

# MARKING GUIDELINES

EXAMINATION	NATIONAL SENIOR CERTIFICATE
GRADE	12
DATE	NOVEMBER 2025
SUBJECT	LIFE SCIENCES
PAPER	2
MARK TOTAL	150
DURATION (HOURS)	2½
NUMBER OF PAGES	13



SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE  
SUID-AFRIKAANSE KOMPREENSIEWE ASSESSERINGSINSTITUUT



## PRINCIPLES RELATING TO MARKING LIFE SCIENCES 2025

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 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 given in terminology**  
Accept provided it was accepted at the national 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 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 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 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. **No changes must 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 D✓✓

1.1.2 B✓✓

1.1.3 B✓✓

1.1.4 A✓✓

1.1.5 B✓✓

1.1.6 C✓✓

1.1.7 C✓✓

1.1.8 B✓✓

1.1.9 B✓✓

(9x2) (18)

1.2

1.2.1 DNA profile✓

1.2.2 Genetic variation✓

1.2.3 Genome✓

1.2.4 Haploid✓

1.2.5 Biodiversity✓

1.2.6 Theory✓

1.2.7 Chiasma✓/chiasmata

1.2.8 Karyokinesis✓

1.2.9 Codon✓

(9x1) (9)

1.3

1.3.1 (Both) A and B✓✓

1.3.2 None✓✓

1.3.3 B only✓✓

(3x2) (6)

1.4

1.4.1 Transcription✓ (1)

1.4.2 Pro✓ – Leu✓ – Gly✓ (– Trp – Trp) ✓ (4)

1.4.3 Peptide✓ (1)

1.4.4 - Instead of coding for Gly(cine)✓  
 - it will code for Ala(nine) ✓  
 - resulting in a different protein. ✓ (3)

**(9)**

1.5

1.5.1 Phylogenetic tree✓/cladogram/phylogram (1)

1.5.2 **ANY TWO:**

- *A. afarensis*✓,
- Bouri✓,
- *P. aethiopicus*

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

1.5.3  $(1.5 - 0.5)✓ = 1 \text{ my}✓$  (Unit must be correct - not MYA) (2)

- 1.5.4
- a) *A. africanus*✓
  - b) Mrs Ples✓
  - c) Robert Broom✓

**OR**

- a) *A. africanus*✓
- b) Taung child✓
- c) Raymond Dart✓

**OR**

- a) *A. africanus*✓
- b) Little foot✓
- c) Ronald Clarke✓

**(Mark first ONE only) (3)**

**(8)**

**TOTAL SECTION A: [50]**

## SECTION B

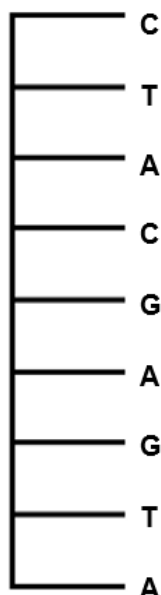
### QUESTION 2

2.1

- 2.1.1 a) Deoxyribose sugar✓ and phosphate✓ (2)  
 b) Hydrogen✓ bond (1)  
 c) Nucleotide ✓ (1)

- 2.1.2 - DNA replication allows the cell to make an identical copy of itself✓  
 - which is necessary for the DNA composition/chromosomes to be identical to the parent cell after cell division✓ (2)

2.1.3 Stick Diagram of a DNA strand



CRITERIA	ELLABORATION	MARK
Caption (C)	Stick diagram of DNA	1
Diagram (D)	Stick diagram with the correct nitrogen bases indicated	3

(1 mark per three correct bases) (4)

- 2.1.4 - Ribose sugar instead of deoxyribose sugar✓ (2)  
 - Cytosine✓ would be the complementary base (2)

(12)

2.2

2.2.1 Geographical isolation✓ (1)

2.2.2 Teeth✓ are different, according to their diet✓

**OR**

Vampire bat has less or less sharp/blunt✓ molars✓ than fish-eating bat

**OR**

Fish-eating bat has more✓ and sharper✓ molars than vampire bat (2)

- 2.2.3
- The bat population got separated by an ancient land bridge✓\*
  - Original population of bats 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)**

**(10)**

2.3

2.3.1 a) Diagnosed cases of different TB strains✓/ Diagnosed cases of TB, MDR-TB and XDR-TB (1)

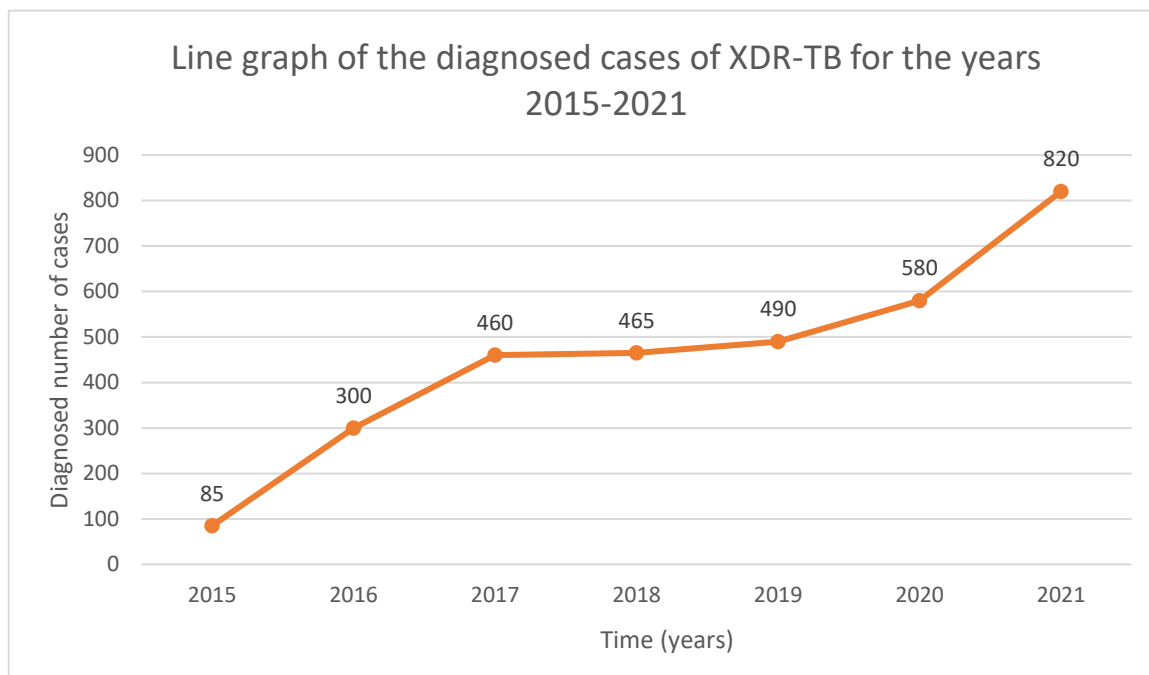
b) Years✓ (1)

2.3.2 - MDR-TB and XDR-TB are drug-resistant strains that originated from normal TB✓

- through mutations/variations✓

- and failure to complete antibiotic courses✓ (3)

2.3.3



CRITERIA		ELLABORATION	MARK
Caption	(C)	Include both variables (diagnosed cases and years)	1
Type	(T)	Line graph	1
Labels	(L)	Diagnosed number of cases on y-axis Years on x-axis	1
Scale	(S)	Scaling constant on both axes	1
Plotting	(P)	1-6 points correct All 7 points correct	1 2

(6)

- 2.3.4 - Both increased from 2019 to 2020 ✓  
 - but MDR-TB decreased in 2021 while XDR-TB increased ✓ (2)

- 2.3.5 - Better awareness campaigns for patients to finish their antibiotics courses ✓  
 - Better preventative measures in place ✓ (2)

(15)

2.4

- 2.4.1 The group consisting of modern humans and all their immediate ancestors ✓✓ (2)

- 2.4.2 Fossil ✓ evidence (1)

- 2.4.3 - Primates have very few offspring because their young are dependent on their parents. ✓  
 - Smaller number of offspring allows for better parental care ✓  
 - and increases chances of survival. ✓ (Mark first TWO only) (2)

2.4.4

	African Apes	Humans
a) Palate shape	Rectangular ✓	More rounded ✓
b) Cranial ridges	Prominent/pronounced ✓	Reduced ✓ ridges

**(1 mark per difference, last mark for table)**

(5)

2.4.5 - The foramen magnum is more forward/at the bottom of the skull ✓

- Presence of a broader pelvic girdle ✓

- Straightened spine ✓ / S-shaped

(3)

**(13)**

**TOTAL QUESTION 2: [50]**

### QUESTION 3

3.1

3.1.1 Anaphase II ✓ (1)

3.1.2 Non-disjunction ✓ (1)

3.1.3 - 1/one cell with an extra chromosome ✓  
 - and 1/one cell with 1/one less chromosome ✓ / 1 cell with  $n+1$  and the other with  $n-1$  (2)

3.1.4 - The product would be a zygote with 47 chromosomes ✓ /  $2n+1$   
 - which causes genetic disorders ✓ in humans e.g. Down Syndrome  
 - that can lead to various symptoms ✓ e.g. developmental and mental delay (3)

3.1.5 - Chromosomes arrange randomly ✓  
 - in a single line ✓  
 - on ✓ the equator with the  
 - spindle fibers attached ✓  
 - to the centromeres ✓ (3)

**(Mark ANY THREE)**

3.1.6 There are 3 ✓ / three chromosomes instead of 23 ✓ / twenty-three chromosomes after meiosis. (2)

**(12)**

3.2

3.2.1 Autosomal ✓ recessive ✓ (2)

3.2.2 - To be aware ✓  
 - and plan in the case of genetic disorders that can be inherited ✓ (2)

3.2.3 50 ✓ % ✓ (2)

3.2.4 Bb ✓ ✓ (2)

**(8)**

3.3

3.3.1 3 ✓ / three (1)

3.3.2 Father – I<sup>B</sup>i ✓  
 Mother – I<sup>A</sup>I<sup>A</sup> ✓ (2)

- 3.3.3 a) 0%✓✓ (2)  
 b) 50%✓✓ (2)

3.3.4 B✓ (2)  
 O✓

- 3.3.5 - The father is blood group B and therefore won't have any antibodies✓ against blood group B antigens.✓  
 - Type O is the universal donor✓ and can be given to all✓ the blood groups.  
 - The father will have antibodies✓ against blood group A antigens.✓

(Mark any 1x2) (Mark first TWO only) (4)  
**(13)**

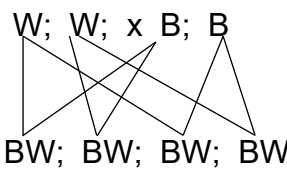
3.4

3.4.1 Co-dominance✓ (1)

3.4.2

**P<sub>1</sub>:** Phenotype: White hen x black rooster✓  
 Genotype: WW x BB✓

✓ { Meiosis  
 Gametes: W ; W ; B ; B ✓  
 Fertilisation

W; W; x B; B  
  
 BW; BW; BW; BW

**F<sub>1</sub>:** Genotype BW ; BW ; BW ; BW ✓  
 Phenotype: 100%✓ speckled  
 10\*✓ speckled chickens (\*compulsory mark)

(1\*compulsory mark + any 5 other)

OR



3.5.3 Genetic testing:

- Determine the chance✓ of the parents having a baby with the disorder.✓/  
Marfan Syndrome.
- Can possibly confirm✓ the disorder/Marfan Syndrome and give the parents  
the choice✓ of keeping the baby or terminating the pregnancy.

Genetic counselling:

- Give the best options✓ for handling the disorder✓/Marfan Syndrome.
- Give support✓ to the parents on how to care✓ for the affected child.
- Give information✓ to understand✓ the disorder/Marfan Syndrome.

**(Mark any 1x2 at testing and any 1x2 at counselling) (Mark first ONE only  
at each)**

(4)

(7)

**TOTAL QUESTION 3: [50]**

**TOTAL SECTION B: [100]**

**GRAND TOTAL: [150]**