



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

LIFE SCIENCES P1

MAY/JUNE 2026

MARKS: 150

TIME: 2½ hours

This question paper consists of 18 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 1.1.9) in the ANSWER BOOK, e.g. 1.1.10 D.

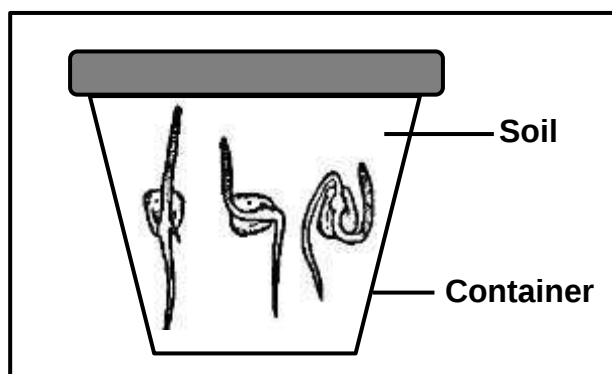
1.1.1 In plants, gibberellins are responsible for ...

- A tropisms.
- B seed dormancy.
- C growth of lateral branches.
- D seed germination.

1.1.2 Which of the following structures provide nutrients for the developing foetus?

- A Placenta and umbilical artery
- B Amnion and umbilical vein
- C Placenta and umbilical vein
- D Amnion and umbilical artery

1.1.3 The diagram below shows germinating seeds in a non-transparent (opaque) container.



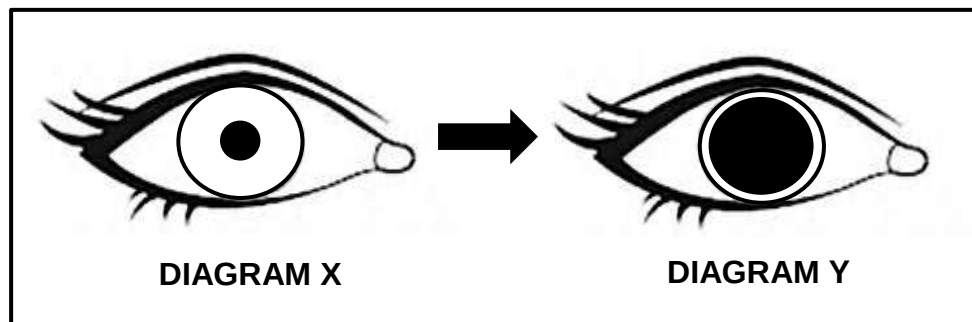
Which ONE of the following statements CORRECTLY describes the growth response of the seeds?

- A Stems grow upwards due to apical dominance.
- B Roots grow downwards due to geotropism.
- C Stems grow upwards due to phototropism.
- D Roots grow downwards due to phototropism.

1.1.4 The jelly layer of a human ovum ...

- A secretes hormones required for fertilisation.
- B fuses with the nucleus of a sperm to form a zygote.
- C provides protection to the fertilised ovum.
- D secretes hormones required for implantation.

1.1.5 The diagrams below show the change in the size of the pupil from diagram X to diagram Y.



Which ONE of the following combinations of light conditions and muscle actions CORRECTLY describes the response shown above?

	LIGHT CONDITION	CIRCULAR MUSCLES	RADIAL MUSCLES
A	Bright light	Contract	Relax
B	Dim light	Contract	Relax
C	Bright light	Relax	Contract
D	Dim light	Relax	Contract

1.1.6 Which ONE of the following may be a reason for hearing loss in people with middle-ear infection?

- A There is excess air inside the Eustachian tube.
- B The auditory nerve is damaged.
- C The ossicles cannot vibrate freely.
- D Sound waves do not reach the tympanic membrane.

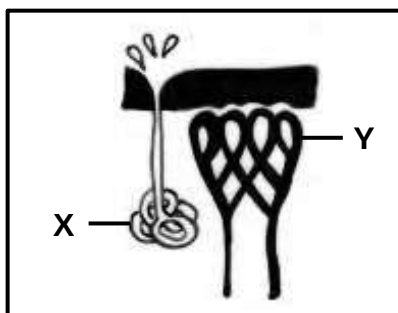
1.1.7 The following is a list of functions of plant hormones:

- (i) Promotes seed dormancy
- (ii) Acts as a weed killer
- (iii) Causes the falling of leaves
- (iv) Promotes cell division

Which combination of functions describes the role of abscisic acid?

- A (i) only
- B (i) and (ii) only
- C (i) and (iii) only
- D (i), (ii), (iii) and (iv)

1.1.8 The diagram below shows parts of the skin involved in thermoregulation.



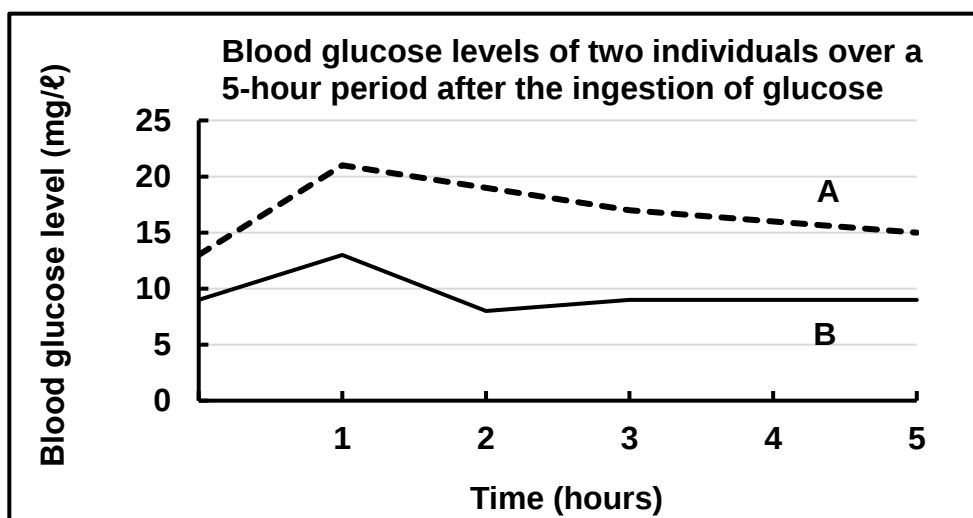
When a person is exposed to high environmental temperatures, the hypothalamus stimulates ...

- A vasodilation in **Y** and decreased sweat secretion by **X**.
- B vasoconstriction in **Y** and increased sweat secretion by **X**.
- C vasodilation in **Y** and increased sweat secretion by **X**.
- D vasoconstriction in **Y** and decreased sweat secretion by **X**.

1.1.9 Note the following for an investigation:

- Two individuals, **A** and **B**, had not eaten for four hours prior to the investigation.
- They then ingested 15 grams of pure glucose.
- One of the individuals has untreated diabetes mellitus.

The graphs below show the blood glucose levels of the two individuals over a period of 5 hours after the glucose has been ingested.



Which statement regarding the information in the graphs is CORRECT?

- A The insulin levels of individual **A** will remain high.
- B Individual **B** has diabetes mellitus because the glucose levels dropped to below 10 mg/ℓ.
- C The insulin levels of individual **B** will remain constant.
- D Individual **A** has diabetes mellitus because the glucose levels remain above 10 mg/ℓ.

(9 × 2)

(18)

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 1.2.8) in the ANSWER BOOK.

- 1.2.1 The process where the change in the level of one hormone brings about an opposite response in the level of another hormone
- 1.2.2 The part of a sperm cell that contains enzymes which dissolve the ovum membrane
- 1.2.3 A mature follicle inside the ovary that contains the ovum
- 1.2.4 The group of cells in the pancreas that perform an endocrine function
- 1.2.5 A visual defect caused by the uneven curvature of the cornea
- 1.2.6 Receptors in the inner ear that are stimulated by a change in the position of the head
- 1.2.7 The hormone that stimulates milk production
- 1.2.8 The branch of the nervous system that comprises spinal and cranial nerves

(8 x 1)

(8)

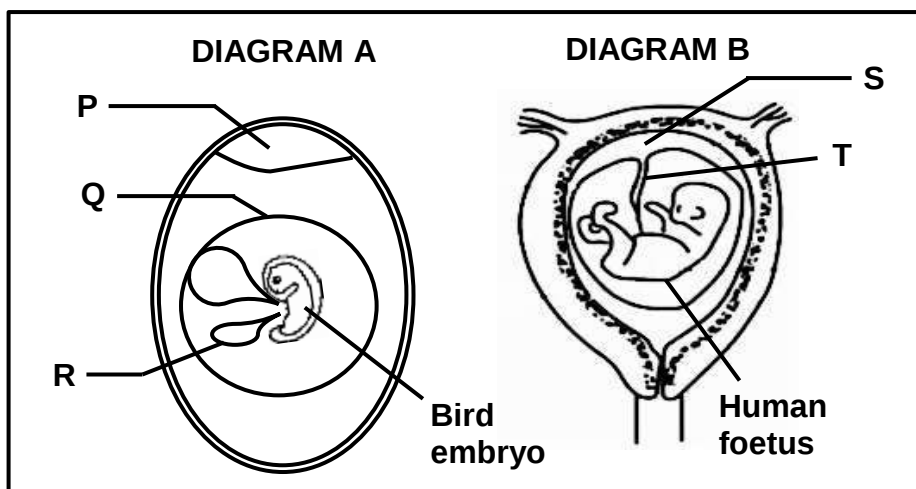
1.3 Indicate whether each of the descriptions in COLUMN I apply to **A ONLY**, **B ONLY**, **BOTH A AND B** or **NONE** of the items in COLUMN II. Write **A only**, **B only**, **both A and B** or **none** next to the question numbers (1.3.1 to 1.3.3) in the ANSWER BOOK.

	COLUMN I	COLUMN II
1.3.1	Part of the human body influenced by growth hormone	A: Muscles B: Skeleton
1.3.2	Chicks hatch without feathers	A: No parental care B: Altricial development
1.3.3	Responsible for the secondary sexual characteristics during puberty	A: FSH B: LH

(3 x 2)

(6)

1.4 The diagrams below represent stages in the reproduction of vertebrates.

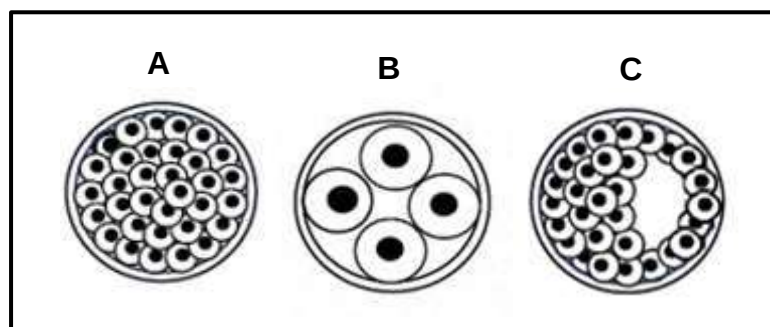


1.4.1 Identify **P**. (1)

1.4.2 Write the LETTERS of ALL the parts that are involved with the removal of waste products from the developing embryo and foetus. (3)

1.4.3 Name TWO reproductive strategies that occur in humans. (2)
(6)

1.5 Diagrams **A**, **B** and **C** below represent different stages of human embryonic development. The stages are NOT shown in the correct order.



1.5.1 Identify stage: (1)

(a) **A** (1)

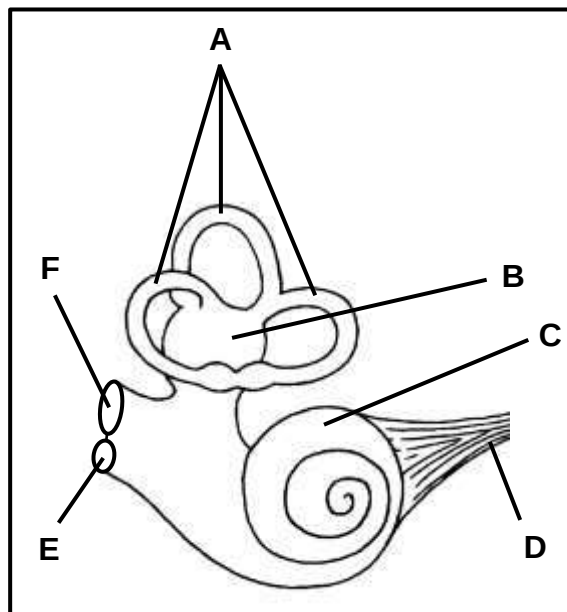
(b) **C** (1)

1.5.2 Identify the type of cell division responsible for the formation of the different stages. (1)

1.5.3 Give the LETTER of the embryonic stage that implants in the endometrium. (1)

1.5.4 Use the letters **A**, **B** and **C** to arrange the stages in the CORRECT order of development. (2)
(6)

1.6 The diagram below shows the structure of the inner ear.



1.6.1 Identify part:

- (a) **A** (1)
- (b) **D** (1)

1.6.2 Give the LETTER and NAME of the part that:

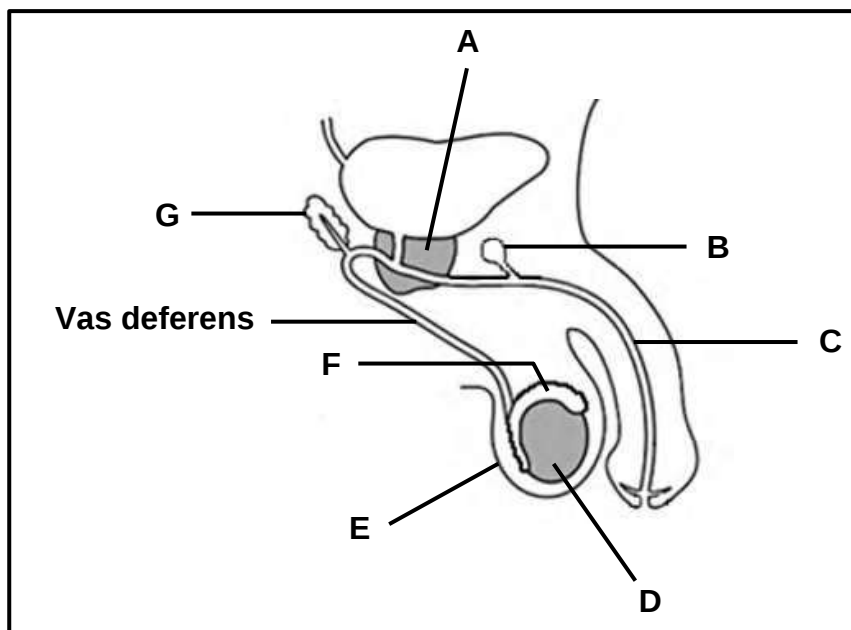
- (a) Receives vibrations from the middle ear (2)
- (b) Contains the organ of Corti (2)
- (6)**

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 The diagram below represents the male reproductive system.



2.1.1 Identify part:

(a) **D** (1)

(b) **E** (1)

2.1.2 Give the LETTER and NAME of the part that:

(a) Stores sperm until maturation (2)

(b) Transports semen out of the body (2)

2.1.3 Name TWO exocrine glands visible in the diagram. (2)

2.1.4 Fertility is the capacity to reproduce. Due to an infection, both vas differentia (plural for 'vas deferens') become blocked.

Explain how this blockage affects fertility. (3)

(11)

2.2 Read the extract below.

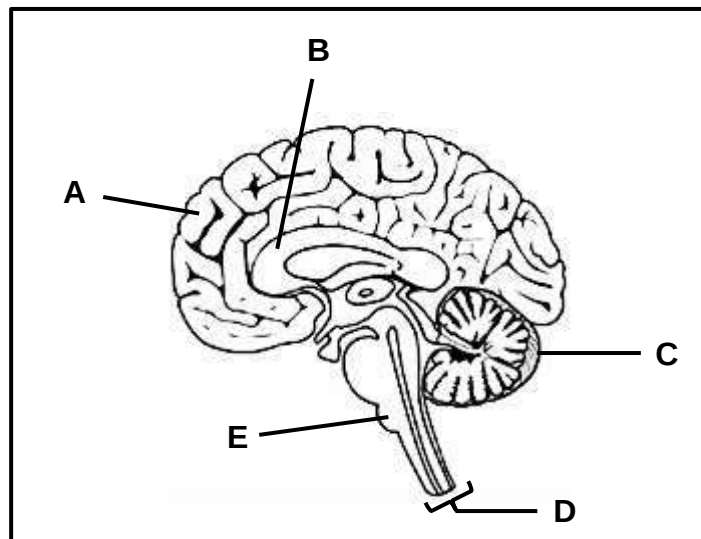
PITUITARY TUMOURS

In women, pituitary tumours form due to the abnormal growth of tissue in the pituitary gland. These tumours secrete excess levels of follicle stimulating hormone (FSH) which increase as the tumour grows larger.

The pressure on the pituitary gland by the tumour may also result in very low levels of luteinising hormone (LH) in the blood. The FSH levels in the blood can only return to normal after surgical removal or radiation of the tumour.

- 2.2.1 Identify the target organ of FSH. (1)
- 2.2.2 According to the information, state:
- (a) The relationship between the size of a pituitary tumour and FSH secretion (1)
 - (b) ONE way in which normal FSH levels can be restored (1)
- 2.2.3 Explain how low levels of LH may reduce the chances of pregnancy in a woman with a pituitary tumour. (2)
- 2.2.4 Describe how high levels of FSH are normally controlled in a female. (6)
- (11)**
- 2.3 Describe the process of *oogenesis*. (5)

2.4 The diagram below represents a part of the human central nervous system.



2.4.1 Identify part:

- (a) **B** (1)
- (b) **E** (1)

2.4.2 Give the collective name for the membranes that protect the central nervous system. (1)

2.4.3 Give the LETTER and NAME of the part that:

- (a) Interprets impulses received from the eye (2)
- (b) Coordinates all voluntary actions (2)

2.4.4 A person suffered an injury to structure **D**.

Explain why this person is unable to walk. (4)

(11)

- 2.5 Good hand-eye coordination is essential to perform well in sports. Athletes can be trained to improve their hand-eye coordination.

An investigation was conducted to determine the effect of performance training on hand-eye coordination.

The procedure was as follows:

- Five girls, all 11 years old, were selected as participants.
- A ball-catch test was conducted to measure their hand-eye coordination where:
 - The girls bounced a rubber ball off a wall while standing 2 m away and they were required to catch the ball each time it bounced back
 - The number of successful catches in 30 seconds was recorded
 - The test was repeated three times and an average was calculated
- All the girls then participated in a performance-training programme for six weeks, with training sessions held twice a week.
- The ball-catch test was then repeated on completion of the performance training.

The results of the ball-catch tests are recorded in the table below.

PARTICIPANT	AVERAGE NUMBER OF SUCCESSFUL BALL CATCHES IN 30 SECONDS	
	BEFORE TRAINING	AFTER TRAINING
A	3	7
B	4	8
C	3	6
D	5	9
E	4	7

- 2.5.1 Identify the:
- (a) Independent variable (1)
 - (b) Dependent variable (1)
- 2.5.2 How many training sessions did each of the girls participate in? (1)
- 2.5.3 What was the purpose of the ball-catch test? (1)
- 2.5.4 State THREE ways in which the validity of the investigation was ensured. (3)
- 2.5.5 Describe ONE way in which the reliability of the investigation can be improved. (1)
- 2.5.6 Explain the results of the investigation. (2)
- 2.5.7 State the conclusion for this investigation. (2)
- (12)**
[50]

QUESTION 3

- 3.1 The table below shows the occurrence of multiple sclerosis (MS) in men and women in different age groups.

NUMBER OF PEOPLE IN DIFFERENT AGE GROUPS WITH MULTIPLE SCLEROSIS (per 100 000 people)		
AGE GROUP (YEARS)	MEN	WOMEN
14 to 19	0	0
20 to 29	40	70
30 to 39	150	250
40 to 49	235	450
50 to 59	290	620
60 to 69	400	600
70 to 79	150	240

3.1.1 Name:

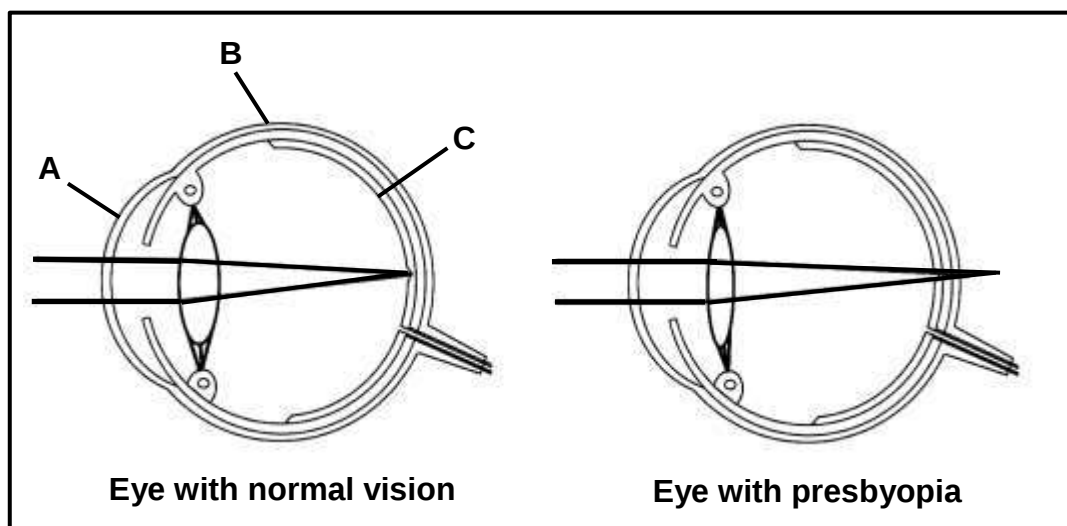
- (a) The specialised cells in the nervous system that are affected by MS (1)
- (b) The part of the cells named in QUESTION 3.1.1(a) that are damaged (1)

3.1.2 Describe the relationship between age and the occurrence of MS in men up to the age of 69. (2)

3.1.3 Draw a histogram to represent the results in women aged 40 to 79. (6)
(10)

- 3.2 After the age of 40, the lens of the eye becomes less flexible and is unable to change its shape. This makes it difficult to focus on nearby objects. This condition is called presbyopia.

The diagrams below show the eye of a person with normal vision and the eye of a person with presbyopia. Both eyes are focussed on an object less than 6 m away.



- 3.2.1 Identify part:
- (a) **A** (1)
 - (b) **B** (1)
- 3.2.2 Explain how layer **C** is structurally suited to its function. (2)
- 3.2.3 From the information, give ONE reason why accommodation becomes more difficult after 40 years of age. (1)
- 3.2.4 People with presbyopia develop long-sightedness. Reading glasses are prescribed to improve near vision.
- (a) Explain why presbyopia leads to long-sightedness. (2)
 - (b) What type of lenses would be prescribed for a person with long-sightedness? (1)
- (8)**

3.3 Read the extract below.

HYPOTHYROIDISM IN CHILDREN

Hypothyroidism is a condition where the thyroid gland does not secrete enough thyroxin.

In a study, 265 children with hypothyroidism were checked for other effects and disorders.

The results showed that the most common effects included short stature (33%), loss of appetite (16%), weight gain (14%), tiredness (12%) and goitre (3%). Disorders included a vitamin D deficiency (37%), diabetes mellitus (22,3%) and Down syndrome (8,3%).

3.3.1 State ONE function of thyroxin. (1)

3.3.2 According to the extract, which effect is most common among children with hypothyroidism? (1)

3.3.3 Calculate the number of children in the group that had diabetes mellitus.

Show ALL your working and round off the answer to ONE decimal place. (3)

3.3.4 Apart from testing the thyroxin levels in the blood, explain why doctors may also test the TSH levels in the blood of children with hypothyroidism. (2)
(7)

3.4 Both the nervous and endocrine systems are involved in maintaining homeostasis in the human body.

3.4.1 Which ONE of the two systems is involved in maintaining the:

(a) Carbon dioxide levels (1)

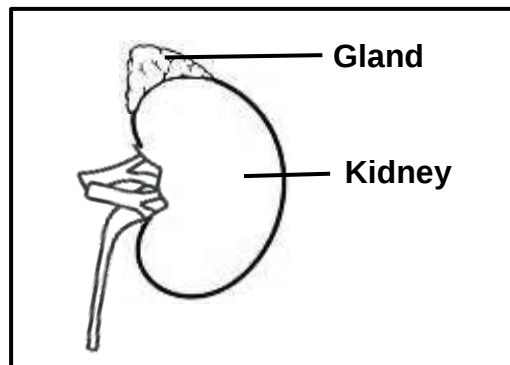
(b) Water levels (1)

3.4.2 While doing strenuous exercise, the water level in a person's blood is low.

(a) Describe how osmoregulation will take place. (5)

(b) Explain TWO reasons why this person needs to breathe faster. (4)
(11)

3.5 The diagram below represents a gland that is located on top of the kidney.



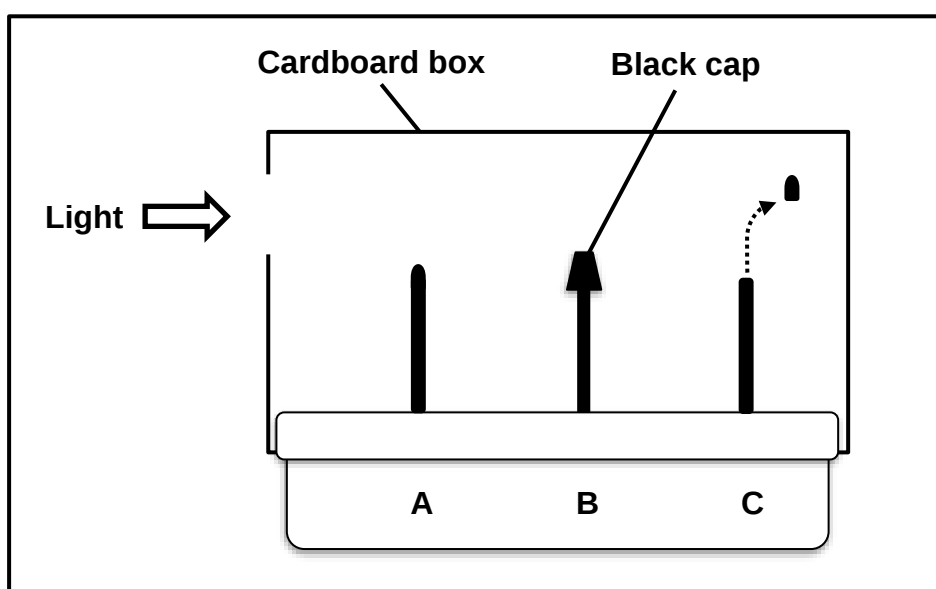
- 3.5.1 Name the gland shown in the diagram. (1)
- 3.5.2 Name the hormone secreted by the gland, referred to in QUESTION 3.5.1, that: (1)
- (a) Prepares the body for an emergency (1)
 - (b) Maintains the salt levels in the body (1)
- 3.5.3 Explain the effect of the hormone, named in QUESTION 3.5.2(a), on the: (2)
- (a) Blood vessels transporting blood to the digestive system (2)
 - (b) Liver (2)
- (7)**

- 3.6 Scientists conducted an experiment to investigate a growth response in plants.
- They used three plants and the stem tip of each plant was treated as follows:

PLANT	TREATMENT
A	The stem tip was left untreated.
B	The stem tip was covered with a black cap.
C	The stem tip was removed.

They placed the plants in a cardboard box with a small opening on one side to allow light through. The plants were left in this cardboard box for five days.

The diagram below represents the experimental set-up at the start of the investigation.



- 3.6.1 Name the growth response that was investigated. (1)
- 3.6.2 Name the hormone that causes the growth response referred to in QUESTION 3.6.1. (1)
- 3.6.3 Explain why the stem tip was removed in plant C. (2)
- 3.6.4 Draw a diagram to show the appearance of ALL THREE stem tips at the end of the investigation. (3)
- (7)
- [50]

TOTAL SECTION B: 100
GRAND TOTAL: 150



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LIFE SCIENCES P1

MAY/JUNE 2026

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 9 pages

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
Stop marking when maximum marks are 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 the 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 the 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 the 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 standardisation 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 learners' 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 without consulting the provincial internal moderator who in turn will consult with the national internal moderator (and the external 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.

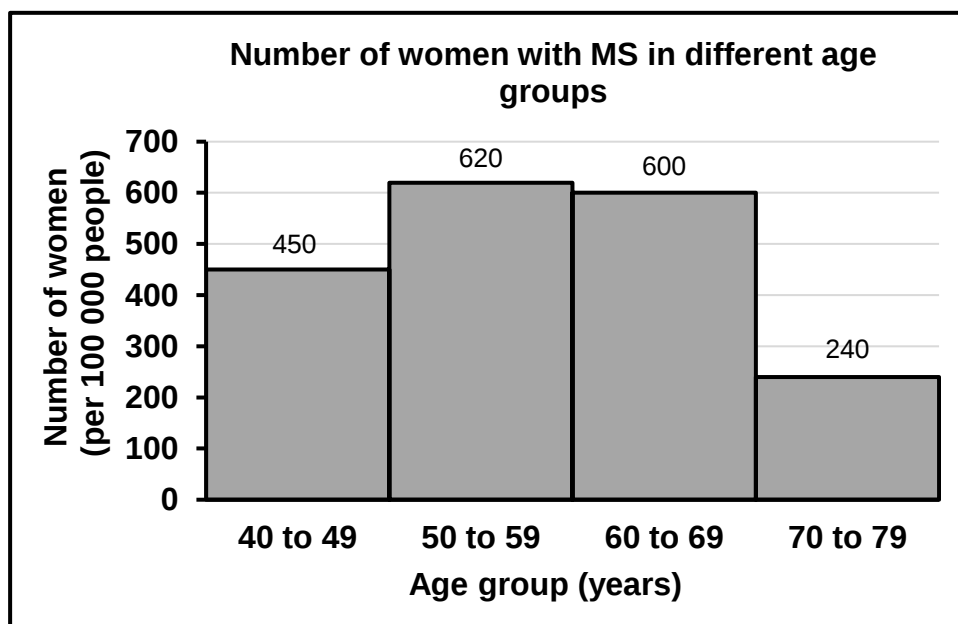
QUESTION 1

TOTAL SECTION A: 50

2.4	2.4.1	(a) Corpus callosum✓	(1)
		(b) Medulla oblongata✓	(1)
	2.4.2	Meninges✓	(1)
	2.4.3	(a) A✓ - Cerebrum✓	(2)
		(b) C✓ - Cerebellum✓	(2)
	2.4.4	- Impulses from the cerebrum✓/cerebellum - are not transmitted via the spinal nerves✓/cord to the - muscles/effectors in the leg✓ - preventing muscle control✓/coordination	(4) (11)
2.5	2.5.1	(a) Performance training✓	(1)
		(b) Hand-eye coordination✓	(1)
	2.5.2	12✓	(1)
	2.5.3	To measure hand-eye coordination✓	(1)
	2.5.4	- All participants were 11 years old✓ - Only girls✓/female participants were selected - A rubber ball was used✓ - They stood at a distance of 2 m from the wall✓ - The ball-catch test was conducted for 30 seconds✓ - The girls participated in the same training programme✓/training was conducted for six weeks /12 sessions - All the girls participated in the performance training programme✓	Any (3)
		(Mark first THREE only)	
	2.5.5	- More than 5 participants should be selected✓ - The ball-catch test should be repeated more than 3 times✓ - Increase the ball-catch test time to more than 30 seconds✓ - Repeat the investigation with another group✓	Any (1)
		(Mark first ONE only)	
	2.5.6	- The (average) number of ball catches increased✓ - due to performance training✓/ improved hand-eye coordination	(2)
	2.5.7	Performance training improves hand-eye coordination✓✓	(2) (12) [50]

QUESTION 3

- 3.1 3.1.1 (a) Neurons✓ (1)
 (b) Myelin sheath✓ (1)
 3.1.2 The occurrence of MS is greater in men of higher age groups✓✓ (2)
 3.1.3



Criteria for marking the graph:

Criteria	Mark allocation
Type of graph: Histogram is drawn (T)	1
Caption of the graph includes both variables (C)	1
Correct labels and units on X-axis and Y-axis (L)	1
Scale: (S) - Correct scale for Y-axis and - Same width of bars for X-axis	1
Plotting: (P) - 1 - 3 co-ordinates are plotted correctly - Only the 4 required co-ordinates are plotted correctly	1 2

(6)
(10)

If a bar or line graph is drawn, marks will be lost for:

- Type of graph
- Scale

If axes are transposed:

- Can get all marks, if labels are also swapped and bars are horizontal
- If labels are not corresponding, then:
 - Marks will be lost for labels and scale
 - Plotting can get credit if coordinates are correct for given labels

3.2	3.2.1	(a) Cornea✓		(1)
		(b) Sclera✓		(1)
	3.2.2	- It contains the photoreceptors✓ - which convert light stimuli into impulses✓		(2)
	3.2.3	- The lens becomes less flexible✓/ is unable to change its shape (Mark first ONE only)		(1)
	3.2.4	(a) - The lens cannot become more convex✓/is less convex - Light is not refracted enough✓/refracted too little - The image is focussed behind the retina✓	Any	(2)
		(b) Convex✓ lenses		(1)
				(8)
3.3	3.3.1	- It regulates the metabolic rate✓ - It affects the growth/functioning of the heart✓ - It affects the growth/functioning of the nervous system✓ - It influences bone development✓ - It influences muscle control✓	Any	(1)
		(Mark first ONE only)		
	3.3.2	Short stature✓		(1)
	3.3.3	$\left[\frac{22,3}{100}\right] \times 265 = 59,1$ ✓ OR $22,3\% \times 265 = 59,1$ ✓		(3)
	3.3.4	- High levels of TSH✓ - indicate low thyroxin levels✓		(2)
				(7)
3.4	3.4.1	(a) Nervous✓ system (Mark first ONE only)		(1)
		(b) Endocrine✓ system (Mark first ONE only)		(1)
	3.4.2	(a) - The hypothalamus detects✓ low water levels - The pituitary gland is stimulated✓ to - release more ADH✓ which causes - the renal tubules to become more permeable✓ - More water is reabsorbed✓ into the blood vessels of the kidney and - less water is released in the urine✓ - Water levels return to normal✓/increase	Any	(5)
		(b) - To increase oxygen intake✓ which is needed for increased respiration✓/energy release - To remove more carbon dioxide✓ which is a harmful waste product✓		(4)
		(Mark first TWO only)		(11)

- (1)

- (1)

- (1)

- (2)

- (2)

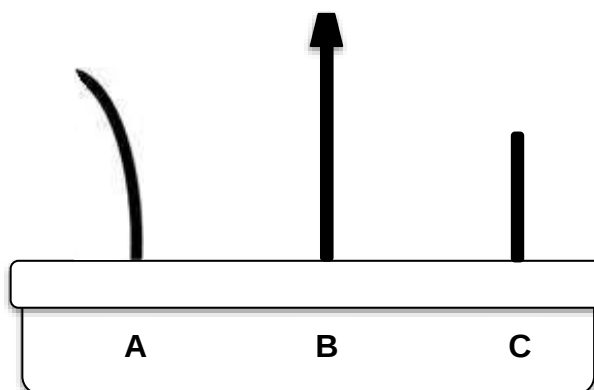
- (7)

- (1)

- (1)

- (2)

(Mark first TWO only)



(3)

(7)

[50]

100

150