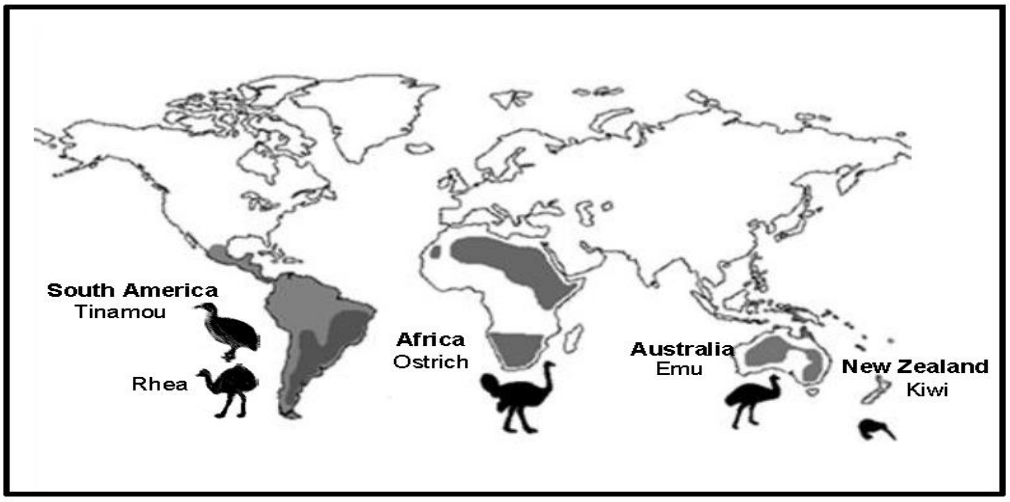


[Adapted from www.pbs.org/wgbh/evolution/library]

(*)1.1 *Give* ONE conclusion the scientists came to after the investigation. (2)
(*)1.2 *Explain* your answer to QUESTION 1.1. (2)
(*)1.3 Why did the scientists repeat the investigation? (1)

2. *Tabulate* FOUR differences between *Lamarckism* and *Darwinism*. (9)

3. Flightless bird species that are currently distributed across different continents are shown in the picture below.
Scientists hypothesise that these species of flightless birds arose from a single common ancestor that was able to fly.



(*)3.1 *Describe* how Lamarck would have explained the evolution of flightless birds. (4)

3.2 *Name* FIVE reproductive isolation mechanisms that keep species separate. (5)

4. Read the extract below.

> The red-bellied black snake (*Pseudechis porphyriacus)* and the green tree snake (*Denderelaphis punctulatus*) are predators that sometimes feed on cane toads (*Bufo marinus*) that contain a toxin that may kill them.
> The snakes consume the toads by swallowing them whole. A decrease in the average jaw size of the snakes has been observed over a period of 70 years. Some scientists believe that this may be an example of punctuated equilibrium. With this change it was also noted that the snakes could no longer swallow the large cane toads. This has resulted in an increase in the survival of the snakes.

4.1 *Define punctuated equilibrium*. (3)

4.2 What characteristic of the toad species protects it from predation? (1)

4.3 *Explain* how the change in jaw size helped the snakes to survive. (3)

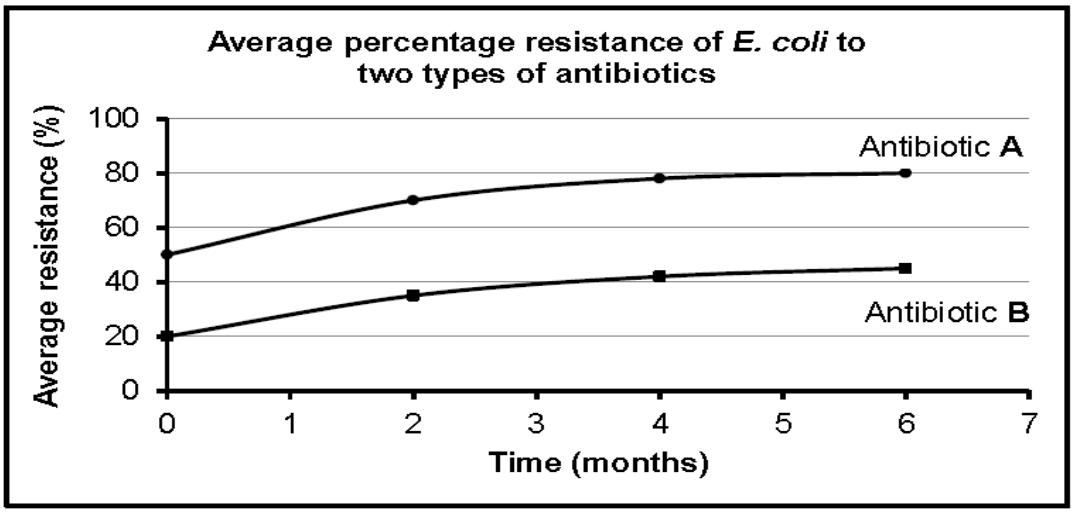
(*)4.4 How would Lamarck have explained the development of a small jaw size in the snakes? (4)

5. The *E. coli* bacterium lives in the intestines of pigs where they reproduce rapidly. Certain strains of *E. coli* cause diarrhoea in young pigs (piglets). Scientists carried out an investigation using 100 piglets to determine the resistance of *E. coli* to two antibiotics, **A** and **B**.

The scientists:

- Injected the piglets with antibiotic **A** and antibiotic **B.**
- Took a sample of *E. coli* from the intestines of each piglet a week later and placed them in separate petri dishes.
- Allowed the bacteria to grow for 24 hours.
- Added antibiotic **A** to one petri dish and antibiotic **B** to the other petri dish.
- Measured the growth of the bacteria in each petri dish after 24 hours.
- Used the growth measurement as an indication of the resistance of the bacteria to each antibiotic.
- Repeated the process over a period of six months.
- Calculated the average percentage resistance to both antibiotics.

The results are shown in the graph below.



(*)5.1 *Identify* the independent variable in this investigation. (1)

(*)5.2 *Identify* TWO factors that should be kept constant during the investigation. (2)

(*)5.3 *State* TWO ways in which the scientists ensured the reliability of the investigation (2)

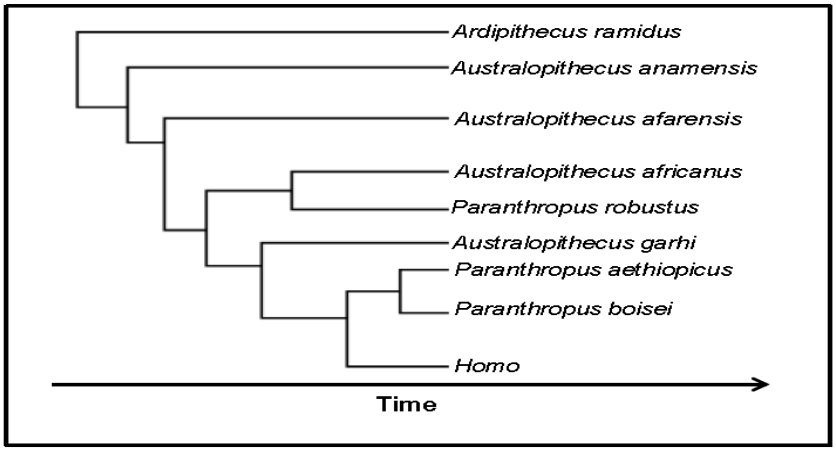
5.4 Which antibiotic will you recommend for controlling *E. coli* in piglets? (1)

5.5 *Support* your answer to QUESTION 5.4 using evidence in the graph. (2)

(*)5.6 *Explain* the results that are shown in the graph for antibiotic A in terms of natural selection. (5)

6. *Describe* how speciation occurs through geographic isolation (6)

7. The diagram below shows possible evolutionary relationships between hominids.



[Source: http://tolweb.org/tree]

7.1 What is this type of diagram called? (1)

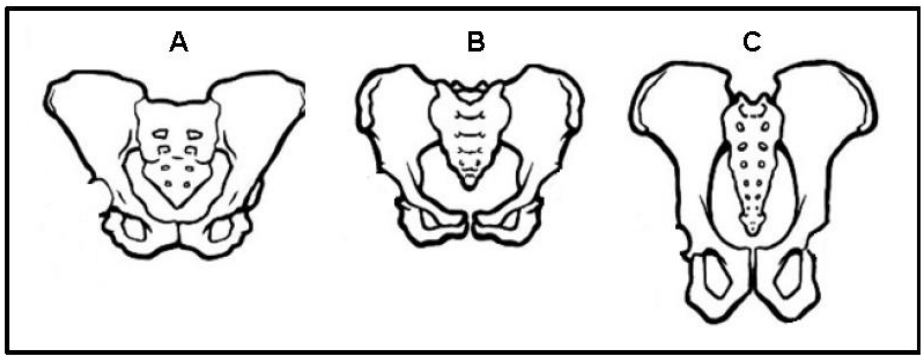
7.2 How many genera are shown in the diagram above? (1)

7.3 According to this diagram, which:
(a) Genus is most recently evolved (1)
(b) Genus is the oldest (1)
(c) Hominid share a common ancestor with *Australopithecus africanus* (1)

7.4 *Give* ONE example of an *Australopithecus africanus* fossil found in South Africa. (1)

7.5 *Name* TWO *Homo* species, besides *Homo sapiens,* that were found in Africa. (2)

8. In a study to establish the mode of locomotion of some species, scientists compared the pelvic structure of their fossils. They established that two of these species had the ability to walk upright permanently. The diagrams (**A**, **B** and **C**) below show the pelvic structure of three species, drawn to scale.



8.1 What term is used to describe organisms that are able to walk upright permanently? (1)

(*)8.2 Which TWO diagrams above represent the pelvis of the organisms in QUESTION 8.1? (2)

(*)8.3 *Explain* your answer to QUESTION 8.2. (2)

8.4 *State* ONE feature of the spine of the organism represented by **C**. (1)

9. *Tabulate* THREE differences between the skulls of humans and African apes. (7)

10. The diagram shows the upper jaw, scull and pelvic girdle of a modern human and an African ape. The diagrams are NOT drawn to scale.

ORGANISM	UPPER JAW	SKULL (BOTTOM VIEW)	PELVIC GIRDLE
A		Foramen magnum 	
B		Foramen magnum 	

10.1 Which organism has a pelvic girdle for bipedalism? (1)

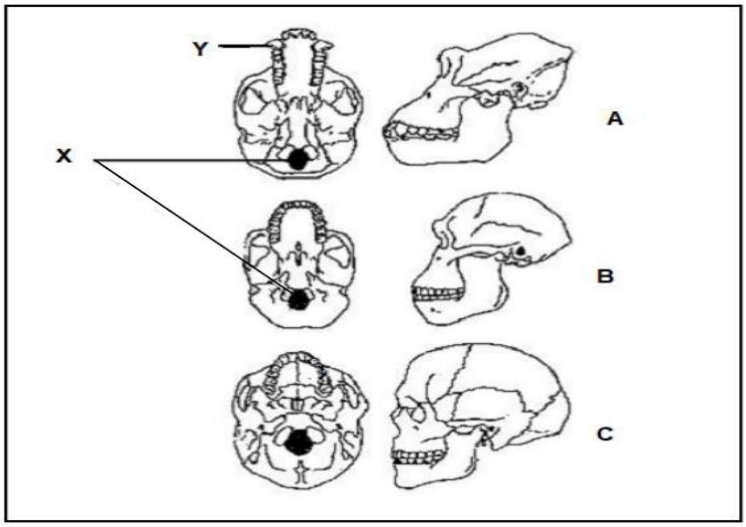
10.2 *Explain* your answer in QUESTION 10.1. (2)

10.3 *Tabulate* THREE visible differences between the upper jaws of organisms **A** and **B**. (7)

(*)10.4*Explain* the significance of bipedalism for hominids. (4)

11. *Give* FOUR characteristics of the upper limbs that humans share with African apes. (4)

12. The diagram below shows the skulls of three organisms.



12.1 *Identify* part **X** and the type of teeth at **Y.** (2)

(*)12.2 *Explain* the significance of the location of structure X in organism C. (2)

12.3 Which of the skulls (**A**, **B** or **C**) belongs to:

(a) An australopithecine (1)

(b) A quadripedal primate (1)

12.4 *Explain* how the change in the skull from **B** to **C** could indicate a change in intelligence. (3)

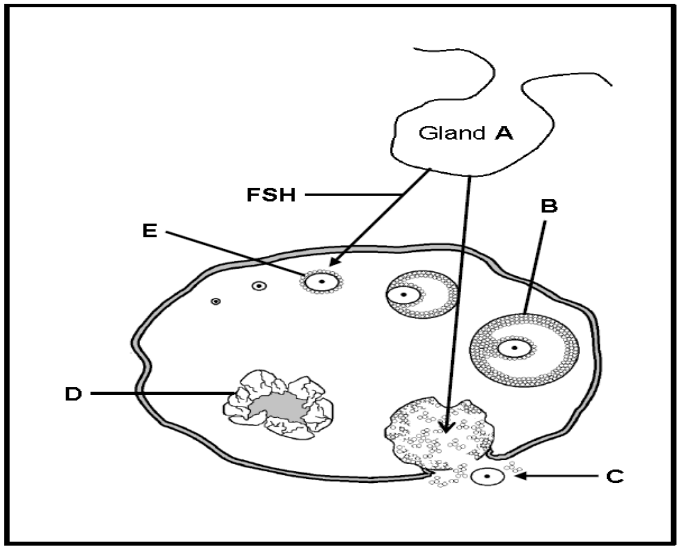
(*)12.5 *Describe* the significance of the shape of each of the following as a trend in human evolution:

(a) Spine (2)
(b) Shape of the pelvis (2)

(*)12.6 *Describe* the significance of *Homo erectus* to the 'Out of Africa' hypothesis. (2)

Topic: Human reproduction:

1. The diagram below represents an endocrine gland **A** and the events that take place in the ovary during the menstrual cycle in humans.



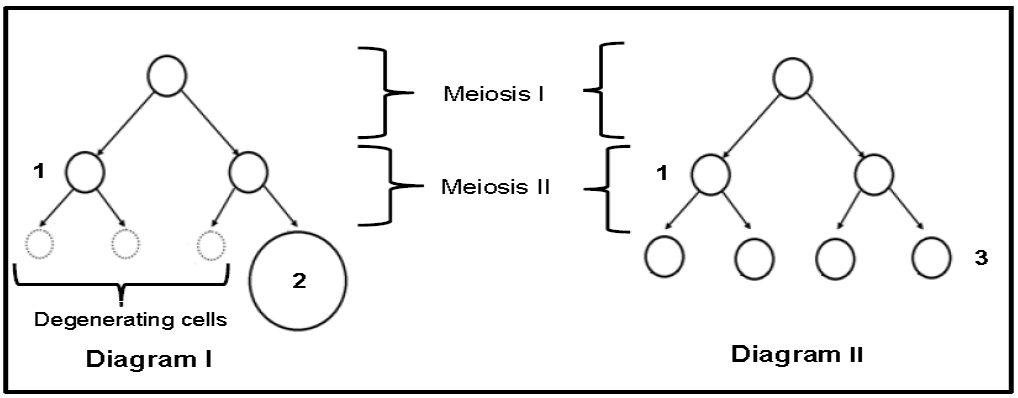
1.1 *Identify:*

(a) Gland A (1)
(b) Structure B (1)
(c) Process C (1)
(d) Structure D (1)

1.2 *State* the effect on the oestrogen levels in the blood if gland **A** stops secreting FSH. (1)

1.3 *State* ONE function of LH. (1)

2. Diagrams **I** and **II** below represent gametogenesis in human males and females (not in any particular sequence). The diagrams are NOT drawn to scale.



2.1 *Identify* the specific type of gametogenesis in Diagram **I**. (1)

(*)2.2 *Explain* your answer to QUESTION 2.1 by referring to a visible difference between Diagram I and Diagram II. (2)

2.3 Where in the human body does the type of gametogenesis shown in Diagram **II** take place? (1)

2.4 *Give* the chromosome number of:
(a) The cells at **1** (1)
(b) Cell **2** (1)

2.5 *Name* TWO processes that take place during Meiosis I that lead to genetic variation in the four cells shown at **3** in Diagram **II**. (2)

(*)2.6 *Explain* the implication for the human population size if the three cells referred to in Diagram I did not degenerate, but remained as gametes. (2)

3. An investigation was carried out to determine the effects of smoking during pregnancy on the baby's birth weight. Babies born weighing 2 499 g or less have a low birth weight.
The table below compares the percentage of babies with a low birth weight born to mothers who smoked with mothers who did not smoke in a certain city in 2009.

BIRTH WEIGHT (GRAMS)	PERCENTAGE OF TOTAL BIRTHS (%) IN 2009	
	MOTHERS WHO SMOKED	MOTHERS WHO DID NOT SMOKE
<1 000	0,7	0,2
1 000–1 499	0,9	0,3
1 500–1 999	2,2	1,1
2 000–2 499	7,1	3,2

[Adapted from www.ainw.gov.au]

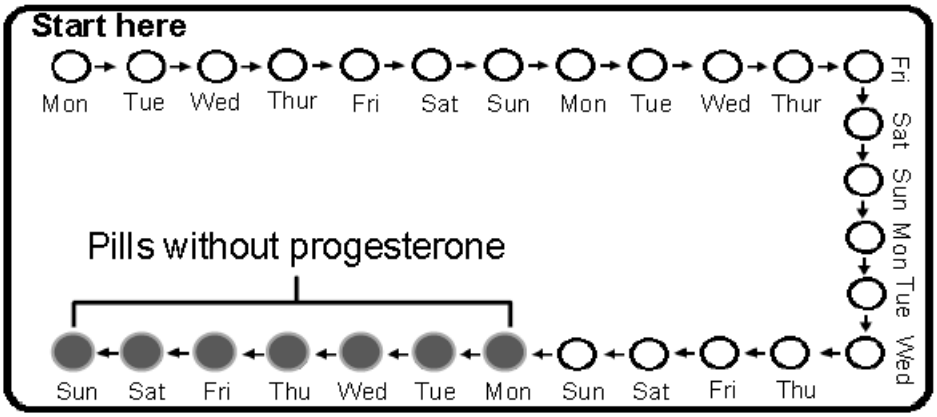
(*)3.1 *Draw* a histogram to represent the percentage of births in each weight group born to mothers who smoked. (6)

3.2 Why were babies that weighed more than 2 500g at birth not included in the investigation? (1)

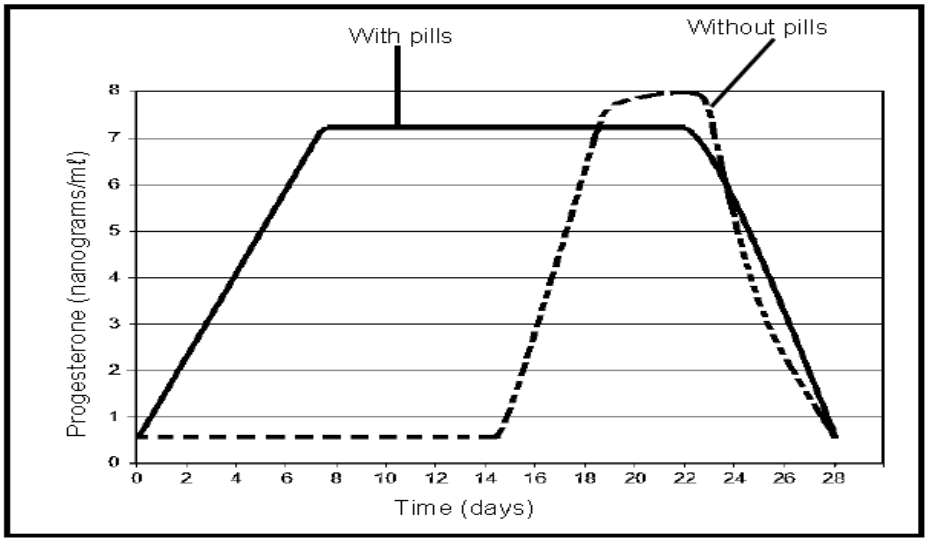
(*)3.3 *State* a general conclusion for the investigation based on the data in the table. (2)

(*)3.4 *Describe* how chemicals from cigarette smoke are able to reach the baby's blood from the mother's blood. (2)

4. Contraceptives are used to prevent pregnancy. Some females use pills that contain progesterone. In one packet there would be 28 pills, of which 21 contain different concentrations of progesterone according to the day in the cycle and the remaining 7 will contain no progesterone. A female has to take one pill daily at the same time in a given sequence, as shown below.



The graph below shows the difference in the progesterone levels during a menstrual cycle of a woman taking contraceptive pills and a woman not taking contraceptive pills.

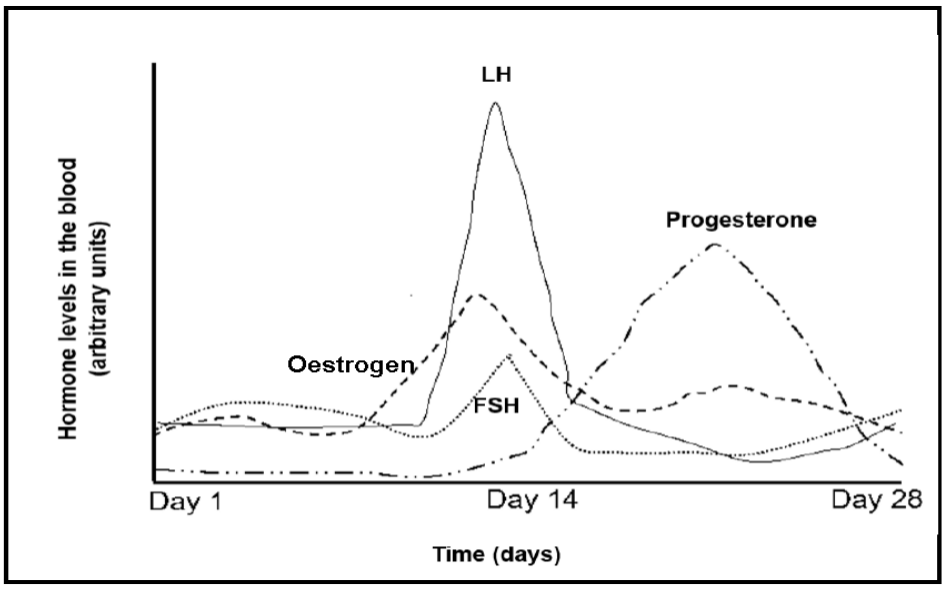


(*)4.1 The oestrogen levels between days 8 and 22 will remain low in the woman who takes contraceptive pills. *Explain* why this is the case. (4)

(*)4.2 Ovulation took place on day 14 in the woman not taking contraceptive pills. *Explain* the evidence in the graph that supports this conclusion. (2)

(*)4.3 *Suggest* ONE reason for including pills with no hormones in the contraceptive pill packet. (1)

5. The graph below shows the changes in the concentration of hormones in the blood of a woman during a menstrual cycle.



(*)5.1 *Explain* why the concentration of FSH in the blood increases after Day 1. (3)

5.2 *State* what happens to oestrogen levels in the blood when the LH level increases. (1)

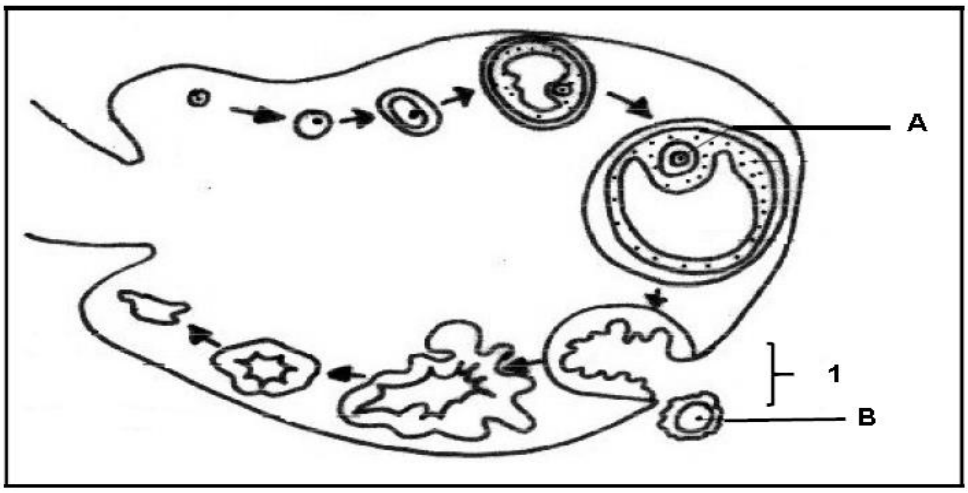
(*)5.3 *Explain* why the oestrogen level decreases after Day 14. (2)

(*)5.4 With reference to hormonal control, describe what causes menstruation to occur between Days 1 – 4. (2)

5.5 *Describe* the process of oogenesis. (5)

6. The human ovarian cycle includes follicle development, ovulation and the formation of the corpus luteum. *Describe* the secretion and functions of the hormones involved in the ovarian cycle and also *describe* the negative feedback mechanism in which progesterone controls the production of ova. (17)

7. The diagram below shows events in the ovary during the menstrual cycle in a 28-day cycle.



7.1 *Identify:*

(a) Structure A (1)
(b) Process 1 (1)

7.2 *Name* the hormone responsible for process **1**. (1)

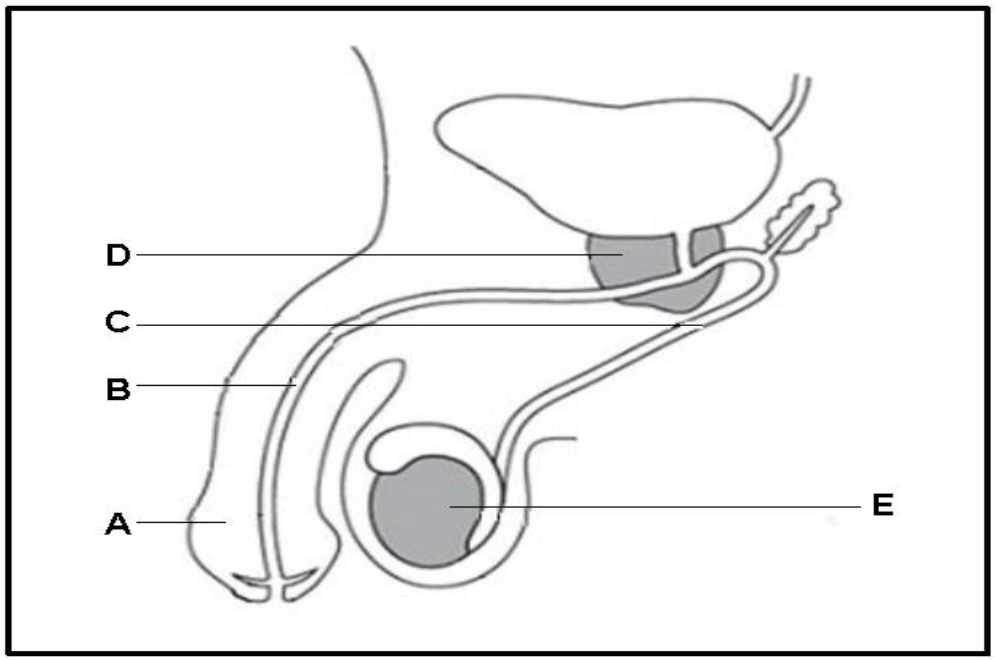
(*)7.3 A woman was given medication with high concentration of progesterone. *Explain* the effect of this medication on the ovarian cycle. (3)

(*)7.4 *Give* an observable reason which suggest that fertilisation did not take place after the process numbered 1. (2)

(*)7.5 *Explain* why a female who has only her ovaries removed will not undergo menstruation. (4)

7.6 *Draw* a labelled diagram of the structure **B**. (3)

8. The diagram below represents a part of the male reproductive system.



8.1 *Identify*

(a) B (1)

(b) D (1)

(c) E (1)

8.2 *Describe* the process of spermatogenesis in part **E**. (4)

(*)8.3 Test results show that a man has a low sperm count. *Explain* why a doctor would advise the man to wear underwear that is not tight. (3)

(*)8.4 During a vasectomy the vas deferens from both testes is cut. *Explain* ONE reason why a man who has had a vasectomy is still capable of ejaculation. (2)

(*)8.5 *Explain* THREE structural adaptations of the sperm for fertilisation. (6)

5. REVISION TEST:

Complete the following questions on biological terms and items and statements.

Biological terms:

Terminology is the key for understanding Life Sciences. You need to understand the biological terms in order to be able to understand the question and to have the necessary vocabulary to answer the questions.

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

	Biological term	Description
1		A diagram representing possible evolutionary relationships between species
2		A type of variation where there is a range of phenotypes for the same characteristic
3		The present-day distribution of living organisms
4		Similar structures in different species that show modification by descent
5		The genus of the fossil 'Little Foot'
6		The first Homo species to use tools
7		A breeding process used for the domestication of plants and animals
8		The opening in the skull through which the spinal cord enters
9		The membrane that, together with the endometrium, forms the placenta
10		The structure in the head of a sperm containing digestive enzymes
12		The hormone that stimulates the production of milk in a mother after the birth of a baby
13		The period of development of the foetus in the uterus
14		Structure in the female reproductive system where fertilisation occurs
15		The stage when secondary characteristics develop in males and females
16		A type of reproduction in humans where the foetus develops inside the uterus

16x 1 (16)

Items and statements:

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 numbers (1 to 12).

	COLUMN I	COLUMN II
1	A type of development in birds in which offspring are poorly developed at birth and are thus unable to feed themselves	A. Precocial development B. Altricial development
2	Forms the placenta	A. Chorionic villi B. Endometrium
3	Unfertilised eggs are released from the female's body	A. Asexual reproduction B. External fertilisation
4	Secretions from this gland contribute to the formation of semen	A. Cowper's gland B. Prostate gland
5	The blood vessel that transports oxygenated blood from the placenta to the foetus	A. Umbilical artery B. Umbilical vein
6	Nutrition provided by the egg	A. Ovipary B. Ovovivipary
7	Jaws of African apes	A. No spaces between teeth B. Large canines
8	Law of inheritance of acquired characteristics	A. Darwinism B. Modification by descent
9	Humans select the characteristics when breeding organisms	A. Artificial selection B. Natural selection
10	A testable statement that may be accepted or rejected	A. Theory B. Law
11	Similarity between humans and African apes	A. Opposable thumb B. A short and wide pelvis
12	Discovered the fossil called 'Little Foot'	A. Raymond Dart B. Ron Clarke

12 x 2 (24)

1. …… **7.** ……
2. …… **8.** ……
3. …… **9.** ……
4. …… **10.** ……
5. …… **11.** ……
6. …… **12.** ……..

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