basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/
NATIONAL SENIOR CERTIFICATE EXAMINATIONS

LIFE SCIENCES P2

MAY/JUNE 2024

MARKS: 150

TIME: 2½ hours

This question paper consists of 17 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–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 Which female scientist took X-rays of the DNA molecule and concluded that DNA is helix-shaped?

A Watson
B Franklin
C Crick
D Wilkins

1.1.2 A cell with 14 chromosomes undergoes meiosis.

What is the number of chromatids in this cell at the beginning of meiosis?

A 7
B 14
C 28
D 56

1.1.3 In the inheritance of blood groups there are …

A two phenotypes controlled by three alleles.
B three phenotypes controlled by two alleles.
C four phenotypes controlled by three alleles.
D four phenotypes controlled by two alleles.

1.1.4 The following statements relate to cell division:

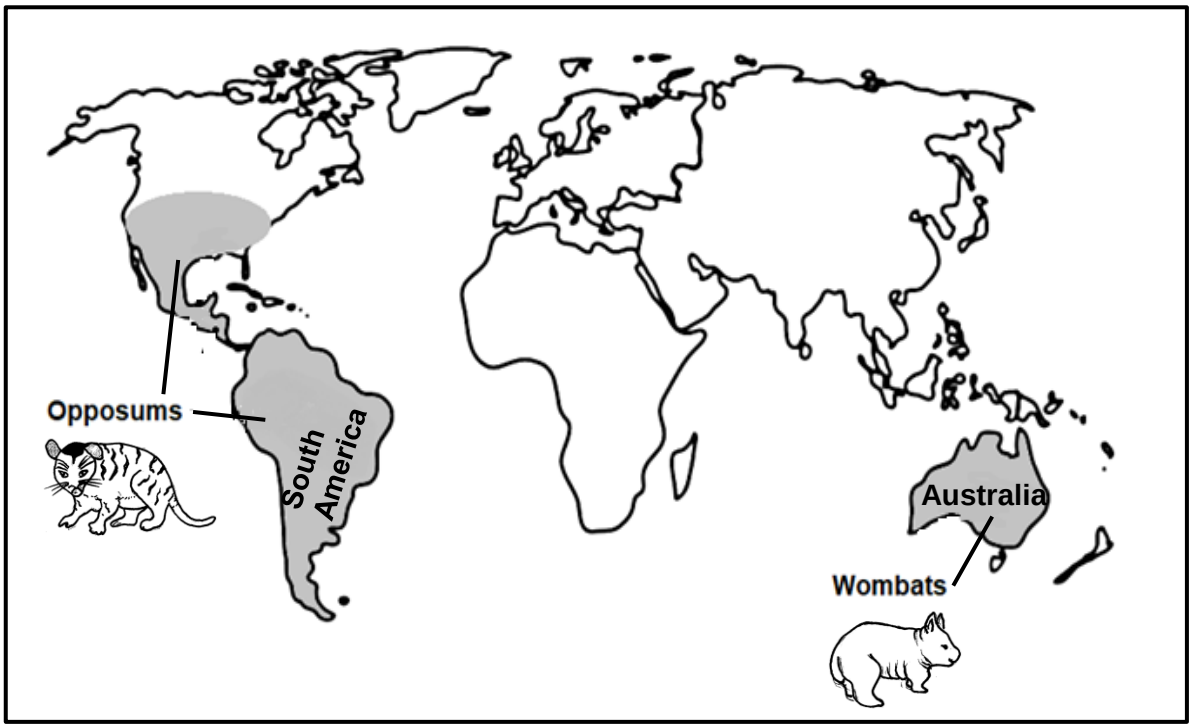
(i) Crossing over occurs
(ii) Contributes to genetic variation in a population
(iii) Produces cells with a diploid number of chromosomes
(iv) Produces somatic cells only

Which ONE of the following combinations of statements refer to meiosis?

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

1.1.5 The opossums and wombats are believed to have originated from a common ancestor.

The shaded parts of the diagram below show the distribution of these species.



The type of evidence for evolution that is represented in the diagram is ...

A biogeography.
B modification by descent.
C genetics.
D cultural.

1.1.6 A plant with yellow (y) and round (R) peas is crossed with a plant with green (Y) and wrinkled (r) peas.

Which ONE of the following are the possible genotypes of the parents (P_1)?

A yyRR x YYRr
B YyRR x yyrr
C Yyrr x YYRR
D yyRR x YYrr

1.1.7 A segment of DNA contains:

- 31% of adenine in strand **1**
- 12% of cytosine in strand **2**
- 27% of guanine in strand **2**

In this segment of DNA, there will also be …

A 31% of adenine in strand **2**
B 12% of cytosine in strand **1**
C 31% of thymine in strand **2**
D 27% of cytosine in strand **2**

1.1.8 Two people each gave four descriptions about themselves.

	PERSON 1	**PERSON 2**
P	I can roll my tongue.	I cannot roll my tongue.
Q	I am 150 cm tall.	I am 153 cm tall.
R	I have unattached earlobes.	I have attached earlobes.
S	My blood group is A.	My blood group is AB.

Which ONE of the following combinations are examples of discontinuous variation?

A P, Q and S
B P, R and S
C Q, R and S
D P, Q, R and S

1.1.9 The phase in meiosis where chromatids are pulled towards poles is …

A anaphase I
B telophase I
C metaphase II
D anaphase II (9 x 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 A section of a DNA molecule that codes for a specific characteristic

1.2.2 A pattern of black bars resulting from DNA analysis

1.2.3 Evolution characterised by long periods of no change alternating with short periods of rapid change

1.2.4 The production of a genetically identical copy of an organism using biotechnology

1.2.5 Undifferentiated cells in animals that have the potential to become any type of tissue

1.2.6 A genetic disorder that results in a person who cannot distinguish between the colours red and green

1.2.7 The part of the plant where the male gametes are produced

1.2.8 The structure that joins two chromatids together (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	The type of dominance in which neither of the two alleles is dominant over each other, resulting in an offspring with an intermediate phenotype	A: Complete dominance B: Co-dominance
1.3.2	The point where two chromatids overlap during crossing over	A: Chiasma B: Locus
1.3.3	The scientist who proposed the law of segregation	A: Darwin B: Lamarck

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

1.4 The diagrams below represent two types of nucleic acids.

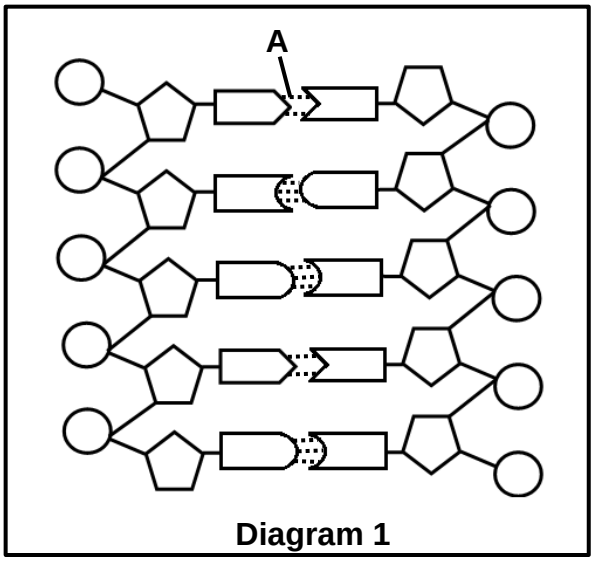


Diagram 1

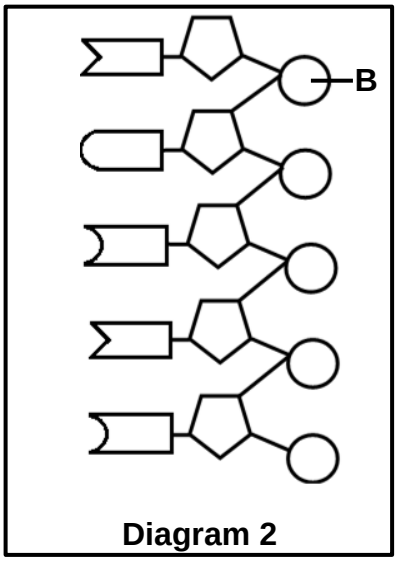


Diagram 2

1.4.1 Identify the nucleic acid shown in diagram **1**. (1)

1.4.2 Identify:

(a) **A** (1)

(b) **B** (1)

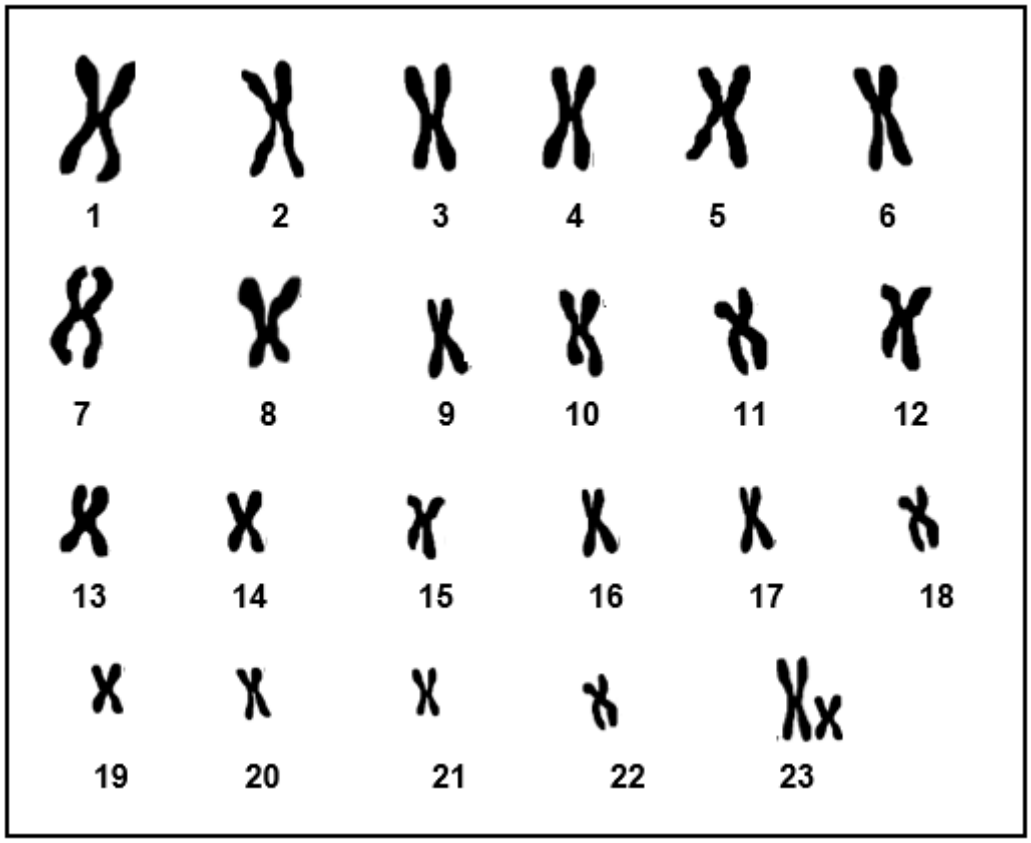
1.4.3 Name the type of sugar found in the nucleic acid represented in diagram **2**. (1)

1.4.4 Which diagram (**1** or **2**) represents a nucleic acid that is used for:

(a) Tracing of human ancestry (1)

(b) Paternity testing (1)
(6)

1.5 The diagram below shows the karyotype of a gamete of an individual.



1.5.1 Name the type of mutation that occurred during the production of this gamete. (1)

1.5.2 What type of gamete is represented in the karyotype? (1)

1.5.3 In this gamete, give the number of:

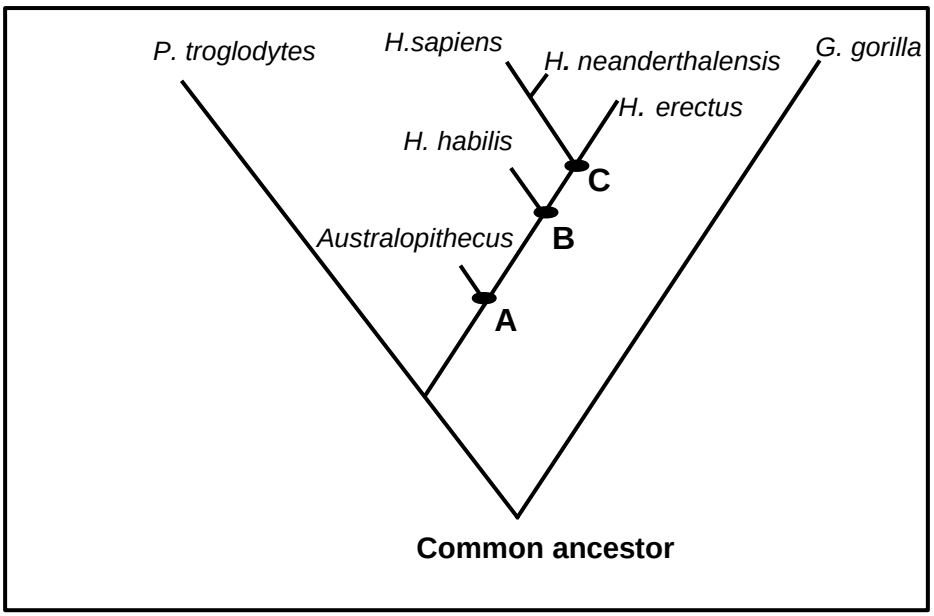
(a) Autosomes (1)

(b) Gonosomes (1)

1.5.4 This gamete fuses with a normal gamete.

Using X and Y representation, write the sex chromosomes of the offspring. (2)
(6)

1.6 The diagram below shows the evolutionary relationship between different species.



1.6.1 Identify the type of diagram shown above. (1)

1.6.2 Give the:

(a) Genus that gave rise to the *Australopithecus* at **A** (1)

(b) LETTER that represents the most recent common ancestor for both *H. sapiens* and *H. erectus* (1)

1.6.3 Name TWO species that existed at the same time as *H. erectus.* (2)

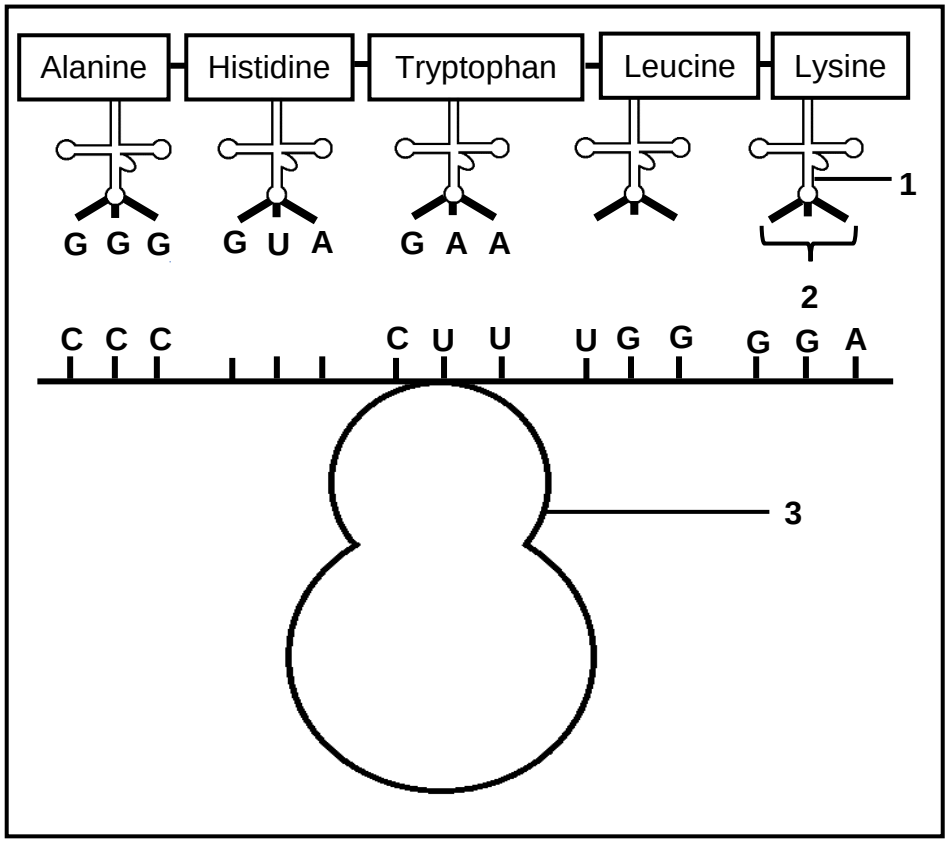
1.6.4 Give ONE example of the fossil of *Australopithecus africanus* that was found in South Africa. (1)
(6)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 The diagram below represents a stage during the synthesis of a certain protein.



2.1.1 Identify organelle **3**. (1)

2.1.2 Describe the role of molecule **1** during this stage of protein synthesis. (2)

2.1.3 Give the sequence of nitrogenous bases:

(a) At **2** (1)

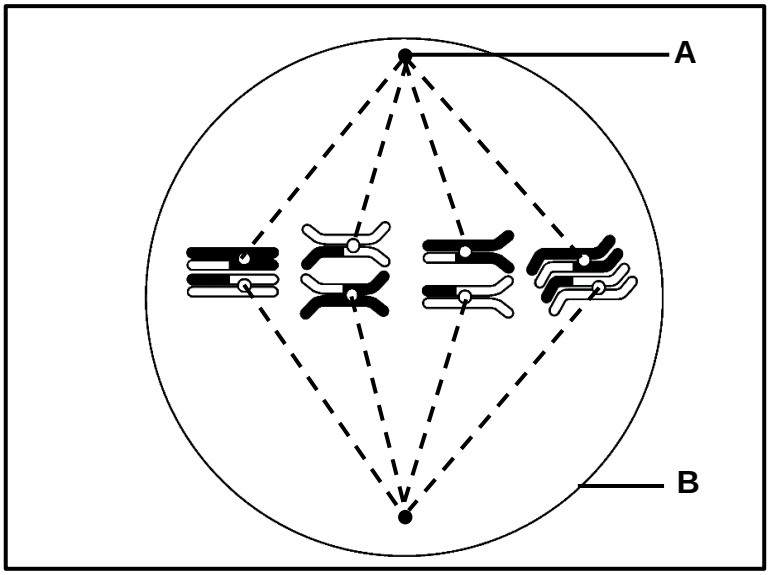
(b) On the DNA molecule that coded for histidine (2)

2.1.4 During the synthesis of the same protein, there was a change in the amino acid sequence because alanine was replaced by tryptophan.

Explain the possible reason for this. (3)
(9)

2.2 Describe *transcription*. **(6)**

2.3 The diagram below represents metaphase **I** of meiosis.

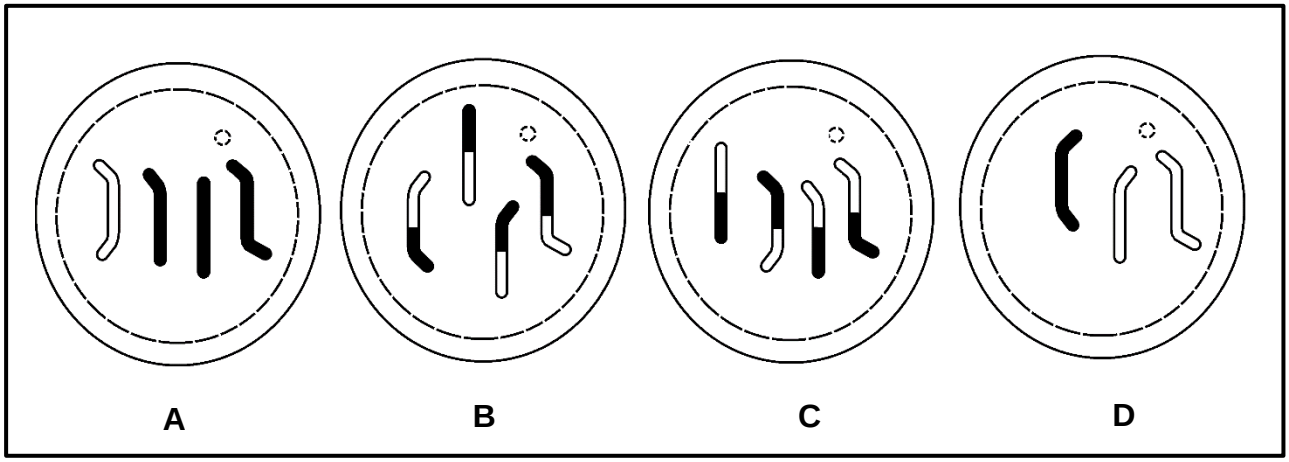


2.3.1 Identify part **B**. (1)

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

2.3.3 Explain the contribution of metaphase **I** to natural selection. (6)

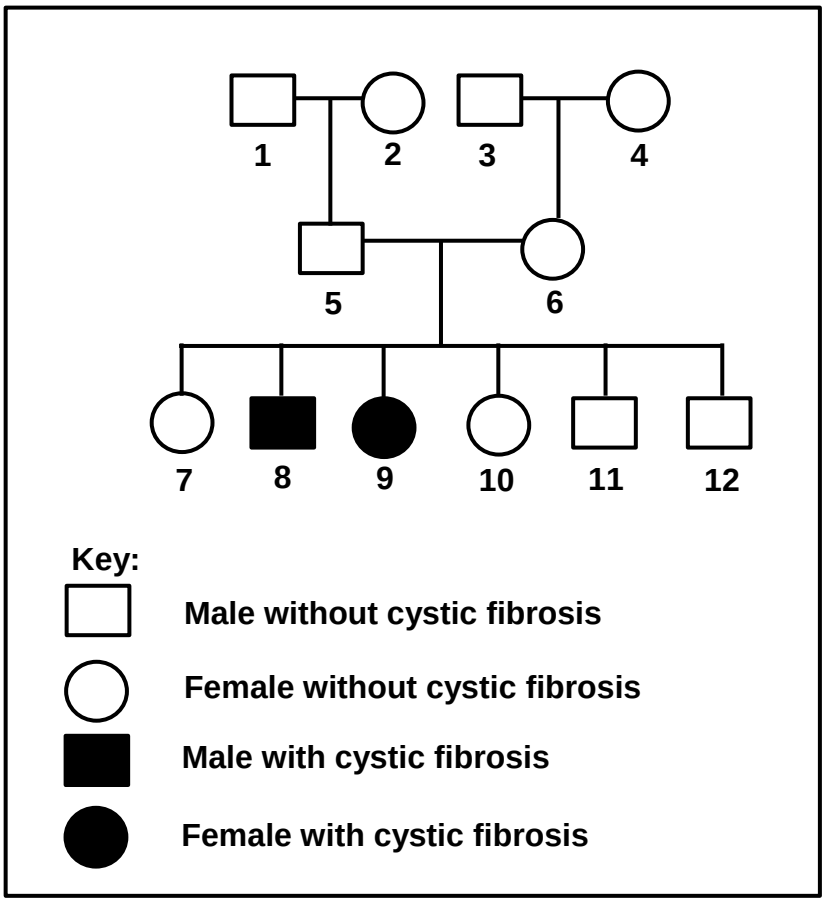
The diagram below shows four possible daughter cells formed at the end of this meiosis.



2.3.4 Draw cell **D**, including the missing 4th chromosome. (3)
(11)

2.4 Cystic fibrosis is a genetic disorder caused by a recessive allele (**b**).

The pedigree diagram below shows the inheritance of cystic fibrosis in a certain family.



2.4.1 How many generations are represented in the diagram above? (1)

2.4.2 Give the genotype of individual **9**. (1)

2.4.3 Explain why both individuals **5** and **6** must be heterozygous for cystic fibrosis. (4)

2.4.4 Using the letters **B** and **b**, do a genetic cross to show the inheritance of cystic fibrosis when heterozygous parents are crossed. (6)
(12)

2.5 Bt corn is a crop that has been genetically modified to be insect-resistant.

The table below shows the percentage of land used to grow Bt corn and the amount of insecticide used in a certain country between 1995 and 2010.

Year	**Land used to grow Bt corn (%)**	**Amount of insecticide used (kg per hectare)**
1995	0	0,2
2000	20	0,13
2005	40	0,05
2010	60	0,01

2.5.1 Describe how genetic engineering of Bt corn was done. (2)

2.5.2 Describe the relationship between the land used to grow Bt corn and the amount of insecticide used. (2)

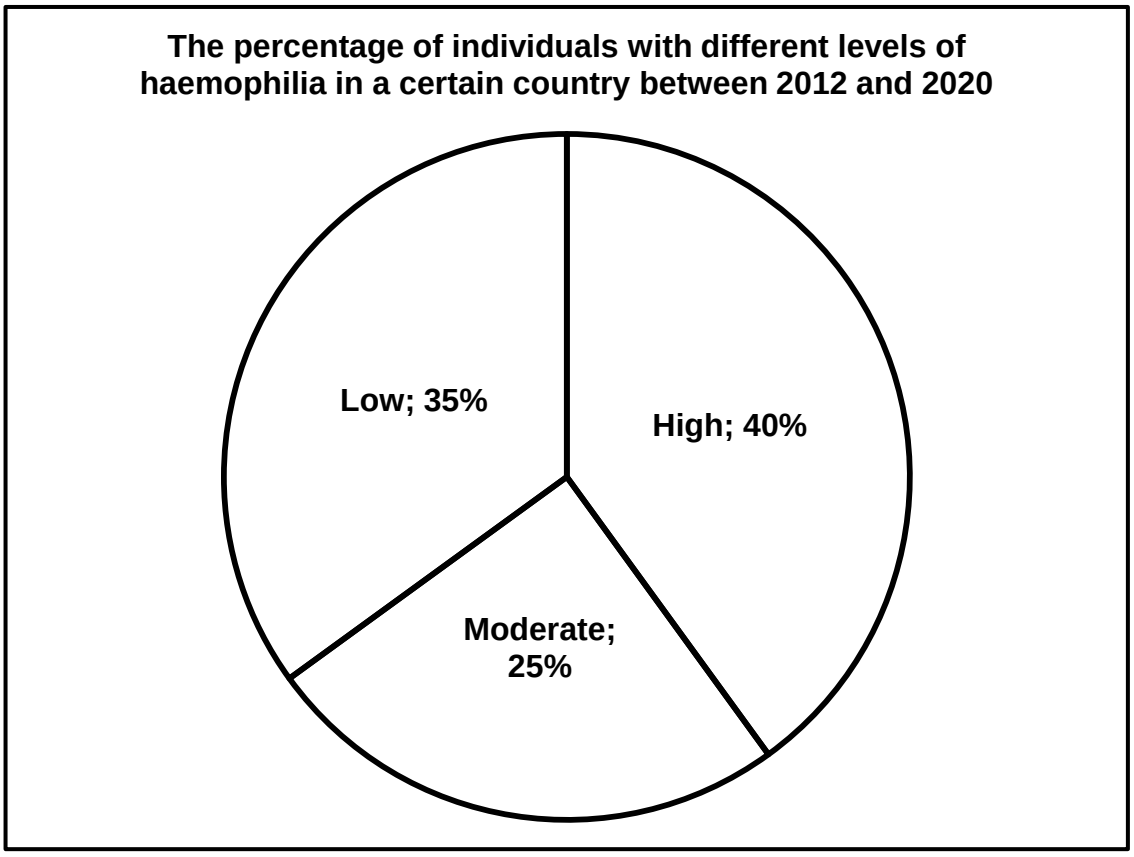
2.5.3 State TWO other plant characteristics that are genetically engineered to increase food security. (2)

2.5.4 Draw a bar graph to represent the percentage of land used to grow Bt corn from 1995 to 2010. (6)
(12)
[50]

QUESTION 3

3.1 In a certain country, 25 000 individuals were suffering from haemophilia between 2012 and 2020. Haemophilia is a genetic disorder that is caused by a mutation.

The pie chart below shows the percentage of individuals with different levels of haemophilia in this country.



3.1.1 Explain the effect of this mutation on an individual. (2)

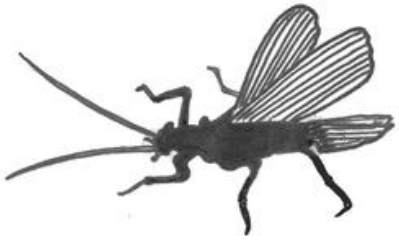
3.1.2 Calculate the number of individuals who were moderately affected by haemophilia in this country. Show ALL working. (2)

3.1.3 Explain why it would be expected that most of the individuals affected by haemophilia will be males. (3)
(7)

3.2 Insects on islands without trees are likely to be wingless because flying is dangerous for them in an area with strong winds.

A certain island was once covered with tall trees. Over the years, there has been deforestation in some areas of the island. On this island, insects called stoneflies, have undergone natural selection. Some have wings and some do not have wings, depending on the area where they are found.

The diagram below shows stoneflies with and without wings.



Stonefly with wings

Stonefly without wings

Scientists wanted to determine the relationship between the presence of tall trees and the wings on the stoneflies.

- They selected six locations, of which three had tall trees and three were without trees.
- Using a specialised net, they collected thousands of stoneflies in each location.
- The samples were labelled according to the area of collection.
- These samples were all collected in the morning during summer.
- The number of stoneflies with wings and without wings at each location was counted and recorded.

3.2.1 Identify the:

(a) Independent variable (1)

(b) Dependent variable (1)

3.2.2 State TWO factors that were kept constant during the investigation. (2)

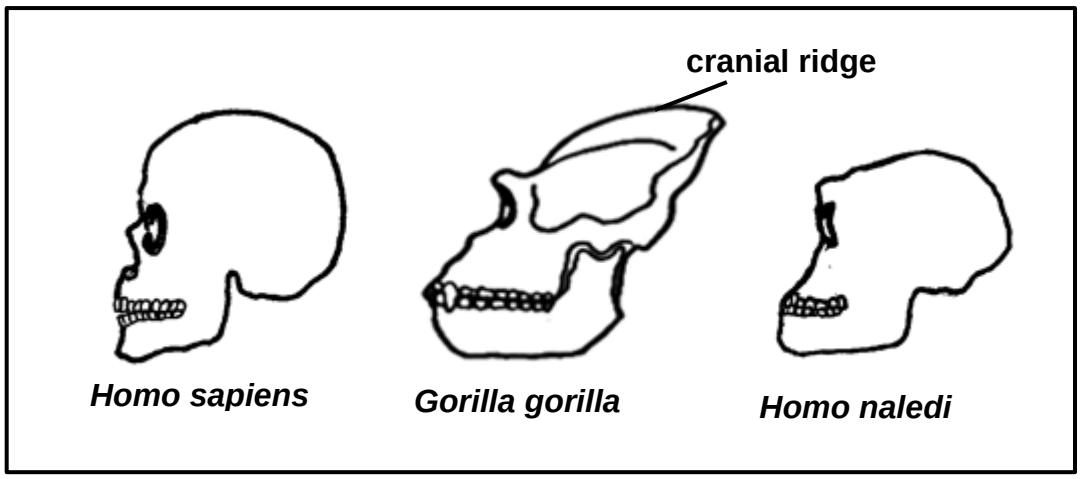
3.2.3 State TWO ways in which the reliability of this investigation was ensured. (2)

3.2.4 Explain why it would be expected that more stoneflies will have no wings in the areas without trees. (4)

3.2.5 Describe how Lamarck would have explained the evolution of stoneflies without wings in the areas without trees. (5)
(15)

3.3 Describe the process of speciation through geographic isolation. **(7)**

3.4 The diagrams below represent the skulls of hominids.



3.4.1 List THREE similarities in relation to vision that are shared by these organisms. (3)

3.4.2 Name ONE species in the diagram that was most prognathous. (1)

3.4.3 Describe the TWO structures that caused the species named in QUESTION 3.4.2 to be most prognathous. (2)

3.4.4 *Homo naledi* was bipedal for most of its adult life.

Explain how the structure of *Homo naledi* 's skull would have assisted in bipedalism. (3)

3.4.5 Describe the difference between *Homo sapiens* and *Gorrilla gorilla* in relation to the shape of the:

(a) Spine (2)

(b) Pelvis (2)

3.4.6 Explain why the *Gorrilla gorilla* species has a cranial ridge. (2)
(15)

3.5 Read the passage below.

Datura flowers open in the evening and release a powerful fragrance which attracts hawk moths. The Datura produces a highly addictive nectar which ensures that the hawk moths stay longer inside the flower and only visit Datura flowers.

3.5.1 Explain TWO ways in which the Datura plants ensure that they are reproductively isolated. (4)

3.5.2 State TWO other mechanisms that would ensure reproductive isolation in plants. (2)
(6)
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150

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SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

LIFE SCIENCES P2

MAY/JUNE 2024

FINAL MARKING GUIDELINES

MARKS: 150

These marking guidelines consists of 12 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. Memorandum 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 memorandum**
No changes must be made to the memoranda. 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 memoranda**
Only memoranda 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	C✓✓		
	1.1.4	B✓✓		
	1.1.5	A✓✓		
	1.1.6	D✓✓		
	1.1.7	C✓✓		
	1.1.8	B✓✓		
	1.1.9	D✓✓	(9 x 2)	**(18)**
1.2	1.2.1	Gene✓/allele		
	1.2.2	DNA profile✓		
	1.2.3	Punctuated equilibrium✓		
	1.2.4	Cloning✓		
	1.2.5	Stem cells✓		
	1.2.6	Colour blindness✓		
	1.2.7	Anther✓/pollen sac		
	1.2.8	Centromere✓	(8 x 1)	**(8)**
1.3	1.3.1	None✓✓		
	1.3.2	A only✓✓		
	1.3.3	None✓✓	(3 x 2)	**(6)**
1.4	1.4.1	DNA✓/Deoxyribo-nucleic acid		(1)
	1.4.2	(a) Hydrogen bond✓		(1)
		(b) Phosphate✓		(1)
	1.4.3	Ribose✓		(1)
	1.4.4	(a) 1✓		(1)
		(b) 1✓		(1) **(6)**
1.5	1.5.1	Chromosomal✓ mutation		(1)
	1.5.2	Sperm✓		(1)
	1.5.3	(a) 22✓		(1)
		(b) 2✓		(1)
	1.5.4	XXY✓✓/XYX		(2) **(6)**

1.6	1.6.1	Cladogram✓/Phylogenetic tree		(1)
	1.6.2	(a) *Ardipithecus*✓		(1)
		(b) C✓		(1)
	1.6.3	- *P. troglodytes*✓ - *G. gorilla*✓ - *Most recent common ancestor of H. sapiens and H. neanderthalensis* **(Mark first TWO only)**	Any	(2)
	1.6.4	- Mrs Ples✓ - Taung child✓ - Little foot✓ **(Mark first ONE only)**	Any	(1) **(6)**

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 Ribosome✓ (1)

2.1.2
- Brings the required/specific amino acid✓
- according to mRNA✓/codon to the ribosome (2)

2.1.3 (a) CCU✓ (1)

(b) GTA✓✓ (2)

2.1.4
- A mutation occurred✓
- that changed the sequence of nitrogenous bases on DNA from GGG to GAA✓/when A replaced G
- mRNA codon changed from CCC to CUU✓/when U replaced C
- causing tRNA to bring a different amino acid✓ Any (3)

(9)

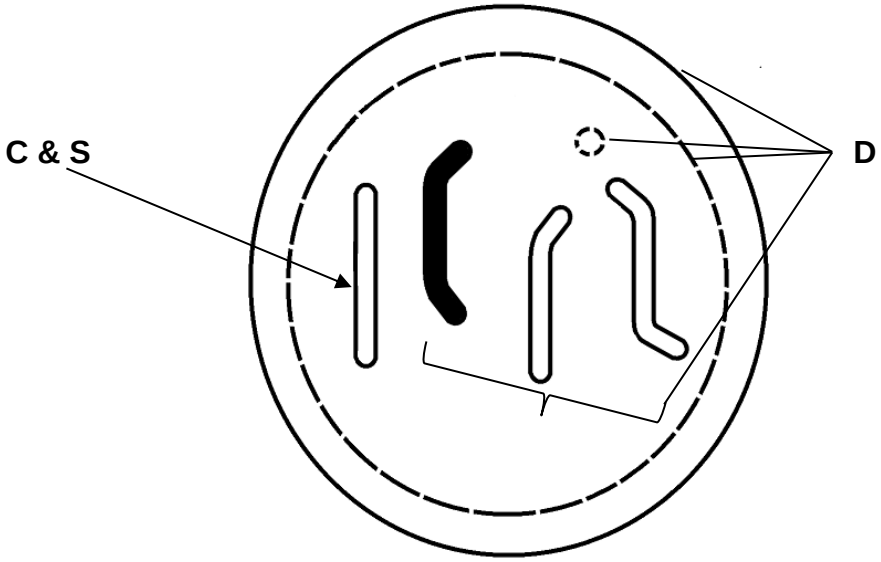
2.2
- The DNA double helix unwinds✓
- The DNA strands unzip✓/weak hydrogen bonds break
- to form two separate strands✓
- One strand is used as a template✓
- to form mRNA✓
- using free RNA nucleotides✓ from the nucleoplasm
- The mRNA is complementary to the DNA✓/A pairs with U, G pairs with C and T pairs with A
- mRNA now has the coded message✓ for protein synthesis Any **(6)**

2.3. 2.3.1 Cell membrane✓ (1)

2.3.2 Produces spindle fibres✓ (1)
(Mark first ONE only)

2.3.3
- Random arrangement of chromosomes✓ at the equator
- results in the formation of genetically different gametes✓
- This leads to increased genetic variation in a population✓
- which will cause some individuals to have favourable and some to have unfavourable characteristics✓
- When environmental conditions change✓
- those with favourable characteristics will survive✓
- and those with unfavourable characteristics will die✓ Any (6)

2.3.4



Criteria for assessing the drawing

Criteria	**Mark**
Cell D copied correctly (**D**)	1
Missing chromosome drawn has a straight shape (**C**)	1
Missing chromosome is unshaded (**S**)	1

(3)
(11)

2.4 2.4.1 Three✓/3 (1)

2.4.2 bb✓ (1)

2.4.3
- Both parents (5 and 6) have a dominant and a recessive allele✓/Bb
- since they do not have cystic fibrosis✓.
- They have children 8 and 9 with cystic fibrosis✓/who are homozygous recessive/bb
- who received one recessive allele from each parent✓ (4)

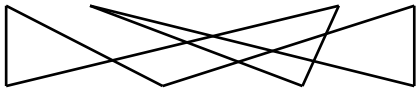
2.4.4

P_1	Phenotype	(Male) without cystic fibrosis	x	(Female) without cystic fibrosis✓
	Genotype	Bb	x	Bb✓

Meiosis

G/gametes B , b x B , b✓

Fertilisation



F_1 Genotype BB , Bb , Bb, bb✓

Phenotype 3 without cystic fibrosis: 1 with cystic fibrosis✓

P_1 and F_1✓

Meiosis and fertilisation✓ Any 6

OR

P_1	Phenotype	(Male) without cystic fibrosis	x	(Female) without cystic fibrosis✓
	Genotype	Bb	x	Bb✓

Meiosis

Fertilisation

Gametes	B	b
B	BB	Bb
b	Bb	bb

1 mark for correct gametes
1 mark for correct genotypes

F_1 Phenotype 3 without cystic fibrosis: 1 with cystic fibrosis✓

P_1 and F_1✓
Meiosis and fertilisation✓

Any 6 (6)
(12)

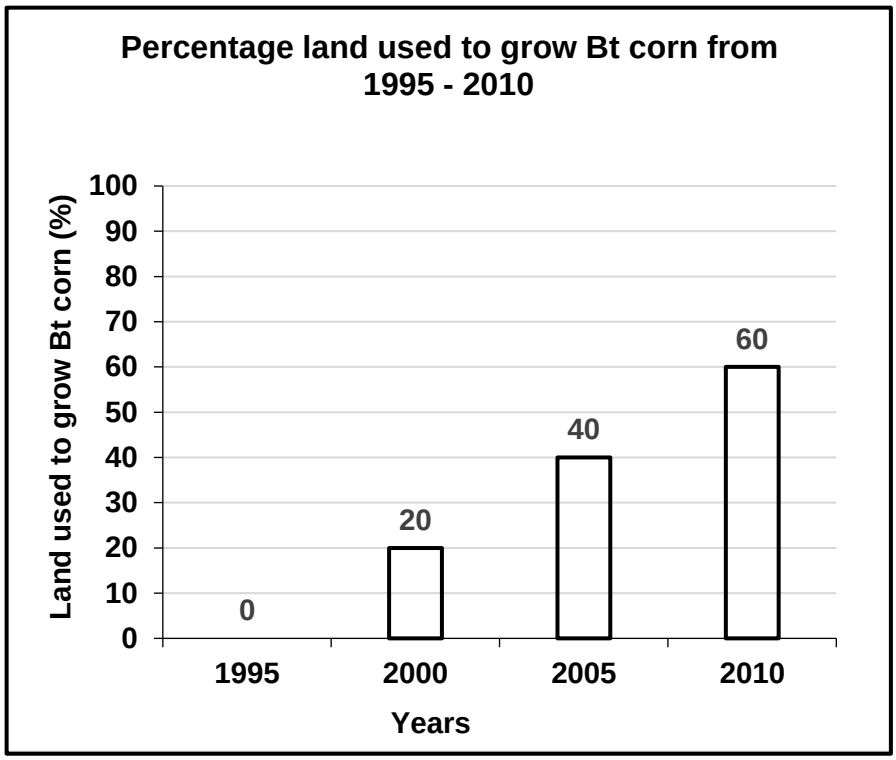
2.5 2.5.1
- The gene for insect resistance is isolated from another species✓
- and inserted into the DNA of corn✓where it is expressed (2)

2.5.2 As (the percentage of) land used to grow Bt corn increases the amount of insecticide used decreases✓✓ (2)

2.5.3
- Longer shelf-life✓
- Drought resistance✓
- More nutrients✓
- Frost-resistant✓
- Increased size✓
- Increased crop yield✓
- Herbicide-resistant✓
- No allergens✓
- Heat-tolerant✓
- Disease-resistant✓

Any (2)
(Mark first TWO only)

2.5.4



Criteria for marking of the graph:

Criteria	Mark allocation
Bar graph is drawn (**T**)	1
Caption of the graph includes both variables (**C**)	1
Correct labels on the X-axis and Y-axis with correct unit on the Y-axis (**L**)	1
Correct scale for Y-axis and bars of equal width and spaces for X-axis **(S)**	1
Plotting (**P**) correctly done for: 1- 3 years All 4 required years	 1 2

(6)
(12)

If a histogram 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 swopped 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

[50]

QUESTION 3

3.1 3.1.1
- It is harmful✓ /prevents clotting of blood
- and leads to excessive bleeding✓ /internal bleeding/ swelling of joints/ bruising (2)

3.1.2 $\left[\frac{25}{100} \times 25\,000\right]$ ✓= 6250✓

OR

25% x 25000✓ / (0,25 x 25000) = 6250✓

OR

$\frac{25000}{4}$ ✓ = 6250✓ (2)

3.1.3
- Males have only one X-chromosome✓/XY
- If this chromosome carries the recessive allele the male will have haemophilia✓
- as there is no other allele that could mask the effect of the recessive allele✓ (3)

(7)

3.2 3.2.1 (a) (Presence or absence of) tall trees✓ (1)

(b) (Presence or absence of) wings on the stoneflies✓ (1)

3.2.2
- Type of net/ apparatus used to catch the insects✓
- Season of collection✓/collection was done in summer
- Time of day for collection✓/collection was done in the morning
- Type of location for each category✓
- Number of locations for each category✓
- Labelling of samples was done according to the area of collection✓ Any (2)

(Mark first TWO only)

3.2.3
- Collected thousands of stoneflies✓
- Three (3) locations for each category✓ (2)

(Mark first TWO only)

3.2.4
- Flying is dangerous✓ in areas without trees
- However, stoneflies with no wings survived since they could not fly✓
- Therefore, they reproduced✓
- Passing the allele for no wings to the next generation✓ (4)

3.2.5
- All stoneflies had wings✓
- Due to strong winds✓ /since it was dangerous to fly in cleared areas
- They stopped using their wings✓/flying
- The wings became smaller✓/disappeared
- The acquired characteristic of no wings was passed on to the offspring✓
- All offspring in the next generation had no wings✓ Any (5)

(15)

3.3
- 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 no gene flow between the two populations✓
- Each population may be exposed to different environmental conditions✓/the selection pressure may be different
- and therefore natural selection occurs independently✓
- such that the individuals of the two populations become different✓ genotypically and phenotypically✓
- Even if these populations were to mix again✓
- they will not be able to interbreed✓
- because they are now different species✓ Any **(7)**

3.4 3.4.1
- Eyes in front✓
- Binocular vision✓
- Stereoscopic vision✓
- Colour vision✓/presence of cones Any (3)

(Mark first THREE only)

3.4.2 *Gorrilla gorrilla*✓ (1)

3.4.3
- Large canines✓/teeth
- Large jaw✓ (2)

(Mark first TWO only)

3.4.4
- More forward position of the foramen magnum✓
- Allows the spine to enter vertically✓beneath the skull
- to support the skull✓/ upright walking (3)

3.4.5 (a)
- *Homo sapiens* has an S-shaped✓ spine
- *Gorrilla gorrilla* has a C-shaped✓ spine (2)

(b)
- *Homo sapiens* has a short and wide✓ pelvis
- *Gorrilla gorrilla* has a long and narrow✓ pelvis (2)

3.4.6
- For the attachment of strong muscles✓
- to assist in eating tough/hard food✓ (2)

(15)

3.5	3.5.1	Datura flowers: - release a powerful fragrance✓ that attracts hawk moths✓ - release a highly addictive nectar✓ that ensures that the hawk moths only visit it✓/stays longer in the flower - open in the evening✓ and this ensures visit by moth✓ - are adapted to a specific pollinator✓ since they attract hawk moths✓ **(Mark first TWO only)**	Any (2 x 2)	(4)
	3.5.2	- Reproduction is at different times of the year✓ - Infertile offspring✓ - Prevention of fertilisation✓ **(Mark first TWO only)**	Any	(2) **(6)** **[50]**

TOTAL SECTION B: 100

GRAND TOTAL: 150