basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE/ NATIONAL SENIOR CERTIFICATE

GRADE 12

LIFE SCIENCES P1

NOVEMBER 2020(2)

MARKS: 150

TIME: 2½ hours

This question paper consists of 16 pages.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. Answer ALL the questions.
2. Write ALL the answers in the ANSWER BOOK.
3. Start the answers to EACH question at the top of a NEW page.
4. Number the answers correctly according to the numbering system used in this question paper.
5. Present your answers according to the instructions of each question.
6. Do ALL drawings in pencil and label them in blue or black ink.
7. Draw diagrams, tables or flow charts only when asked to do so.
8. The diagrams in this question paper are NOT necessarily drawn to scale.
9. Do NOT use graph paper.
10. You must use a non-programmable calculator, protractor and a compass, where necessary.
11. Write neatly and legibly.

SECTION A

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A to D) next to the question numbers (1.1.1 to 1.1.10) in the ANSWER BOOK, e.g. 1.1.11 D.

1.1.1 Which part controls the amount of light entering the eye?

A Cornea
B Iris
C Choroid
D Lens

1.1.2 Which ONE of the following refers to an aquifer?

A An increase in the temperature of water bodies as a result of water from industries
B Planting of the same crop on the same area repeatedly
C An underground permeable rock saturated with water
D The release of water with chemicals from mines

1.1.3 The structure in the amniotic egg that removes waste products:

A Yolk sac
B Chorion
C Amnion
D Allantois

1.1.4 Which ONE of the following is CORRECT with regard to astigmatism?

A Light cannot pass through the cornea
B Light cannot pass through the lens
C Refraction of light rays by the cornea is uneven
D The lens cannot become more rounded

1.1.5 Which structures secrete progesterone during pregnancy?

A Adrenal gland and corpus luteum
B Corpus luteum and placenta
C Thyroid gland and Graafian follicle
D Pituitary gland and Graafian follicle

1.1.6 Which ONE of the following shows the correct sequence of an impulse from the receptor in a simple reflex arc?

A Sensory neuron through the dorsal root → motor neuron through the ventral root → effector
B Motor neuron through the dorsal root → sensory neuron through the ventral root → effector
C Sensory neuron through the dorsal root → effector → motor neuron through the ventral root
D Effector → interneuron through the dorsal root → motor neuron through the ventral root

1.1.7 Which ONE of the following would be a disadvantage when a biological method is used to control alien plant invasion?

A Able to control alien plants without the use of harmful chemicals
B Some part of the alien plant may be left to regrow when mechanically removed
C The species introduced might be alien in the area and outcompete the indigenous species
D Chemicals might affect the indigenous plants in the area

1.1.8 Which ONE of the following is a consequence of the destruction of wetlands?

A Increased biodiversity
B Decreased water availability
C Decreased global warming
D Increased water quality

1.1.9 Nocturnal animals have the ability to see clearly in the dark. They have …

A bigger eyes.
B more rods in the retina.
C more cones in the retina.
D no blind spot.

1.1.10 Which ONE of the following is CORRECT regarding the homeostatic control of glucose in the human body?

	GLAND	HORMONE SECRETED	EFFECT ON BLOOD GLUCOSE LEVEL
A	Pancreas	Insulin	Increase
B	Pituitary	Glucagon	Increase
C	Pancreas	Insulin	Decrease
D	Pancreas	Glucagon	Decrease

(10 x 2) **(20)**

1.2 Give the correct **biological term** for each of the following descriptions. Write only the term next to the question numbers (1.2.1 to 1.2.10) in the ANSWER BOOK.

1.2.1 The layer in the atmosphere that protects living organisms from the ultraviolet rays of the sun

1.2.2 The illegal hunting and killing of animals

1.2.3 A condition of the cell where there is only one set of chromosomes

1.2.4 The response of a part of a plant to a light stimulus

1.2.5 A hormone that stimulates ovulation in humans

1.2.6 The part of the brain that connects the left and right hemispheres

1.2.7 The blood vessel that transports deoxygenated blood from the foetus towards the placenta

1.2.8 A small device that is inserted in the ear to drain fluids caused by a middle-ear infection

1.2.9 The branch of the autonomic nervous system that restores an increased heart rate back to normal

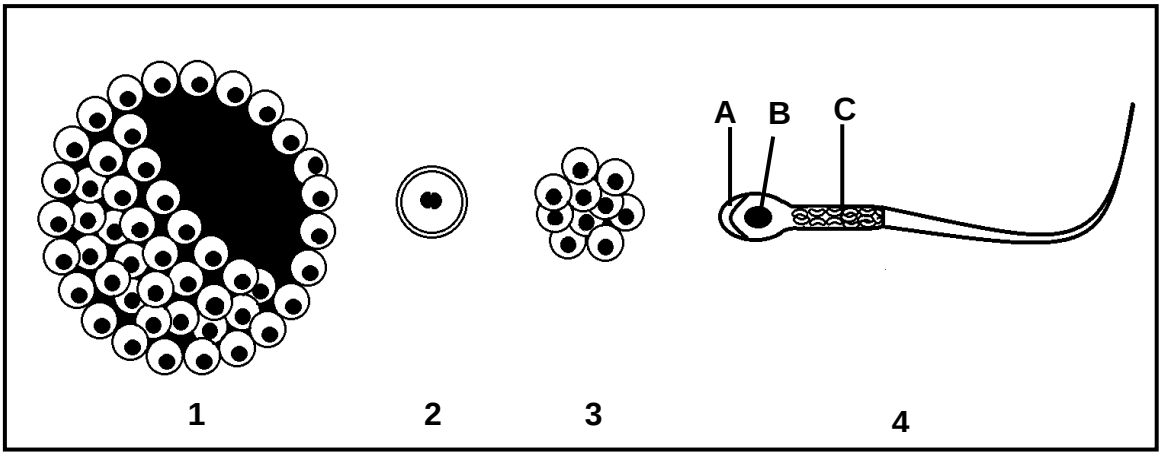
1.2.10 A structure in the eye that absorbs light to prevent internal reflection (10 x 1) **(10)**

1.3 Indicate whether each of the descriptions in COLUMN I apply 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 (1.3.1 to 1.3.3) in the ANSWER BOOK.

	COLUMN I	COLUMN II
1.3.1	The functional connection between two consecutive neurons	A: Receptor B: Synapse
1.3.2	The young develops and is nourished in an amniotic egg that is retained in the mother's body	A: Ovipary B: Vivipary
1.3.3	A reproductive strategy in vertebrates where internal fertilisation occurs	A: Altricial development B: Precocial development

(3 x 2) **(6)**

1.4 The diagrams below show structures formed during human reproduction.



1.4.1 Identify part **A**. (1)

1.4.2 Name the organelle found in large numbers in part **C**. (1)

1.4.3 Give the NUMBER (**1**, **2**, **3** or **4**) only of the diagram that represents the following:

(a) Morula (1)

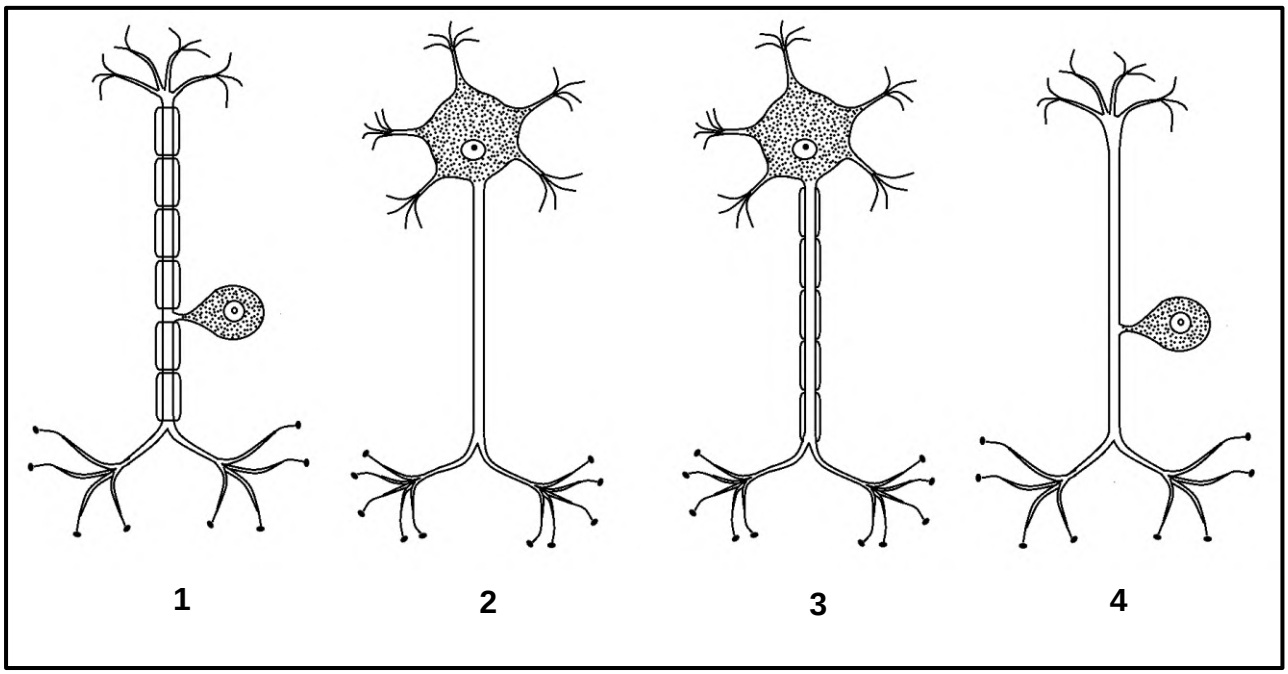
(b) Structure that will implant in the uterus (1)

(c) Blastula/Blastocyst (1)

1.4.4 Give the LETTER and NAME of the part that will enter the ovum during fertilisation. (2)

1.4.5 Name the type of cell division that occurred to produce the structure in diagram **3**. (1)
(8)

1.5 The diagrams below show different neurons.



Give only the NUMBERS (**1**, **2**, **3** or **4**) of TWO neurons that:

1.5.1 Transport impulses from the receptor to the central nervous system (2)

1.5.2 Will have a faster transmission of impulses (2)

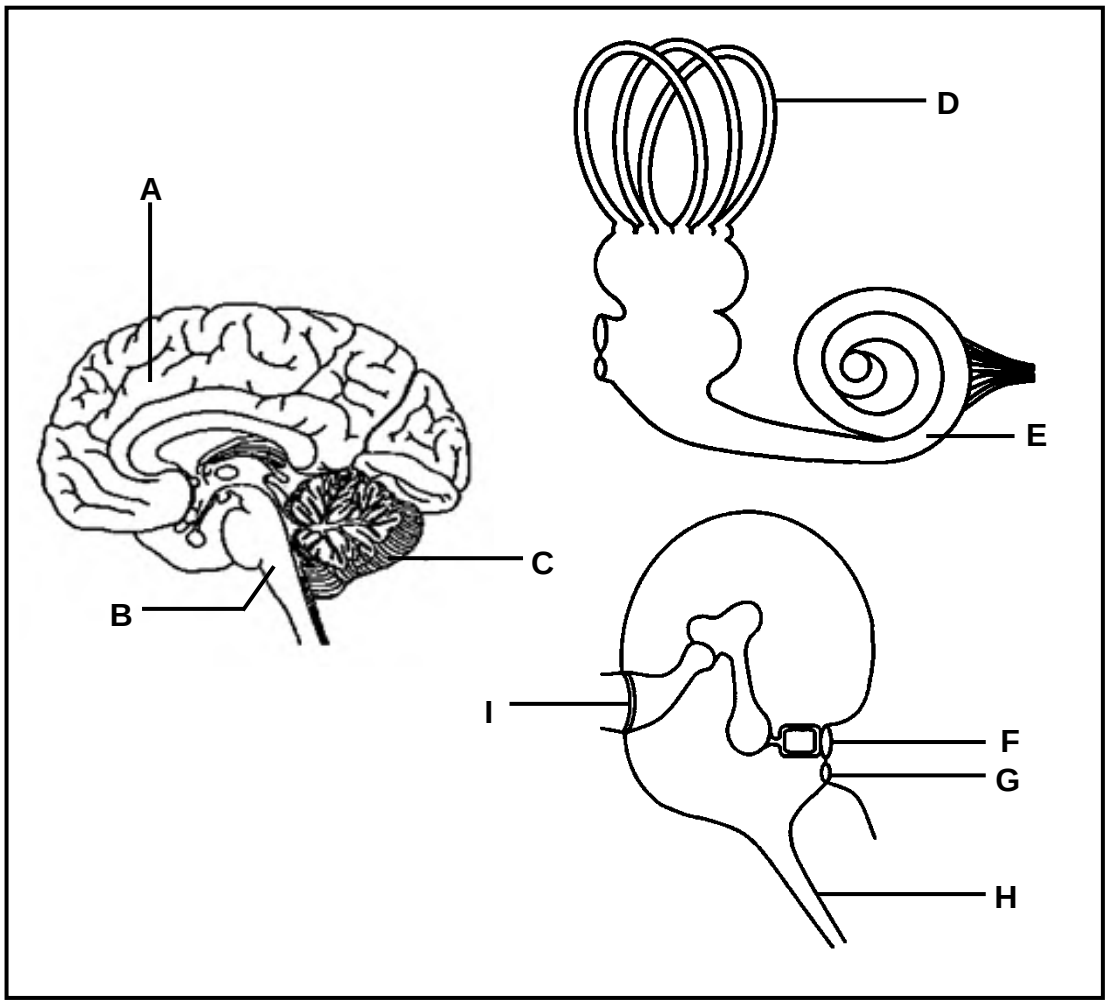
1.5.3 Are damaged if a person can feel the stimulus but is unable to react (2)
(6)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 The diagrams below show different parts of the brain and the ear.



2.1.1 Identify part:

(a) **A** (1)

(b) **B** (1)

(c) **H** (1)

2.1.2 Give the LETTER and NAME of the part of the ear that absorbs excess pressure waves from the inner ear. (2)

2.1.3 Name the receptors found at part **E**. (1)

2.1.4 Explain why damage to part **B** can lead to instant death. (2)

2.1.5 Describe how part **C** responds to impulses received from part **D**. (3)

2.1.6 In older people, part **F** of the ear may harden.

Explain how this condition may lead to hearing loss. (4)
(15)

2.2 Describe the accommodation of the eye for distant vision. **(5)**

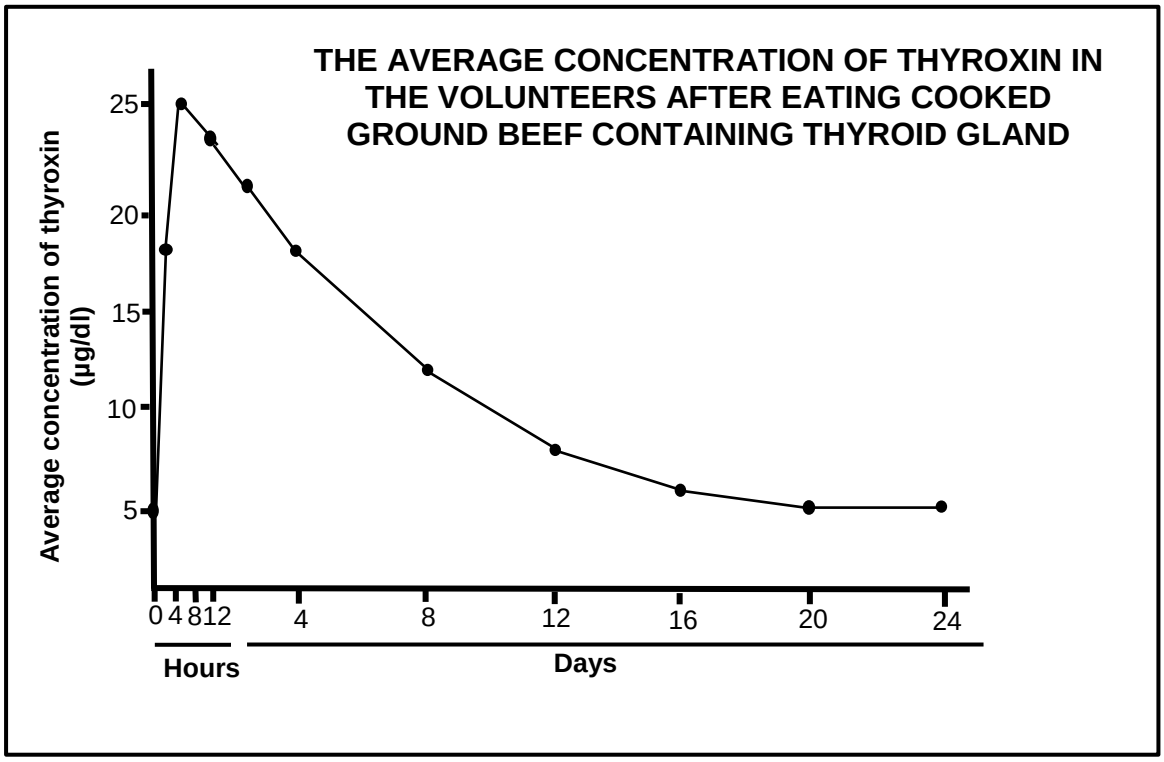
2.3 Read the extract below.

AN OUTBREAK OF THYROTOXICOSIS

Thyrotoxicosis is a medical condition caused by high levels of thyroxin in the blood. There was a sudden increase in the number of reported cases of this condition in one city. They suspected that this was due to people eating ground beef (minced meat) from a local butcher. The butcher added the thyroid glands of cattle when he produced the ground beef. Some people who ate this ground beef showed symptoms of increased heart rate, excessive sweating and weight loss.

Doctors conducted an investigation to determine if the ground beef caused the thyrotoxicosis. The normal thyroxin levels of 5 volunteers were measured. They were then given cooked ground beef from the butchery to eat. Their thyroxin concentration was measured every **4 hours on day 1** and then **once a day for the next 23 days**. The average thyroxin levels was calculated and recorded.

The results are shown in the graph below.



2.3.1 Give the average normal thyroxin concentration (µg/dl) in the blood of the volunteers. (1)

2.3.2 Calculate the percentage increase of the average thyroxin concentration in the first 8 hours after eating the ground beef. Show ALL working. (3)

2.3.3 Explain why thyrotoxicosis causes weight loss. (3)

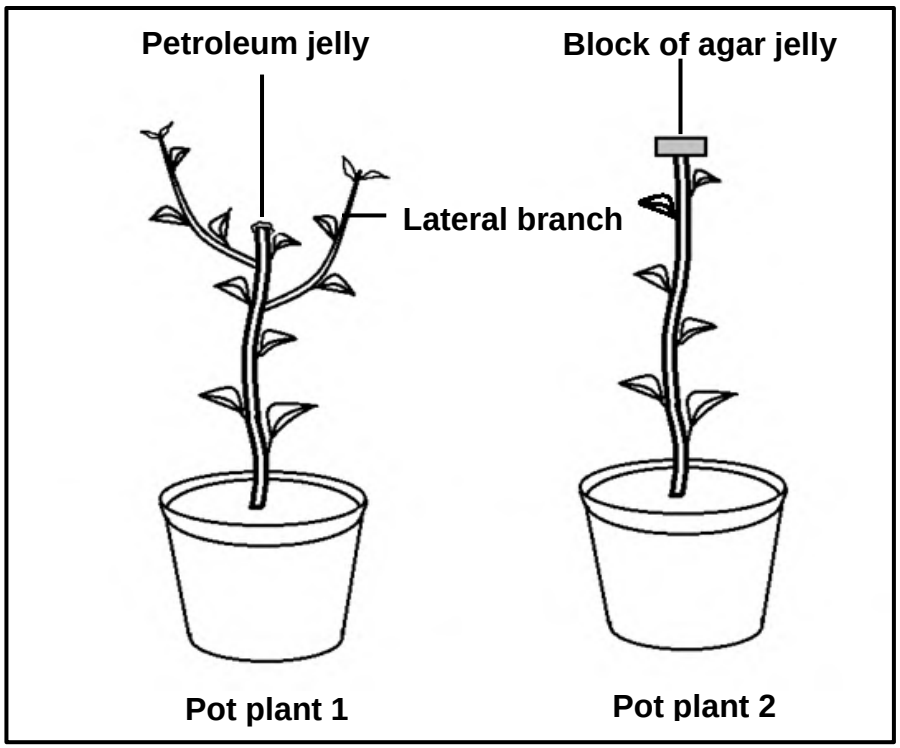
2.3.4 Explain the expected concentration of TSH in the blood 8 hours after eating the ground beef. (4)
(11)

2.4 An investigation was done to determine the effect of a plant hormone on plant growth:

The procedure was as follows:

- Two pot plants (**1** and **2**) of the same species and age were used.
- The apical buds of both plants were cut at the same length along the stem.
- The cut surface of plant **1** was sealed with **petroleum jelly**.
- The cut apical bud of pot plant **2** was placed on a **block of agar jelly** for 2 hours.
- The block of agar jelly was then placed on the cut surface of plant **2**.
- The plants were exposed to the same environmental conditions for 2 weeks.
- The growth of both plants was observed at the end of this period.

The diagrams below show the **results** obtained.



2.4.1 State why the apical bud was placed on a block of agar jelly for 2 hours. (2)

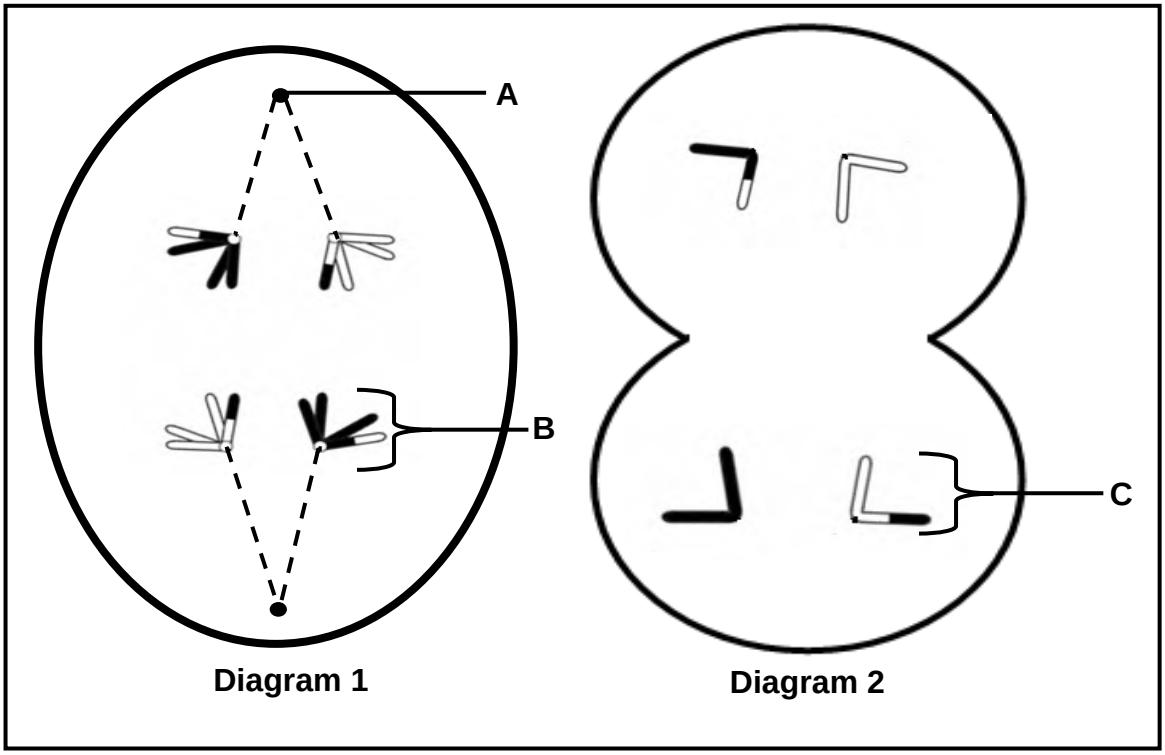
2.4.2 Describe the results obtained for plant **1**. (2)

2.4.3 Explain how fruit farmers can use the knowledge from the results in QUESTION 2.4.2 to their benefit. (2)

2.4.4 Explain why the stem in pot plant **2** grew upwards. (3)
(9)
[40]

QUESTION 3

3.1 The diagrams below represent two phases of meiosis.



3.1.1 Identify part **A**. (1)

3.1.2 Identify the phase represented by diagram **1**. (1)

3.1.3 Describe the events that took place in the phase before the one represented in diagram **2**. (2)

3.1.4 Name the process that causes the chromosomes to have a combination of genes as shown in the diagrams. (1)

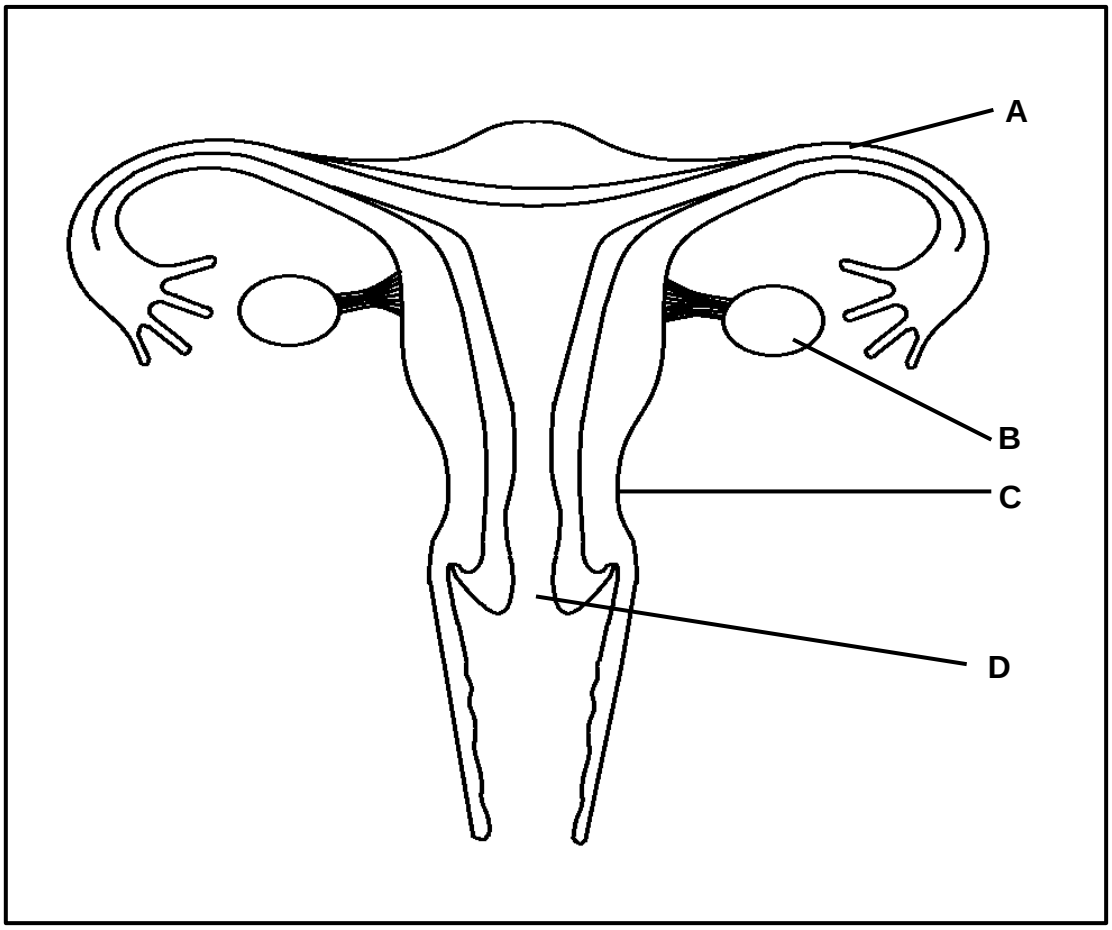
3.1.5 Give ONE reason why the process named in QUESTION 3.1.4 is important. (1)

3.1.6 If this was a human cell, how many chromosomes would be present in the cell during the phase represented in diagram **1**? (1)

3.1.7 Structure **B** and structure **C** are both chromosomes.

Explain why they are structurally different. (3)
(10)

3.2 The structure below represents a part of the female reproductive system.



3.2.1 Identify part **D**. (1)

3.2.2 State ONE function of part **A**. (1)

3.2.3 Describe the process of oogenesis as it occurs in part **B**. (4)

3.2.4 State ONE way in which structure **C** is suited for its function during pregnancy (1)

3.2.5 A person undergoes a surgical operation to remove part **B** on both sides.

Explain why this person will not menstruate. (3)
(10)

3.3 Male hormone contraceptive (birth control) pills have been in development for over 50 years. The pills contain a substance called TU, which inhibits the secretion of testosterone. There is, however, no product available on the market yet, mainly due to many side effects associated with the product.

An investigation was done to determine how TU affects male fertility.

The procedure was as follows:

- 308 healthy, male volunteers were selected.
- A sperm count for each volunteer was done initially.
- Each volunteer was given 500 mg of TU monthly over a period of 12 months.
- During the period of the investigation, the volunteers were asked to wear loose-fitting trousers and underwear made of the same light fabric.
- A sperm count was done weekly over a period of 24 months.
- The average sperm count was calculated per volunteer.

NOTE: Sperm count refers to the total number of healthy sperm per ml of semen and is an indication of male fertility.

3.3.1 Identify the dependent variable in the investigation. (1)

3.3.2 State how the dependent variable in QUESTION 3.3.1 was measured. (1)

3.3.3 Name TWO other factors that should be considered when selecting volunteers. (2)

3.3.4 Explain how TU reduces fertility. (2)

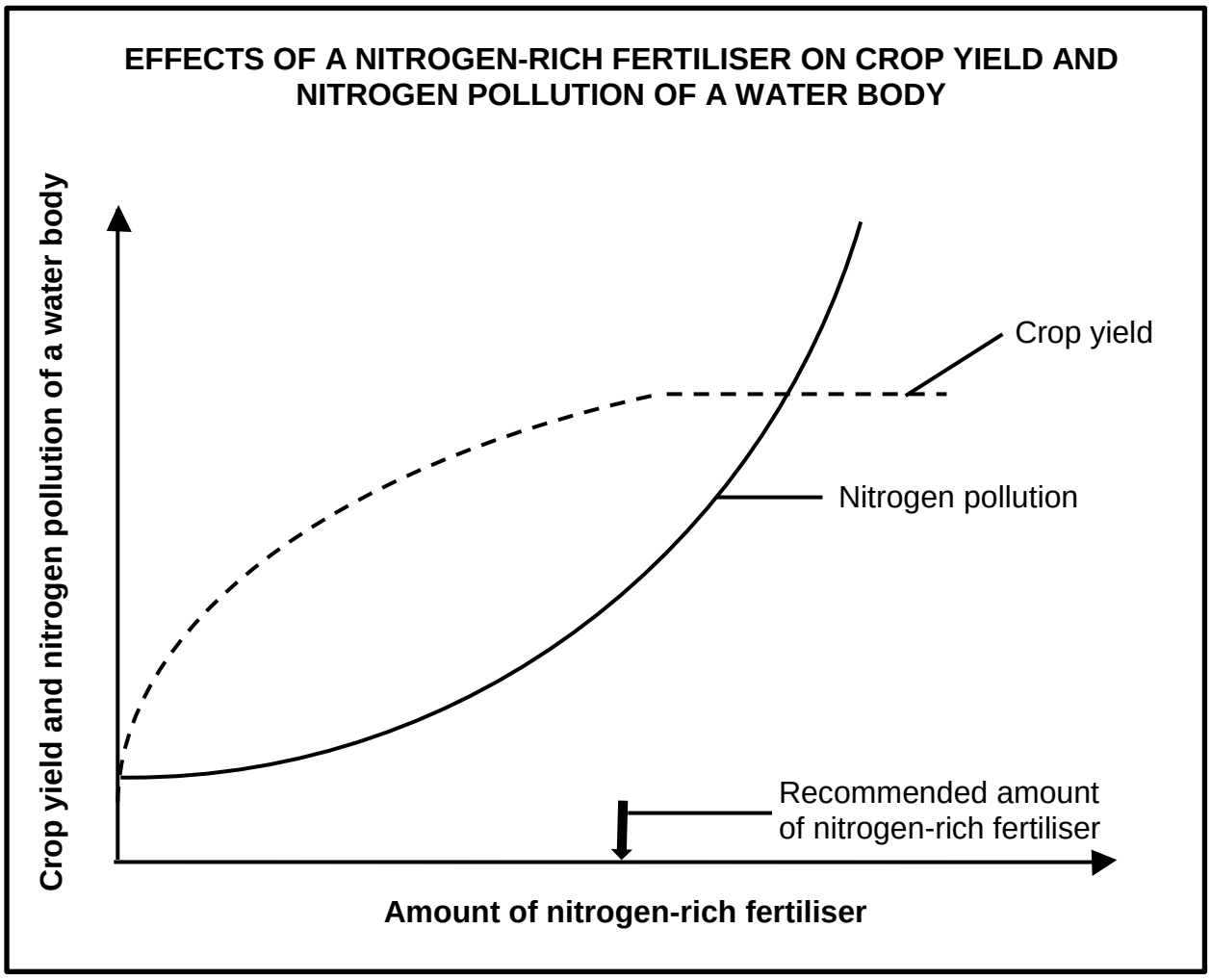
3.3.5 Explain why wearing tight-fitting trousers will decrease male fertility. (2)

3.3.6 Suggest ONE reason for doing the sperm count for an additional 12 months after stopping the TU treatment. (1)

3.3.7 The contraceptive options that are currently available for men are limited to condoms and vasectomy. Vasectomy involves the cutting and tying of both the vas deferens.

Explain how a vasectomy prevents pregnancy. (2)
(11)

3.4 The graph below shows the influence of a nitrogen-rich fertiliser on crop yield and nitrogen pollution of a nearby water body.



3.4.1 Name the process whereby excess nutrients accumulate in a water body. (1)

3.4.2 Explain why it will not economically benefit the farmer to use more than the recommended amount of fertiliser. (3)

3.4.3 Suggest ONE reason why farmers are advised to apply fertilisers to the soil during the dry season of the year. (1)

3.4.4 Explain the effect that an increase in nitrogen pollution will have on the number of bacteria in the water. (4)
(9)
[40]

TOTAL SECTION B: 80

SECTION C

QUESTION 4

Describe how the human body maintains the temperature and carbon dioxide concentration in the blood when they rise above normal limits.

Also, describe the importance of carbon dioxide in regulating atmospheric temperature, and why increasing levels of carbon dioxide leads to global warming.

Content: (17)
Synthesis: (3)
[20]

c

NOTE: NO marks will be awarded for answers in the form of flow charts, tables or diagrams.

TOTAL SECTION C: 20
GRAND TOTAL: 150

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GRADE 12

LIFE SCIENCES P1

NOVEMBER 2020(2)

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 10 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
   Stop marking when maximum marks is reached and put a wavy line and 'max' in the right-hand margin.

2. **If, for example, three reasons are required and five are given**
   Mark the first three irrespective of whether all or some are correct/incorrect.

3. **If whole process is given when only a part of it is required**
   Read all and credit the relevant part.

4. **If comparisons are asked for, but descriptions are given**
   Accept if the differences/similarities are clear.

5. **If tabulation is required, but paragraphs are given**
   Candidates will lose marks for not tabulating.

6. **If diagrams are given with annotations when descriptions are required**
   Candidates will lose marks.

7. **If flow charts are given instead of descriptions**
   Candidates will lose marks.

8. **If sequence is muddled and links do not make sense**
   Where sequence and links are correct, credit. Where sequence and links are incorrect, do not credit. If sequence and links become correct again, resume credit.

9. **Non-recognised abbreviations**
   Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation, but credit the rest of the answer if correct.

10. **Wrong numbering**
    If answer fits into the correct sequence of questions, but the wrong number is given, it is acceptable.

11. **If language used changes the intended meaning**
    Do not accept.

12. **Spelling errors**
    If recognisable, accept the answer, provided it does not mean something else in Life Sciences or if it is out of context.

13. **If common names are given in terminology**
    Accept, provided it was accepted at the national memo discussion meeting.

14. **If only the letter is asked for, but only the name is given (and vice versa)**
    Do not credit.

15. **If units are not given in measurements**
Candidates will lose marks. Marking guidelines will allocate marks for units separately.

16. **Be sensitive to the sense of an answer, which may be stated in a different way.**

17. **Caption**
All illustrations (diagrams, graphs, tables, etc.) must have a caption.

18. **Code-switching of official languages (terms and concepts)**
A single word or two that appear(s) in any official language other than the learner's assessment language used to the greatest extent in his/her answers should be credited, if it is correct. A marker that is proficient in the relevant official language should be consulted. This is applicable to all official languages.

19. **Changes to the marking guidelines**
No changes must be made to the marking guidelines. The provincial internal moderator must be consulted, who in turn will consult with the national internal moderator (and the Umalusi moderators where necessary).

20. **Official marking guidelines**
Only marking guidelines bearing the signatures of the national internal moderator and the Umalusi moderators and distributed by the National Department of Basic Education via the provinces must be used.

SECTION A

QUESTION 1

1.1	1.1.1	B✓✓		
	1.1.2	C✓✓		
	1.1.3	D✓✓		
	1.1.4	C✓✓		
	1.1.5	B✓✓		
	1.1.6	A✓✓		
	1.1.7	C✓✓		
	1.1.8	B✓✓		
	1.1.9	B✓✓		
	1.1.10	C✓✓	(10 x 2)	**(20)**
1.2	1.2.1	Ozone✓/stratosphere		
	1.2.2	Poaching✓		
	1.2.3	Haploid✓		
	1.2.4	Phototropism✓		
	1.2.5	Luteinising✓ hormone/LH		
	1.2.6	Corpus callosum✓		
	1.2.7	Umbilical artery✓		
	1.2.8	Grommet✓		
	1.2.9	Parasympathetic✓nervous system		
	1.2.10	Choroid✓	(10 x 1)	**(10)**
1.3	1.3.1	B only✓✓		
	1.3.2	None✓✓		
	1.3.3	Both A and B✓✓	(3 x 2)	**(6)**
1.4	1.4.1	Acrosome✓		(1)
	1.4.2	Mitochondria✓		(1)
	1.4.3	(a) 3✓		(1)
		(b) 1✓		(1)
		(c) 1✓		(1)
	1.4.4	B✓- Nucleus✓		(2)
	1.4.5	Mitosis✓		(1) **(8)**
1.5	1.5.1	1✓ and 4✓ **(Mark first TWO only)**		(2)
	1.5.2	1✓ and 3✓ **(Mark first TWO only)**		(2)
	1.5.3	2✓ and 3✓ **(Mark first TWO only)**		(2) **(6)**

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 (a) Cerebrum ✓ (1)

(b) Medulla oblongata ✓ (1)

(c) Eustachian tube✓ (1)

2.1.2 G✓ Round window✓ (2)

2.1.3 Hair cells✓/Organ of Corti (1)

2.1.4
- Part B controls vital processes✓/heartbeat/breathing
- These processes will stop✓ leading to death (2)

2.1.5
- The impulses will be interpreted✓
- and sent to the skeletal muscles✓
- to maintain balance✓ (3)

2.1.6
- The oval window/Part F will not vibrate✓ freely
- Fewer/no vibrations will be carried to the cochlea✓/inner ear
- Fewer/no pressure waves will form✓ in the cochlea
- There will be less/no stimulation of the organ of Corti✓/hair cells
- Fewer/no impulses will be transmitted to the cerebrum✓ leading to hearing loss

Any (4)
(15)

2.2 For distant vision:
- The ciliary muscle is relaxed✓
- The ciliary body/choroid layer moves backward✓/away from the lens
- The suspensory ligaments are tight✓/taut
- Tension on the lens is increased✓
- The lens is less convex✓/flatter
- Light rays are refracted less✓
- so that a clear image falls on the retina✓/yellow spot

Any **(5)**

2.3 2.3.1 5✓µg/dl (1)

2.3.2 $\left[\frac{(25 - 5)}{5}\right]$ ✓ x 100 ✓
= 400✓%

OR

$\left[\frac{(24 - 5)}{5}\right]$ ✓ x 100 ✓
= 380✓%

Accept a range between:
- 24 and 25 for the first value and
- 380% and 400% for the answer (3)

	2.3.3	-	Thyrotoxicosis increases the metabolic rate✓/rate of cellular respiration - More glucose is used✓ - less glucose is stored✓ - fat is broken down✓ causing weight loss	Any	(3)
	2.3.4	-	The high levels of thyroxin✓ in the blood - causes the pituitary gland✓/hypophysis - to secrete less TSH✓ into blood - causing the level of TSH to decrease✓		(4) **(11)**
2.4	2.4.1	-	So that the plant hormone✓/ auxins from the apical tip - could diffuse into the block of agar jelly✓		(2)
	2.4.2	-	The stem stopped growing upwards✓ - Lateral branches developed✓		(2)
	2.4.3	-	(Lateral) branches develop✓ - that can bear more fruit✓/increased yield **OR** - Shorter trees✓ /development of lateral branches - makes harvesting of fruit easier✓	Any (1 x 2)	(2)
	2.4.4	-	Auxins✓in the block of agar jelly - move downwards ✓into the stem - causing (cell) elongation✓/growth resulting in upward growth of the stem		(3) **(9)** **[40]**

QUESTION 3

3.1	3.1.1	Centriole✓/centrosome		(1)
	3.1.2	Anaphase I✓		(1)
	3.1.3	- The spindle fibres contract✓ - The centromeres split✓ - Each chromatid is pulled to the opposite poles✓	Any	(2)
	3.1.4	Crossing over✓		(1)
	3.1.5	It leads to (genetic) variation✓ **(Mark first ONE only)**		(1)
	3.1.6	46✓/23 pairs		(1)
	3.1.7	- Structure B consists of two DNA molecules✓/contains a double thread/is made up of two chromatids - because of DNA replication✓ - Structure C consists of one DNA molecule✓/ contains a single thread/chromatid - because it is unreplicated✓/as a result of the splitting of the chromosome during anaphase 2	Any	(3) **(10)**
3.2	3.2.1	Cervix✓		(1)
	3.2.2	- The site of fertilisation ✓ - The site of zygote division✓ - The transfer of the ovum/embryo to the uterus✓ **(Mark first ONE only)**	Any	(1)
	3.2.3	- Diploid cells in the ovary undergo mitosis✓ - to form numerous follicles✓ - Under the influence of FSH✓ - one cell undergoes meiosis✓ - to form a (haploid) ovum✓	Any	(4)
	3.2.4	- It is a hollow organ✓ - It has a muscular wall✓ - It has a blood-rich lining✓/endometrium **(Mark first ONE only)**	Any	(1)
	3.2.5	- No follicle will develop✓ - No oestrogen produced✓ - and no progesterone produced✓ - Therefore, the endometrium will not develop✓***** to be shed during menstruation	**Compulsory mark✓*1** + Any 2	(3) **(10)**

3.3	3.3.1	Male fertility✓		(1)
	3.3.2	Measuring the sperm count✓		(1)
	3.3.3	- Age✓ - Diet✓ - Exercise✓ - Activity level✓ - Lifestyle✓ - Occupation✓ etc (Accept factors that are NOT related to health; race) **(Mark first TWO only)**	Any	(2)
	3.3.4	- TU inhibits the secretion of testosterone✓ - spermatogenesis cannot take place✓/no sperm will be produced		(2)
	3.3.5	- The higher temperature/pressure on the testes✓ due to the tight underwear - could decrease the sperm count✓/sperm production/lead to the production of abnormal sperm		(2)
	3.3.6	- To determine if TU is still effective after 12 months✓ - To see if the sperm count returns to normal✓ when the treatment stops **(Mark first ONE only)**	Any	(1)
	3.3.7	- No sperm will be transported✓ - from the epididymis to the urethra✓ - Semen without sperm will be released✓	Any	(2) **(11)**
3.4	3.4.1	Eutrophication✓		(1)
	3.4.2	- The crop yield reaches a maximum at the recommended amount✓ - Using more fertilizer will cost more✓ without increasing crop yield - Therefore the profit will be less✓		(3)
	3.4.3	- Less fertiliser will be lost due to run-off✓/leaching **(Mark first ONE only)**		(1)
	3.4.4	- Algal bloom✓ occurs - A layer of algae will form on the water, blocking out sunlight✓ - The (water) plants die because they are unable to photosynthesise✓ - Animals that feed on the plants will also die✓ - Decomposition✓ of the dead plants and animals - cause an increase in the number of bacteria✓*****	**Compulsory mark✓*1** + Any 3	(4) **(9)** **[40]**
			TOTAL SECTION B:	**80**

SECTION C

QUESTION 4

When temperature rises above normal (T):

- Receptors are stimulated✓
- and send impulses to the hypothalamus✓
- The hypothalamus sends impulses to the blood vessels in the skin✓
- and to the sweat glands✓
- The blood vessels in the skin dilate✓/vasodilation takes place
- More blood flows to the surface of the skin✓/sweat glands so that
- (More) heat is lost from the body✓
- More sweat is produced✓ and
- (More) heat is lost when sweat evaporates✓
- The temperature of the body returns to normal✓ Any

When the carbon dioxide levels rise above normal (C): (7)

- Receptor cells in the (carotid) artery in the neck/aorta are stimulated✓
- to send impulses to the medulla oblongata✓
- The medulla oblongata sends an impulse to the breathing muscles✓
- to contract more actively✓
- and increase the rate/depth of breathing✓
- An impulse is also sent to the heart✓
- to beat faster✓
- More carbon dioxide is taken to the lungs✓/exhaled
- The carbon dioxide levels return to normal✓ Any

Importance of carbon dioxide in regulating atmospheric temperature and its influence on global warming (A): (5)

- Carbon dioxide is a greenhouse gas✓
- It traps heat/ prevents it from escaping from the atmosphere✓
- This is called the greenhouse effect✓ which
- keeps the earth warm to make life on earth possible✓
- An increase in carbon dioxide levels in the atmosphere causes an enhanced greenhouse effect✓
- More heat is trapped in the atmosphere✓
- causing an increase in the average global temperature✓ Any

Content (17)
Synthesis (5)
(3)
(20)

ASSESSING THE PRESENTATION OF THE ESSAY

RELEVANCE	LOGICAL SEQUENCE	COMPREHENSIVE
All information provided is relevant to the question	Ideas arranged in a logical/ cause-effect sequence	Answered all aspects required by the essay in sufficient detail
All the information is relevant to: - Homeostatic control of temperature when it rises above normal - Homeostatic control of CO_2 - Importance of CO_2 in regulating atmosphere temperature and its influence on global warming No irrelevant information	The sequence of the events in the: - Homeostatic control of temperature - Homeostatic control of CO_2 - Importance of CO_2 in regulating atmosphere temperature and its influence on global warming are in a logical sequence	The following must be included: - Homeostatic control of temperature (**T: 5/7**) - Homeostatic control of CO_2 (**C: 3/5)** - Importance of CO_2 in regulating atmospheric temperature and its influence on global warming (**A**: **3/5)**
1 mark	1 mark	1 mark

TOTAL SECTION C: 20
GRAND TOTAL: 150