

MARKING GUIDELINES

EXAMINATION NATIONAL SENIOR CERTIFICATE	
GRADE	12
DATE	MAY/JUNE 2026
SUBJECT	LIFE SCIENCES
PAPER	2
MARK TOTAL	150
DURATION (HOURS)	2½
NUMBER OF PAGES	13



SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE
SUID-AFRIKAANSE KOMPREENSIEWE ASSESSERINGSINSTITUUT

FINAL APPROVED MARKING GUIDELINES	
DATE OF MEETING	
UMALUSI MODERATOR	
CHIEF MARKER	
INTERNAL MODERATOR	



PRINCIPLES RELATING TO MARKING LIFE SCIENCES 2026

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 part of it is required**
Read all and credit relevant parts.
4. **If comparisons are asked for and 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 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 provided it does not mean something else in Life Sciences or if it is out of context.



13. **If common names are given for terminology**
Accept provided it was accepted at the marking guideline discussion meeting.
14. **If only letter is asked for and only name is given (and vice versa)**
No credit.
15. **If units are not given in measurements**
Candidates will lose marks. Marking guideline will allocate marks for units separately.
16. Be sensitive to the **sense of an answer that may be stated in a different way.**
17. **Captions**
All illustrations (diagrams, graphs, tables, etc.) must have captions.
18. **Code-switching of official languages (terms and concepts)**
A single word or two that appears in any official language other than the learners' assessment language used correctly 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. **No changes may be made to the Marking Guidelines without consulting the SACAI CHIEF MARKER and SACAI MODERATOR and where applicable, also the UMALUSI MODERATOR.**



SECTION A

QUESTION 1

1.1

1.1.1 B ✓✓

1.1.2 A ✓✓

1.1.3 C ✓✓

1.1.4 A ✓✓

1.1.5 D ✓✓

1.1.6 C ✓✓

1.1.7 B ✓✓

1.1.8 B ✓✓

1.1.9 B ✓✓

1.1.10 C ✓✓

(10x2) **(20)**

1.2

1.2.1 (Mendel's Principle/Law of) Segregation ✓

1.2.2 Punctuated Equilibrium ✓

1.2.3 Prophase I ✓

1.2.4 Locus ✓

1.2.5 Reliability ✓ /Validity

1.2.6 Biotechnology ✓

1.2.7 Ribose ✓

1.2.8 Non-disjunction ✓

1.2.9 Complete ✓ dominance

(9x1) **(9)**

1.3

1.3.1 B ✓✓ only

1.3.2 B ✓✓ only

1.3.3 Both A and B ✓✓

1.3.4 B ✓✓ only

(4x2) **(8)**



1.4

1.4.1 DNA ✓ (1)

1.4.2 It is double ✓ stranded/double helix/nitrogenous bases are bound. (1)

1.4.3 Nitrogenous base ✓ (1)

1.4.4 Deoxyribose ✓ sugar
Phosphate ✓ (2)

1.4.5 Nitrogenous bases ✓ must be complementary ✓ to bind. (2)

- 1.4.6
- DNA carries hereditary information. ✓
 - DNA contains coded information for protein synthesis/carries the genetic code for protein synthesis.

(Mark any ONE) (Mark first ONE only) (1)

(8)

1.5

1.5.1 a) Lee Berger ✓ (1)

b) Lee Berger ✓ (1)

1.5.2 *Australopithecus africanus* ✓ (1)

1.5.3 Karabo ✓ (1)

- 1.5.4
- Provides information regarding our ancestry. ✓
 - Adds to the fossil record/evidence.
 - Serve as evidence for evolutionary relationships.
 - Provides evidence of the history of extinct organisms.
 - Indicates the order in which evolution occurred.

(Mark any ONE) (Mark first ONE only) (1)

(5)

TOTAL SECTION A: [50]



SECTION B

QUESTION 2

2.1

- 2.1.1 a) Polypeptide chain ✓ /Amino acid chain (1)
b) Ribosome ✓ (1)

- 2.1.2 C – tRNA in the cytoplasm ✓ carries amino acids ✓ to the ribosome.
E – mRNA comes from the nucleus ✓ and serves as a template/messenger ✓
/carries the codon to which tRNA binds. (4)

- 2.1.3
- If the mRNA breaks away, ✓
 - the tRNA will not be able to bind ✓
 - and bring the amino acids, ✓
 - the chain will not be completed
 - the protein will not form.

(Mark any THREE) (3)

2.1.4 **Transcription*** ✓

- The double helix unwinds. ✓
- The double-stranded DNA unzips/weak hydrogen bonds break ✓ to form two separate strands.
- One strand is used as a template ✓
- to form mRNA ✓
- using free mRNA nucleotides from the nucleoplasm.
- The mRNA is complementary to the DNA.
- mRNA now has the coded message for protein synthesis.

(1*Compulsory mark + any FOUR) (5)

(14)

2.2

- 2.2.1 Organism whose genetic material has been altered/changed using biotechnology. ✓✓ (2)

- 2.2.2
- Increase in crop yield ✓
 - Increased size ✓
 - Increased resistance to pests
 - Increased fruit diversity
 - Increased resistance against environmental conditions/examples.

(Mark any TWO) (Mark first TWO only) (2)



- 2.2.3
- During inbreeding and selection only certain/specific organisms are allowed to breed, ✓
 - causing crosses between organisms with similar genes. ✓
 - There is a decrease in the gene pool. ✓

(Mark any TWO) (Mark first TWO only)

(2)

(6)

2.3

- 2.3.1
- Carried by the X-chromosome, ✓
 - two alleles are required for the characteristic to be expressed in the phenotype. ✓

(2)

- 2.3.2
- can be hairless ✓ that can cause sunburn ✓
 - can sweat excessively ✓ that causes dehydration ✓
 - can have reduced teeth ✓ therefore cannot feed properly ✓
 - farmer might not be able to sell the cows ✓ economically no benefit ✓

(ANY 1 x 2) (Mark first ONE only)

(2)

2.3.3

{ ✓ ✓	P₁:	Phenotype: normal cow x normal bull ✓ Genotype: $X^H X^h \times X^H Y$ ✓	
		{ Meiosis Gametes: Fertilisation	$X^H ; X^h ; X^H ; Y$ ✓
		$X^H ; X^h \times X^H ; Y$ $X^H X^H ; X^H X^h ; X^H Y ; X^h Y$	
	F₁:	Genotype	$X^H X^H ; X^H X^h ; X^H Y ; X^h Y$ ✓ Phenotype: 25 % affected cows* ✓ 25 % affected bulls* ✓ (*compulsory marks)

(2*compulsory marks + any 5)

OR



P₁: **Phenotype:** normal cow x normal bull ✓
Genotype: $X^H X^h$ x $X^H Y$ ✓

✓ **Meiosis**
Gametes: X^H ; X^h ; X^H ; Y ✓
Fertilisation

	X^H	X^h
X^H	$X^H X^H$	$X^H X^h$
Y	$X^H Y$	$X^h Y$

F₁ **Genotype** $X^H X^H$; $X^H X^h$; $X^H Y$; $X^h Y$ ✓
Phenotype: 25 % affected cows* ✓
 25 % affected bulls* ✓
 (*compulsory marks)

(2*compulsory marks + any 5) (7)

- 2.3.4
- Prevent inbreeding of affected/carrier cows. ✓
 - Introduce new cattle without the disorder to mask the recessive allele. ✓
- (2)
- (13)

2.4

2.4.1 Child 1 ✓ (1)

- 2.4.2
- The barcode pattern ✓ formed by
 - the base sequence ✓ of prepared, processed DNA.
- (2)

- 2.4.3
- Process can be inaccurate. ✓
 - DNA can be planted on a scene ✓ /person can be framed.
 - Human error can occur in a laboratory.
 - Laboratories might not be up to standard.
 - Small parts are tested so it might be the same as someone else's.
 - It is an expensive process.
 - Ethical issues.

(Mark ANY two) (Mark first TWO only) (2)

(5)



2.5

- 2.5.1 3 ✓ /Three (1)
- 2.5.2 a) Dominant ✓ (1)
b) Autosomal ✓ (1)
- 2.5.3 a) Unaffected female ✓ (1)
b) Gg ✓ (1)
- 2.5.4 $\frac{1}{2}$ ✓ x 100 ✓ = 50% ✓ (3)
- 2.5.5 Gg ✓ (1)
- 2.5.6
- Kate must be gg ✓ because she does not have the disorder.
 - Therefore the affected allele must come from the father, ✓
 - but it cannot be GG, otherwise all/100% of the offspring will be affected. ✓ (3)

(12)

TOTAL QUESTION 2: [50]



QUESTION 3

3.1

3.1.1 The Grand Canyon formed too deep* ✓

- Leading to geographical isolation. ✓
- Original population of squirrels was separated into two populations. ✓
- There was no gene flow between the two populations. ✓
- Each population was exposed to different environmental conditions. ✓
- Natural selection occurred independently between the different populations. ✓
- The populations were now genotypically and phenotypically different. ✓
- Even if the different populations came into contact again, ✓
- they will not be able to interbreed. ✓

(1* compulsory mark + any 6 other)

(7)

3.1.2 a) Selective breeding ✓ /Outbreeding

(1)

- b)
- By introducing new squirrels, the gene pool is expanded. ✓
 - Genetic variation is increased. ✓
 - Resistance can be formed due to natural selection. ✓
 - The population will be able to survive in the environment.
 - Stronger traits could be introduced.

(ANY THREE) (Mark first THREE only)

(3)

(11)

3.2

3.2.1 A – gorilla ✓

B – Taung child ✓

C – modern human ✓

(3)

3.2.2

Skull A	Skull C
Pronounced brow ridges ✓	Less pronounced brow ridges ✓
Prognathous/protruding jaws ✓	Non-prognathous/less protruding jaws ✓
Larger jaws	Smaller jaws
Smaller cranium size	Larger cranium size
Large teeth/canines	Smaller teeth/canines
Poorly developed chin	Well-developed chin
Cranial ridge is present	Cranial ridge is absent/reduced

Table with correct column headings ✓

(ANY TWO corresponding differences) (Mark first TWO only)

(5)



- 3.2.3
- Freely rotating arms ✓
 - Long upper arms ✓
 - Rotation of elbow joints ✓ /wrist
 - Opposable thumbs
 - Bare fingertips/nails instead of claws
 - Five fingers
 - Fingerprints present

(ANY THREE)

(3)

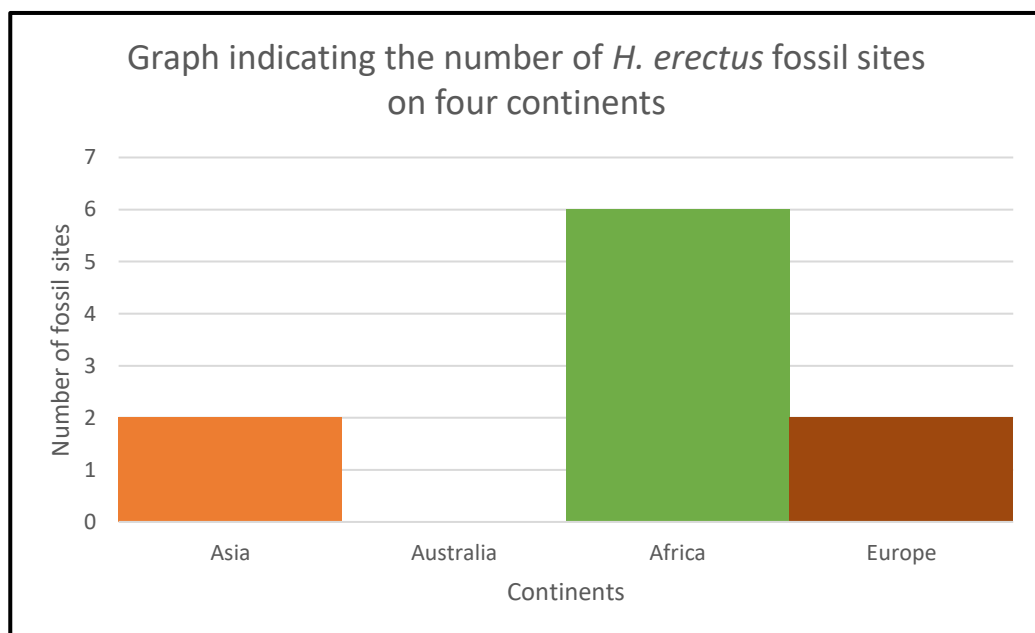
- 3.2.4
- The cranium houses the brain ✓
 - **B** has a larger cranium volume than **A** ✓
 - which indicates a larger brain ✓
 - which suggests greater intelligence. ✓

(4)

(15)

3.3

3.3.1



CRITERIA		ELABORATION	MARK
Caption	(C)	Include both variables	1
Type	(T)	Histogram without spaces	1
Labels	(L)	Labels	1
Scale	(S)	Scaling constant and bars of equal width	1
Plotting	(P)	1 to 3 bars correct 4 bars correct	1 2

(6)



3.3.2 Africa has the greatest number of fossil sites. ✓✓

OR

Africa has more fossil sites than the other continents. ✓✓

(2)

- 3.3.3
- Africa has the most fossil sites. ✓
 - Therefore, it can be argued that humans originated from Africa, ✓
 - and migrated to other continents. ✓

(3)

(11)

3.4

3.4.1 Cell division where the nucleus divides twice, resulting in four cells with half the chromosome number as the original. ✓✓

OR

Type of cell division that produces four different haploid daughter cells.

(2)

3.4.2 Telophase I ✓

(1)

3.4.3 The homologous chromosome pairs have been separated each with their own nucleus. ✓

(1)

- 3.4.4
- The different alleles ✓ for different characteristics,
 - on the maternal and paternal ✓ chromosomes.

(2)

3.4.5

Mitosis	Meiosis
Occurs in body/somatic cells	Occurs in gametes/sex cells ✓
Produces 2/two identical daughter cells	Produces 4/four unidentical daughter cells ✓
Consists of 1/one division	Consists of 2/two divisions
No crossing over of chromosomes	Crossing over of chromosomes during Prophase I
Chromatids are separated during the Anaphase	Chromosomes are separated during Anaphase I

(No mark for table)

(One mark per difference, ANY TWO corresponding differences)

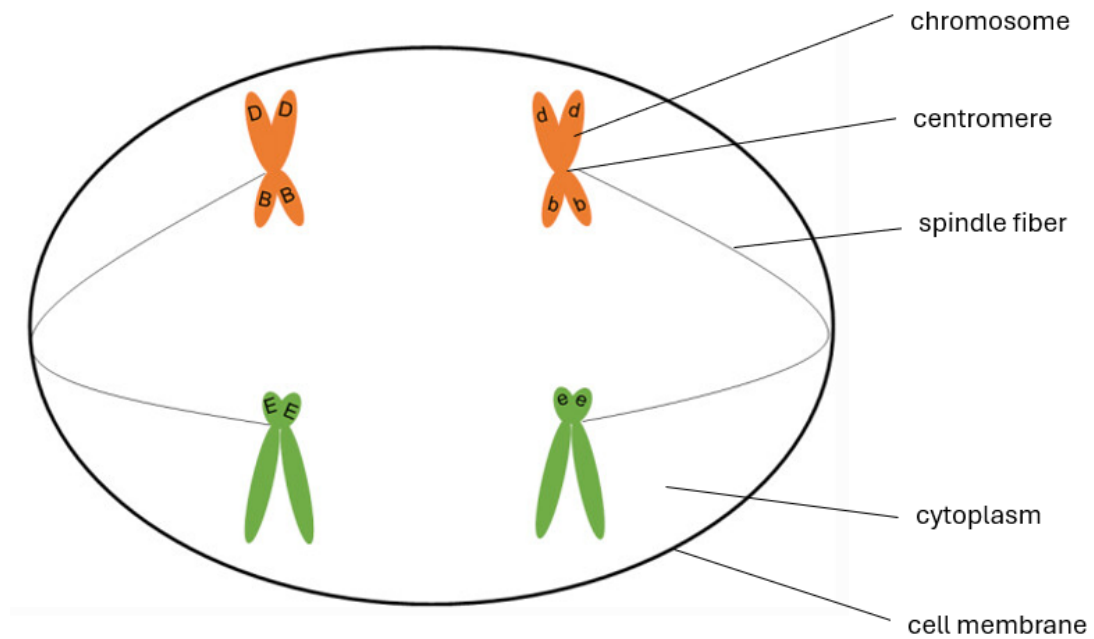
(Mark first TWO only)

(2)



3.4.6

Anaphase I



CRITERIA		ELABORATION	MARK
Heading	(H)	Anaphase I	1
Phase	(P)	Correct phase drawn	1
Cell	(C)	Must be ONE cell	1
Labels	(L)	Any TWO correct labels	2

(5)

(13)

TOTAL QUESTION 3: [50]

TOTAL SECTION B: [100]

GRAND TOTAL: [150]