Downloaded from Stanmorephysics.com

education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

LIFE SCIENCES P2

SEPTEMBER 2025

MARKS: 150

TIME: 2½ hours

This question paper consists of 16 pages.

Copyright reserved

Downloaded from Stanmorephysics.com

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. Answer ALL the questions.
2. Write ALL the answers in your 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 all drawn to scale.
9. Do NOT use graph paper.
10. You must use a non-programmable calculator, protractor and compass, where necessary.
11. Write neatly and legibly.

Copyright reserved

Downloaded from Stanmorephysics.com

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 A possible explanation for an observation that can be tested is known as a …

A fact.
B law.
C theory.
D hypothesis.

1.1.2 The lines of evidence that supports the idea of common ancestor for living hominids …

A biogeography, fossil evidence and genetic evidence.
B modification by descent fossil evidence and genetic evidence.
C fossil evidence, genetic evidence and cultural evidence.
D fossil evidence and genetic evidence only.

1.1.3 A small section of DNA has the following sequence of bases that codes for different amino acids:

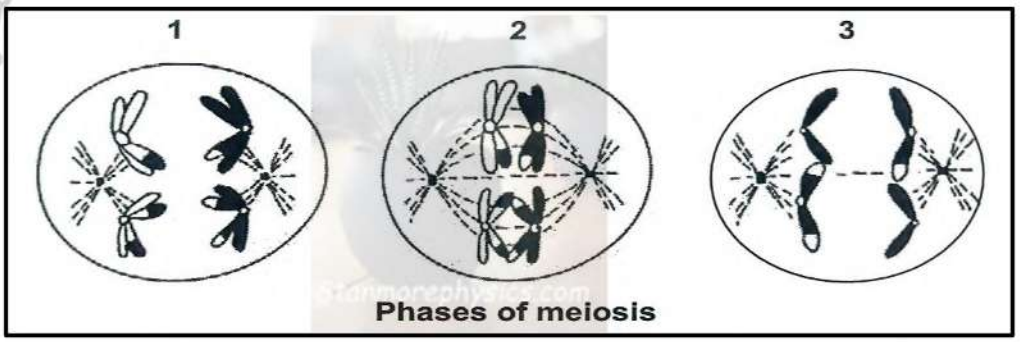
GCT CGT TAA

Which ONE of the following is the CORRECT representation of the anticodons and number of amino acids coded for this section?

	ANTICODONS	NUMBER OF AMINO ACIDS
A	GCU CGU UAA	9
B	GCU CGU UAA	3
C	CGA GCA AUU	9
D	CGA GCA AUU	3

Downloaded from Stanmorephysics.com

1.1.4 The diagram below represents different phases of meiosis.



Phases of meiosis

The CORRECT order of the phases is …

A 1, 2 and 3.
B 2, 3 and 1.
C 3, 1 and 2.
D 2, 1 and 3.

1.1.5 The scientist who discovered the fossil *Karabo* is …

A Ronald Clarke.
B Lee Berger.
C Mary Leakey.
D Robert Broom.

1.1.6 Each gamete in the human female has …

A 22 autosomes and an X gonosome.
B 22 autosomes and a Y gonosome.
C 21 autosomes and XX gonosomes.
D 21 autosomes and XY gonosomes.

1.1.7 Two parents without colour blindness have a son with colour blindness.

Which ONE of the following are the correct genotypes of the parents?

A $X^DY \times X^DX^D$
B $X^dY \times X^DX^D$
C $X^DY \times X^DX^d$
D $X^DY \times X^dX^d$

Downloaded from Stanmorephysics.com

1.1.8 The following refers to reproduction in different organisms:

(i) Breeding at different times of the year
(ii) Fertile offspring
(iii) Prevention of fertilisation
(iv) Species specific courtship behaviour

Which ONE of the following is a combination of the reproductive isolating mechanisms?

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

1.1.9 A, B and O blood groups are inherited characteristics.

What would be the possible blood group of the offspring, when the parents have the genotype I^AI^A and I^Ai?

A Blood group **O** only
B Blood groups **A** and **O**
C Blood group **AB**
D Blood group **A** only (9 x 2) **(18)**

Downloaded from Stanmorephysics.com

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 RNA containing body, usually spherical, within the nucleus of cells

1.2.2 A complete set of chromosomes found in each nucleus of any individual of a particular species

1.2.3 A cleavage of cells cytoplasm that follows karyokinesis

1.2.4 An organelle that gives rise to the spindle in a dividing animal cell

1.2.5 The genus to which Little foot and Mrs Ples belongs

1.2.6 An undifferentiated cell that can form any other cell type in an organism

1.2.7 The type of variation where there is a range of different phenotypes for a particular characteristic

1.2.8 The organisms with similar characteristics and that are capable of random interbreeding to produce fertile offspring

1.2.9 The similar structures that are inherited from a common ancestor and are modified for different functions

1.2.10 The bond formed between two amino acids (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	Proposed the 'Law of Use and Disuse'	A: Eldredge B: Watson
1.3.2	An allele that is not shown in the phenotype when found in the heterozygous condition	A: Dominant B: Recessive
1.3.3	Breeding of organisms for human desire	A: Natural selection B: Artificial selection

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

Downloaded from Stanmorephysics.com

1.4 Mendel observed some characteristics of the pea plant (*Pisum sativum*) which he suggested were controlled by inherited factors. He conducted a series of experiments in which he crossed pea plants with contrasting phenotypes to obtain the offspring of the **F_1** generation. At first his crosses were simple and involved only one pair of characteristics.

Mendel counted the number of offspring showing each of the variations.

His results are shown in the table below.

Plant part	Characteristics	P_1 generation	F_1 generation
Seed	Seed shape	Round x Oval	All round
	Seed colour	Yellow x Green	All yellow
Pod	Pod texture	Smooth x Wrinkled	All smooth
	Pod Colour	Green x yellow	All green
Flowers	Flower colour	Violet x yellow	All violet

1.4.1 Give the term for:

(a) The inherited the factors that Mendel referred to (1)

(b) A cross involving only ONE characteristic (1)

1.4.2 Name the female structure of the flower where meiosis occurs. (1)

1.4.3 Give the characteristics that is:

(a) Dominant for flower colour (1)

(b) Recessive for pod texture (1)

1.4.4 Which ONE of Mendel's Laws of inheritance is demonstrated by the **F_1** generation in the table above? (2)

1.4.5 The **F_1** generation with round seeds **(R)** and violet flowers **(P)** are crossed.

(a) What will be the phenotypic ratio of their offspring? (2)

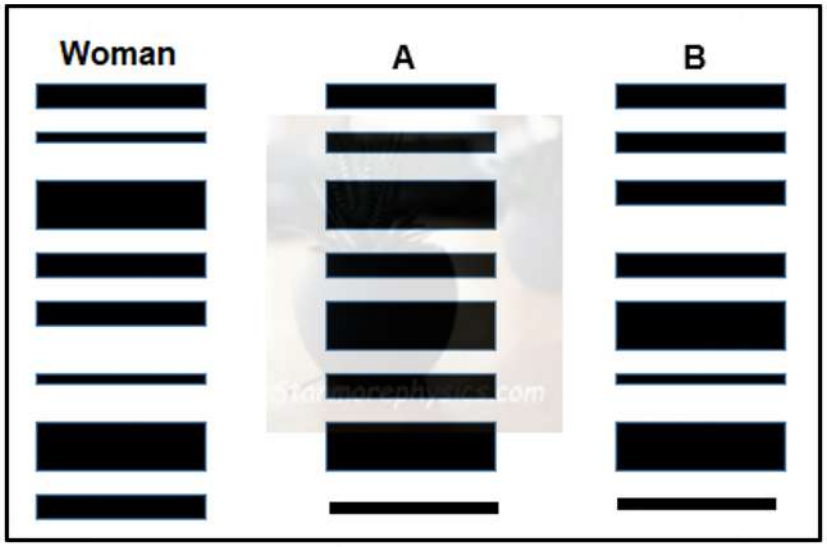
(b) State the genotype of the offspring that is heterozygous for the two characteristics. (1)
(10)

Downloaded from Stanmorephysics.com

1.5 A woman looking for her missing son went to the authorities.

A DNA profiling of the woman, her other son (**A**) and the bone fragment (**B**) obtained from the recently discovered decomposed remains of an unknown person was done.

The diagram below represents their DNA profiles.



1.5.1 What was used as source of DNA profile of decomposed remains? (1)

1.5.2 Do the remains belong to the woman's missing son? (1)

1.5.3 Explain your answer to QUESTION 1.5.2. (2)

1.5.4 State TWO other uses of DNA profiling in humans. (2)
(6)

TOTAL SECTION A: 50

Downloaded from Stanmorephysics.com

SECTION B

QUESTION 2

2.1 The sequence of amino acid in a protein molecule is coded for by DNA and RNA. The table below shows some mRNA codons and the corresponding amino acids.

AMINO ACID	mRNA CODONS
Serine	AGC, AGU
Aspartate	GAU, GAC
Leucine	CUA, CUC
Tyrosine	UAU, UAC
Phenylalanine	UUC, UUU
Glutamic acid	GAG

2.1.1 Name the site for protein synthesis in cells. (1)

2.1.2 A section of mRNA has the following base sequence and is read from left to right:

GAU CUC GAC AGC AUG ACC

Write down the names of the amino acids coded for by base triplets 3 and 4. (2)

2.1.3 Describe the effect of the mutation on protein formation if **GAC** changes to **GAU**. (2)

2.1.4 Describe the process of translation. (5)

2.1.5 Tabulate TWO differences between DNA replication and transcription. (5)
(15)

Downloaded from Stanmorephysics.com

2.2 Read the extract below.

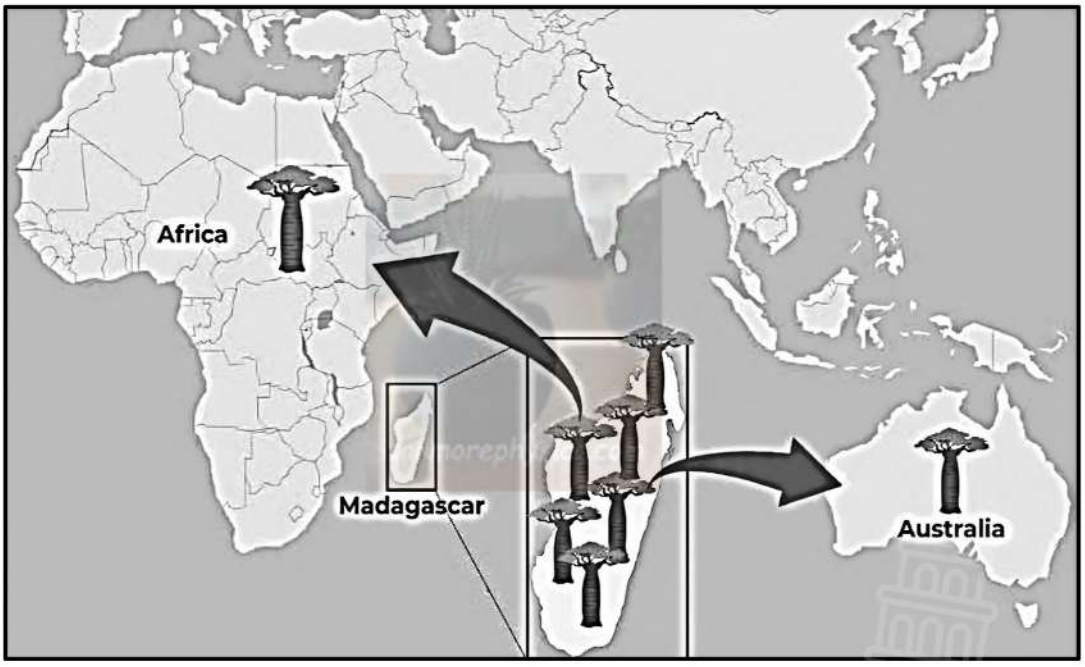
BAOBAB TREES ALL CAME FROM MADAGASCAR

The origin of this group of plants has fascinated people for a long time.

Baobabs are a remarkable keystone species capable of supporting a wide variety of animals for food and shelter.

Researchers found that baobabs we see today all originated in Madagascar. They started evolving to form distinct species around 21 million years ago (mya). Later, two species evolved in Africa and Australia before the lineages went extinct in Madagascar.

The diagram below shows the distribution of baobab trees in Madagascar, Africa and Australia.



2.2.1 Identify the type of evidence for evolution shown in the diagram above. (1)

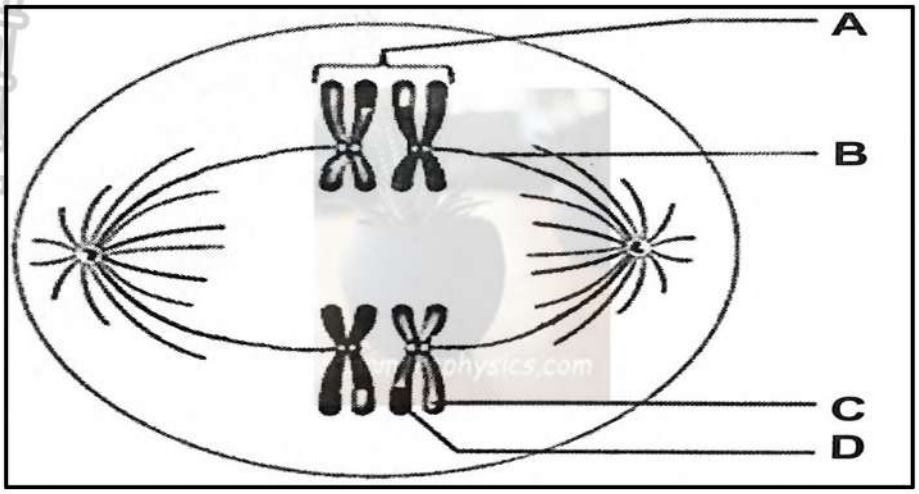
2.2.2 Give THREE other types of evidence for evolution. (3)

2.2.3 Distinguish between *speciation* and *extinction*. (2)

2.2.4. Describe how baobab trees in Africa and in Australia became different species. (6)
(12)

Downloaded from Stanmorephysics.com

2.3 The diagram below represents some chromosomes in a human cell during a phase of meiosis.



2.3.1 Identify structure:

(a) **A** (1)

(b) **B** (1)

2.3.2 Identify the phase shown in the diagram above. (1)

2.3.3 Describe the events of the phase prior to the one shown in the diagram. (4)

2.3.4 Explain the role of crossing over in natural selection. (5)

2.3.5 How many chromosomes would be present in each gamete at the end of meiosis? (1)

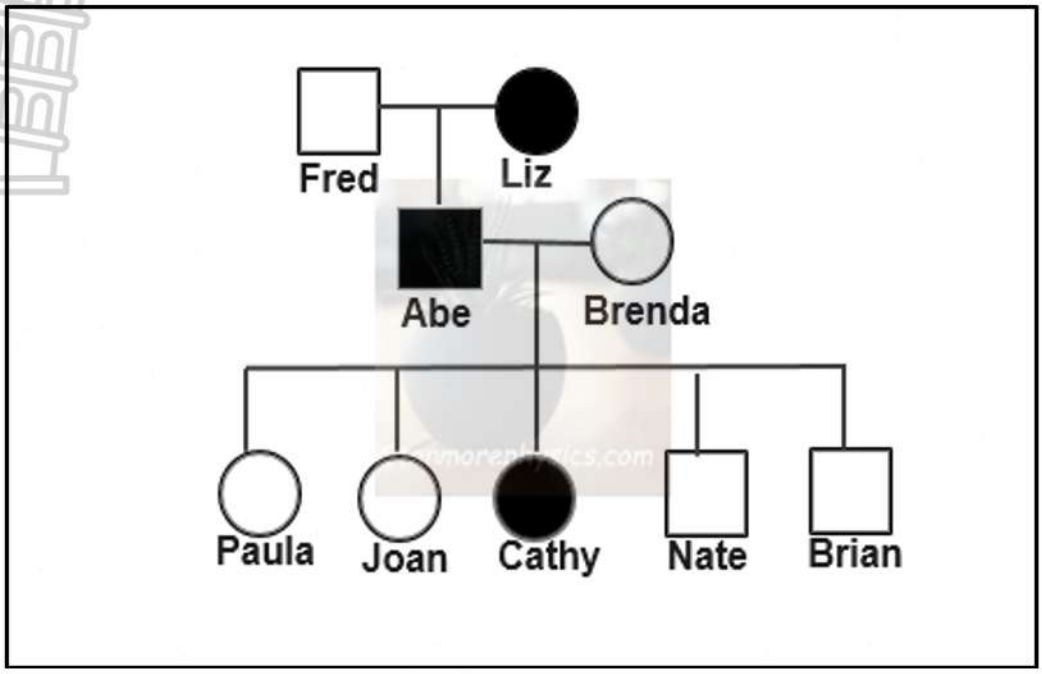
2.3.6 At the end of meiosis, one of the gametes had an extra chromosome 21.

Describe how this may have occurred. (2)

(15)

Downloaded from Stanmorephysics.com

2.4 X-linked Alport syndrome is caused by a recessive allele (**X^a**). The pedigree diagram below shows the inheritance of this syndrome in a certain family.



2.4.1 Give the:

(a) Phenotype of Liz (2)

(b) Genotype of Nate (2)

2.4.2 How many males are definitely without X-linked Alport syndrome? (1)

2.4.3 Is Brenda homozygous or heterozygous? (1)

2.4.4 Explain your answer in QUESTION 2.4.3. (2)
(8)
[50]

Downloaded from Stanmorephysics.com

QUESTION 3

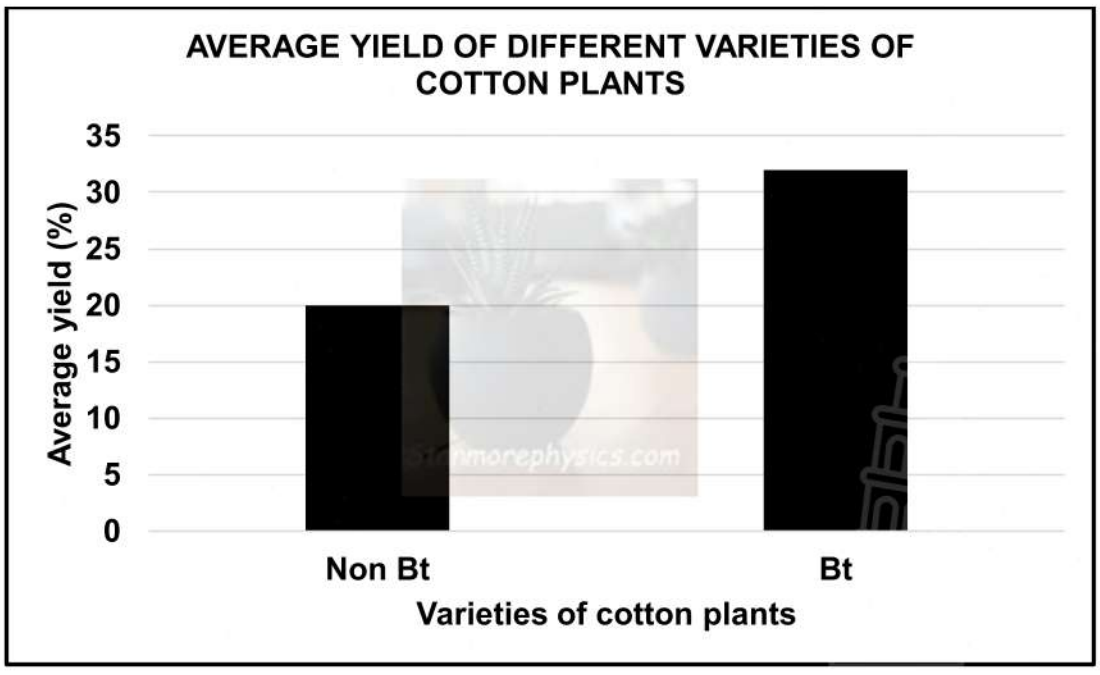
3.1 Bt cotton is genetically modified by inserting genes from the soil bacterium *Bacillus thurigeinsis* (Bt) into cotton plants. When insects eat the cotton plant, the activated Cry-proteins attach to the insect's cells, forming ion channels that cause the cells to die.

An investigation was conducted to determine the effect of Bt-gene on the yield of cotton plants.

The procedure was as follows:

- A field was divided in two equal planting fields (**P** and **Q**)
- 500 Bt cotton plants were planted in one planting field (**P**) and 500 non Bt cotton plants in another planting field (**Q**)
- The environmental conditions for the two planting fields were exactly the same
- 500 insects of the same species were introduced into both planting fields
- All the cotton plants started flowering after 5 weeks and were counted in both planting fields **P** and **Q**
- The average yield in each planting field was calculated and used as an indication of insect resistance

The graph below shows the results at the end of the investigation.



3.1.1 State the aim of this investigation. (2)

3.1.2 Identify the:

(a) Independent variable (1)

(b) Dependent variable (1)

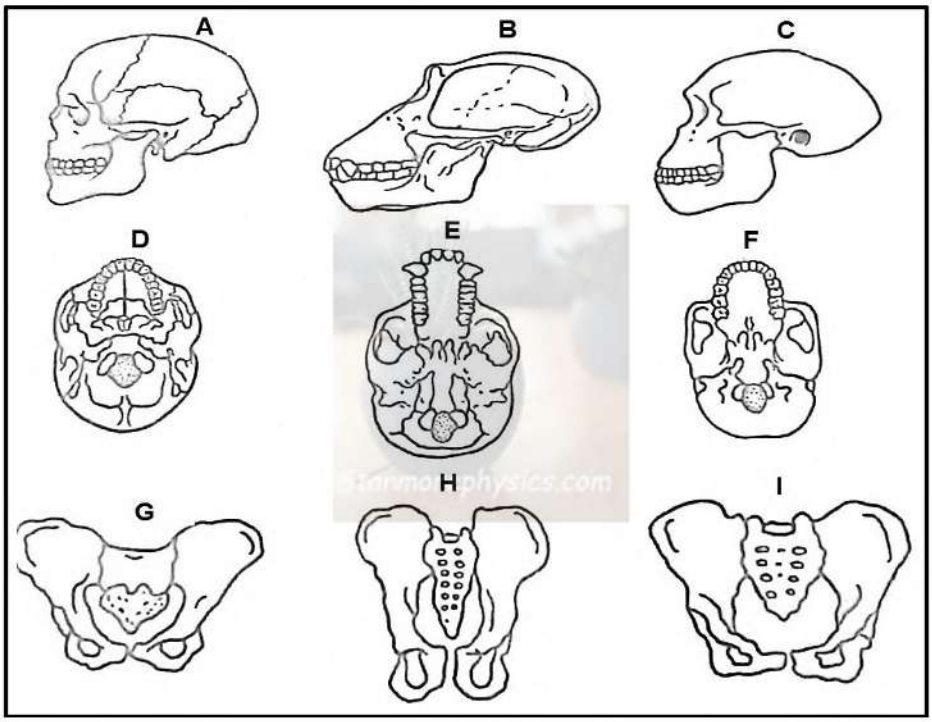
Downloaded from Stanmorephysics.com

3.1.3 State ONE way in which the validity of this investigation was ensured. (1)

3.1.4 Why was the average yield per plot calculated? (1)

3.1.5 State the conclusion for this investigation. (2)
(8)

3.2 The diagrams below represents the anatomical structures of three different primates.



3.2.1 Which ONE of the following structures (**A**–**I**) represent that of a human …

(a) skull? (1)

(b) pelvis? (1)

3.2.2 Give a reason for your answer in QUESTION 3.2.1 (b). (2)

3.2.3 Explain the significance of the cranial size of skull **A**. (2)

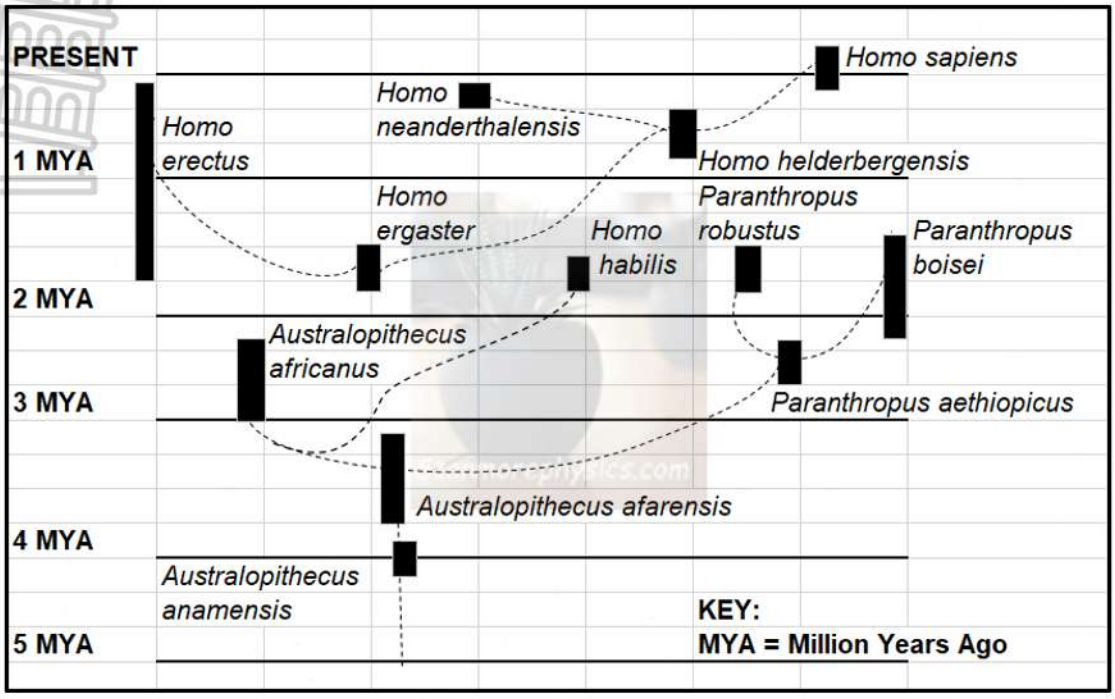
3.2.4 Describe the changes in the position of the foramen magnum from quadrapedalism to bipedalism. (2)

3.2.5 Explain the relationship between the dentition and diet in hominin species **D** and **E**. (4)

3.2.6 Describe the shape of the spine of quadrapedal organisms. (1)
(13)

Downloaded from Stanmorephysics.com

3.3 The diagram below shows possible evolutionary relationships among some hominids.



3.3.1 What is the above diagram called? (1)

3.3.2 What is the common ancestor to all species in the diagram? (1)

3.3.3 How many of EACH of the following are represented in the diagram above?

(a) Genera (1)

(b) *Homo* species (1)

3.3.4 When did *Australopethicus africanus* first appear? (2)

3.3.5 Explain why *P. robustus* and *P. boisei* are more closely related. (2)

3.3.6 Name:

(a) The species that is a direct ancestor of *Homo habilis* (1)

(b) The first hominid species to have moved out of Africa (1)

3.3.7 Describe how the fossils of the Homo species provide evidence for the 'Out of Africa' hypothesis. (3)
(13)

Downloaded from Stanmorephysics.com

3.4 The table below shows the results obtained in an investigation where purebred black lizards were crossed with brown lizards. The gene for black skin is dominant over the gene for brown skin.

The F_1 generation was used as parents (consisting of 4 breeding pairs) to produce the F_2 generation

GENERATIONS	NUMBER OF BLACK LIZARDS	NUMBER OF BROWN LIZARDS
P_1 generation	1	1
F_1 generation	12	0
F_2 generation		
Offspring of 1st breeding pair	12	0
Offspring of 2nd breeding pair	9	3
Offspring of 3rd breeding pair	6	6
Offspring of 4th breeding pair	12	4

3.4.1 Calculate the simplified phenotypic ratio of black lizards to brown lizards in the F_2 generation. Show ALL calculations. (2)

3.4.2 Provide evidence from the data to support the following statement:

The gene for black skin is dominant over the gene for brown skin. (2)

3.4.3 Draw a bar graph to show the phenotypic results of F_2 generation for the 3rd and 4th breeding pairs. (6)
(10)

3.5 A man with blood group A marries a woman with blood group B.

Use a genetic cross to show the possibility of them having ALL the blood groups in the F_1 generation. **(6)**
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150

Copyright reserved

Downloaded from Stanmorephysics.com

education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

LIFE SCIENCES

SEPTEMBER 2025

MARKING GUIDELINES

MARKS: 150

These marking guidelines consists of 12 pages.

Copyright reserved

Downloaded from Stanmorephysics.com

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

4. **If comparisons are asked for but descriptions are given**
   Accept if 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 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 given in terminology**
    Accept, provided it was accepted at the provincial memo discussion meeting.

Copyright reserved

Downloaded from Stanmorephysics.com

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

15. **If units are not given in measurements**
Candidates will lose marks. The marking guideline 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 guideline**
No changes must be made to the marking guideline without consulting the Provincial Internal Moderator who in turn will consult with the Provincial Internal Moderator (and the External moderators where necessary)

Copyright reserved

Downloaded from Stanmorephysics.com

SECTION A

QUESTION 1

1.1	1.1.1		D✓✓		
	1.1.2		C✓✓		
	1.1.3		B✓✓		
	1.1.4		D✓✓		
	1.1.5		B✓✓		
	1.1.6		A✓✓		
	1.1.7		C✓✓		
	1.1.8		A✓✓		
	1.1.9		D✓✓	(9 x 2)	**(18)**
1.2	1.2.1		Nucleolus✓		
	1.2.2		Genome✓		
	1.2.3		Cytokinesis✓		
	1.2.4		Centriole ✓/Centrosome		
	1.2.5		*Australopithecus*✓		
	1.2.6		Stem cells✓		
	1.2.7		Continuous✓ variation		
	1.2.8		Species ✓		
	1.2.9		Homologous✓ structures		
	1.2.10		Peptide✓ bond	(10 x 1)	**(10)**
1.3	1.3.1		None ✓✓		
	1.3.2		A only ✓✓		
	1.3.3		B only ✓✓	(3 x 2)	**(6)**
1.4	1.4.1	(a)	Allele✓		(1)
		(b)	Monohybrid✓ cross		(1)
	1.4.2		Ovary✓/Ovule		(1)
	1.4.3	(a)	Violet ✓		(1)
		(b)	Wrinkled✓		(1)
	1.4.4		Law of dominance ✓✓		(2)
	1.4.5	(a)	9 : 3 : 3 : 1✓✓		(2)
		(b)	RrPp✓		(1)
					(10)

Downloaded from Stanmorephysics.com

1.5 1.5.1 Bone fragment✓ (1)

1.5.2 Yes✓ (1)

1.5.3 There are bands on the profile of B which correspond with those of the mother and those of son A✓✓ (2)

1.5.4 to:
- identify suspects of crimes✓
- prove paternity✓
- determine probability of causes of genetic disorder ✓
- to establish compatibility of tissues for organ transplants✓

(**Mark first TWO only**) Any (2)
(6)

TOTAL SECTION A: 50

Downloaded from Stanmorephysics.com

SECTION B

QUESTION 2

2.1 2.1.1 Ribosome✓ (1)

2.1.2 Aspartate✓ Serine✓ (2)

2.1.3 - GAC and GAU code for the same amino acid✓/aspartate
- therefore there will no effect on the formation of protein✓/same protein is formed. (2)

2.1.4 - Each tRNA carries a specific amino acid✓
- When the anticodon on the tRNA✓
- matches the codon on the mRNA✓
- then tRNA brings the required amino acid to the ribosome. ✓
- Amino acids become attached by peptide bonds✓
- to form the required protein✓ Any (5)

2.1.5 T✓

DNA Replication	Transcription
Two identical DNA molecules are formed✓	One mRNA molecule is formed✓
Two strands act as templates✓	One strand act as a template✓
Base pairs are formed✓	No base pairs formed✓
DNA nucleotides are used✓	RNA nucleotides are used✓

(Mark first TWO only) Table 1 + Any (2 x 2) (5)
(15)

Downloaded from Stanmorephysics.com

2.2 2.2.1 Biogeography ✓ (1)

2.2.2 - Genetic evidence ✓
- Modification by descent✓/Homologous structures
- Fossil evidence✓ (3)

2.2.3 Speciation is formation of new species from the existing ones✓while Extinction is the complete disappearance of species from the Earth✓ (2)

2.2.4
- A population of baobab tree species (in Madagascar) becomes separated by a geographical barrier, the sea✓
- then the population splits into two sub-populations✓, in Africa and in Australia
- 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 two different species, in Africa and in Australia✓ Any (6)

(12)

Downloaded from Stanmorephysics.com

2.3 2.3.1 (a) **A** Homologous chromosome✓ (1)

(b) **B** Spindle fibre✓ (1)

2.3.2 Metaphase I✓ (1)

2.3.3
- Double stranded chromosomes become visible ✓
- the centrosome duplicates/divides into centrioles which will move to opposite poles✓
- spindle fibres are formed✓
- and attach to the centromere✓/holds chromosomes
- Crossing over occur Any (4)
-

2.3.4
- The exchange of genetic material✓ in crossing over
- Results formation of genetically different gametes✓
- leading to increase in genetic variation among the offspring✓
- where some will have favourable characteristics✓,
- and others to have unfavourable characteristics✓
- When the environmental conditions change✓/when there is
- competition/selection pressures
- those with favourable characteristics will survive✓
- and those with unfavourable characteristics will die ✓ Any (5)

2.3.5 23✓ chromosomes (1)

2.3.6
- Non disjunction occurred✓ at pair 21/chromosomes/chromatids at pair 21 failed to separate✓
- during anaphase✓ Any (2)

(15)

2.4 2.4.1 (a) Woman/female with X-linked Alport syndrome✓✓ (2)

(b) X^AY✓✓ (2)

2.4.2 3✓ (1)

2.4.3 Heterozygous✓ (1)

2.4.4
- She and Abe, a male with X^aY genotype✓/ with X-linked Alport syndrome,
- have sons with X^AY genotype✓/without the condition
- and a daughter with X^aX^a genotype✓/with the condition Any (2)

(8)

[50]

Copyright reserved

Downloaded from Stanmorephysics.com

QUESTION 3

3.1 3.1.1 To determine the effect of Bt-gene on the yield of cotton plants ✓✓ (2)

3.1.2 (a) (Varieties/type) of cotton plants✓ (1)

(b) Yield✓ of cotton plants (1)

3.1.3
- Equal number of the two varieties of cotton plants were planted in each plot✓
- The environmental conditions for the two plots were exactly the same✓
- Insects of the same type were introduced in each plot✓
- Equal number of/500 insects were introduced in each plot✓ Any (1)

3.1.4 To increase the reliability of the results.✓ (1)

3.1.5 The cotton plants with the Bt-gene have more yield. ✓✓ (2)
(8)

3.2 3.2.1 (a) (Skull) **A**✓ (1)

(b) (Pelvis) **I**✓ (1)

3.2.2 The pelvis is short✓ and wide✓ (2)

3.2.3
- Large cranium✓
- houses a large brain✓
- leading to more intelligence✓ Any (2)

3.2.4 the foramen magnum move from a backward position✓ in quadrapedalism to a more forward position✓ in bipedalism (2)

3.2.5 Species D have small/short canines✓, since they feed on soft/cooked food✓
Species E have large/long and pointed/sharp canines✓ to it to be able to tear✓ raw/uncooked food✓ Any (4)

3.2.6 C–shaped ✓ (1)
(13)

Downloaded from Stanmorephysics.com

3.3 3.3.1 Phylogenetic tree✓ (1)

3.3.2 *Australopethicus anamensis*✓ (1)

3.3.3 (a) 3✓ (1)

(b) 6✓ (1)

3.3.4 3✓ million years ago✓/mya (2)

3.3.5 They share the most recent common ancestor, *Paranthropus aethiopicus*✓✓ (2)

3.3.6 (a) *Australopethicus afarensis*✓ (1)

(b) *Homo erectus*✓ (1)

3.3.7
- Fossils of *Homo habilis* are found in Africa only✓
- The oldest fossils of *Homo erectus* are found in Africa✓ while younger fossils *a*re found in other parts of the world✓
- The oldest fossils of *Homo sapien* are found in Africa✓ while younger fossils *a*re found in other parts of the world✓ Any (3)

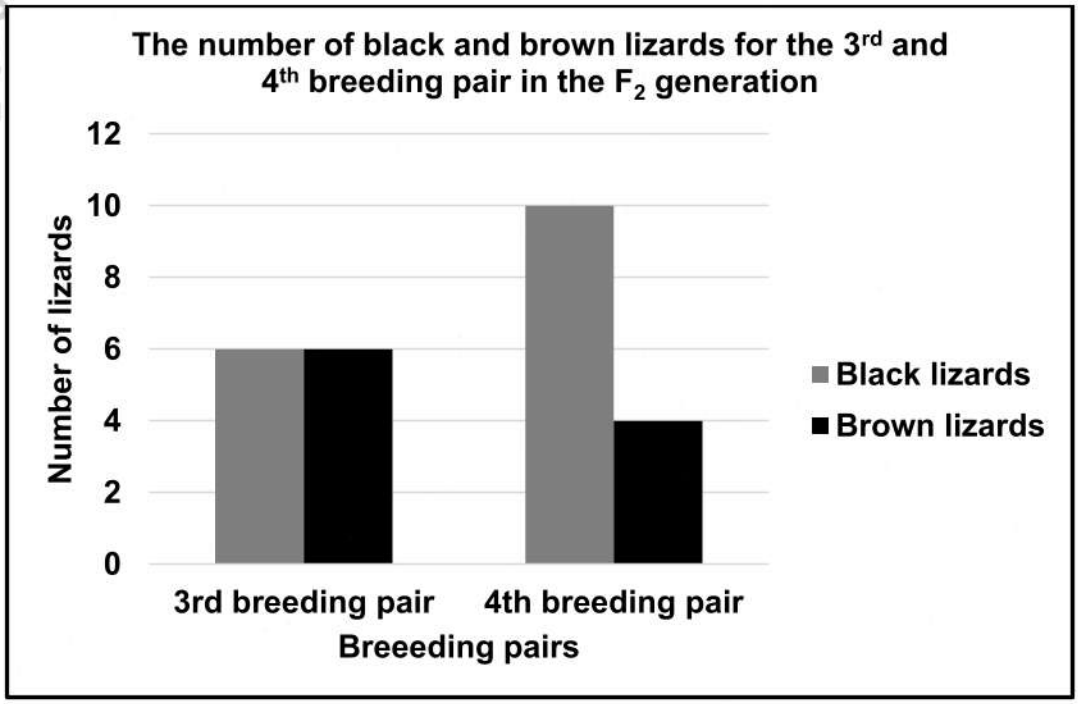
(13)

Downloaded from Stanmorephysics.com

3.4 3.4.1 (12+9+6+12) : (0+3+6+4) ✓ =39 :13 / 3:1✓ (2)

3.4.2 - The parents in the P_1 generation, one with black skin and another with brown skin ✓/homozygous with contrasting characteristics
- but all the offspring they produced in the F_1 generation have black skin✓ (2)

3.4.3



Guideline for assessing the graph

CRITERIA		ELABORATION	MARK
Correct type of graph	**(T)**	Bar graph drawn	1
Caption of graph	**(C)**	Both variables, skin colour and breeding pairs	1
Axes labels	**(L)**	X-and Y axis correctly labelled with units	1
Scale for X- and Y-axis	**(S)**	- Equal width and spaces of bars - Correct scale for Y-axis	1
Plotting of co-ordinates	**(P)**	- 1 to 3 bars plotted correctly - All 4 bars plotted correctly	1 2

(6)
(10)

Stanmorephysics.com

Downloaded from Stanmorephysics.com

3.5 **P_1** Phenotype: Man with blood group A x Woman with blood group B✓

Genotype: I^Ai x I^Bi ✓

Meiosis

Gametes: I^A i x I^B i ✓

Fertilization

F_1

Genotype: I^AI^B | I^Ai | I^Bi | ii ✓

Phenotype: Blood Group AB | Blood Group A | Blood group B | Blood Group O ✓

All blood groups✓* were possible in F_1 generation

P_1 and F_1✓

Meiosis and fertilisation✓

***1 compulsory mark +** Any 5

OR

P_1 Phenotype: Man with blood group A x Woman with blood group B✓

Genotype: I^Ai x I^Bi✓

Meiosis

Fertilization

Gametes	I^A	i
I^B	I^AI^B	I^Bi
i	I^Ai	ii
1 mark for correct gametes 1 mark for correct genotypes		

F_1 Phenotype: Blood Group AB | Blood Group A | Blood group B | Blood Group O ✓

All blood group✓* were possible in F_1 generation

P_1 and F_1✓

Meiosis and fertilisation✓

***1 compulsory mark +** Any 5 **(6)**

[50]

TOTAL SECTION B: 100

GRAND TOTAL: 150

Copyright reserved

Downloaded from Stanmorephysics.com

education
Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

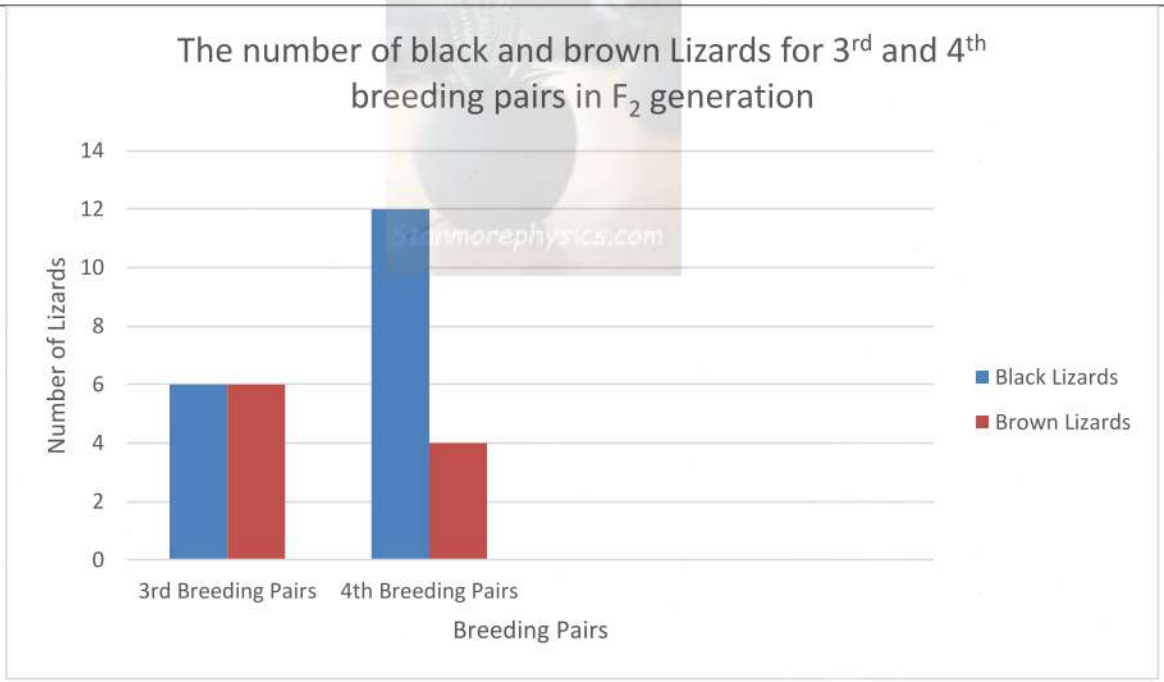
Inset Building, Dr Albert Luthuli Drive
Private Bag X2044
Mmabatho 2735
Tel.: (018) 384-5805
e-mail: KJamolo@nwpg.gov.za

Chief Directorate: Examinations and Assessment
Directorate: Assessment

SUBJECT	LIFE SCIENCES	PAPER	2
DATE	22 September 2025	TIME OF ERRATA	
QUESTION		MARKS	
QUESTION		MARKS	
QUESTION		MARKS	
QUESTION		MARKS	
	TOTAL MARKS AFFECTED		
	TOTAL MARKS FOR THE PAPER AFTER ADJUSTMENT		0

NUMBER	SUB QUESTION	CORRECTIONS/ADDITIONS/ADJUSTMENT	MARKS
1	1.1.8	Correct Answer is **C not A**	(2)
2	1.3.2	Correct Answer is **B only not A only**	(2)
3	1.5.3	Rephrase: There are **DNA** bands/**pattern** on the profile of B which correspond with those of the mother✓ and those of son A✓(split ticks)	(2)
	2.1.5	**DNA Replication** / **Transcription** The whole molecule unwind and unzip✓ / A small portion of molecule unwinds and unzip✓ Thymine pairs with adenine✓ / Adenine pairs with uracil✓	(5)
	2.2.2	- Genetic✓ evidence - Modification by descent✓/Homologous structures - Fossil✓ evidence/**records**	(3)
	2.2.3	Speciation is formation of new species✓from the existing/original (move tick)	(1)
	2.2.4	- A population of baobab tree species (in Madagascar) becomes separated by a geographical barrier, the sea✓/ ocean/continental drift - then the population splits into two✓ sub-populations/population, in Africa and in Australia - 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 occurred 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✓/cross pollinate they will not be able to interbreed✓. (don't accept reproduce) - The two populations are now two different species✓, in Africa and in Australia. Any	(6)
	2.3.3	- Double stranded chromosomes become visible ✓ - the nucleolus✓ and nuclear membrane disappears✓ - the centrosome duplicates/divides into centrioles which will move to opposite poles✓	

Downloaded from Stanmorephysics.com

		- spindle fibres are formed✓ - and attach to the centromere✓/holds chromosomes Crossing over occur✓ Any	(4)
	2.3.6	- Non disjunction occurred✓ at pair 21 - chromosomes/chromatids at position 21 failed to separate✓ - during anaphase✓/ I /II Any	(2)
	2.4.4	- She and Abe, a male with X^aY genotype✓/ with X-linked Alport syndrome, - have sons with X^AY genotype✓/without X-linked Alport syndrome - and a daughter with X^aX^a genotype✓/ with X-linked Alport syndrome Any	(2)
3	3.1.2	(a) **Presence and absence of Bt-gene✓ NOT Varieties of cotton plants**	(1)
	3.1.3	- Equal number of the two varieties of cotton plants✓ were planted in each plot - Equal number of /500 insects✓ were introduced in each plot - **Equal planting fields✓** - Same type of insects✓ - Same environmental conditions for the two plots✓ Any	(1)
	3.4.3		(6)
		Note: If a histogram or line graph is drawn instead of a bar graph, marks will be lost for: • Type of graph (T) • Scale (S) If axes are transposed: • learner can get all marks if labels are **also swapped and bars are of equal width and spaces are equal** • Learner will loose marks for label and scale **: if labels are swapped or not corresponding.**	

Downloaded from Stanmorephysics.com

		• **But bars can be credited if 1 to 3 or ALL are correct** Bars may **not attched together** but must **be close to each** other per breeding pair.	