

MARKING GUIDELINES

EXAMINATION	NATIONAL SENIOR CERTIFICATE
GRADE	12
DATE	NOVEMBER 2024
SUBJECT	LIFE SCIENCES
PAPER	1
MARK TOTAL	150
DURATION (HOURS)	2½
NUMBER OF PAGES	12



SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE
SUID-AFRIKAANSE KOMPREENSIEWE ASSESSERINGSINSTITUUT



PRINCIPLES RELATED TO MARKING LIFE SCIENCES 2024

- 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, but content will be credited if it is clear.
- 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 provided it does not mean something else in Life Sciences or if it is out of context, or if it changes the meaning of the word.
- 13. If common names given in terminology instead of scientific terms**
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 guideline will allocate marks for units separately.
16. **Be sensitive to the sense of an answer, which may be stated in a different way but still be correct.**
17. **Captions**
All illustrations (diagrams, drawings, graphs, tables, etc.) must have a caption.
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 usually happens in cases where the learner's teaching language wasn't their home language or where they are in a double medium teaching situation. This is applicable to all official languages.
19. **No changes must be made to the marking memoranda without consulting the SACAI CHIEF MARKER and SACAI MODERATOR and where applicable, also the UMALUSI MODERATOR.**



SECTION A

QUESTION 1

1.1.1 C✓✓

1.1.2 C✓✓

1.1.3 B✓✓

1.1.4 A✓✓

1.1.5 D✓✓

1.1.6 A✓✓

1.1.7 D✓✓

1.1.8 B✓✓

1.1.9 B✓✓

1.1.10 B✓✓

(10x2) [20]

1.2.1 Osmoregulation✓

1.2.2 Internal✓ fertilisation

1.2.3 Homeostasis✓

1.2.4 Blind spot✓

1.2.5 Gibberellins✓

1.2.6 Axon✓

1.2.7 Auditory✓ canal

1.2.8 Target✓ organs or cells

[8]

- 1.3.1 Both√√
- 1.3.2 Both√√
- 1.3.3 None√√
- 1.3.4 B (only)√√
- 1.3.5 A (only)√√ (5x2) **[10]**

- 1.4.1 a) C√ – acrosome√ (2)
 b) B√ – middle piece/part/body√ (2)
 c) D√ – nucleus√ (2)

- 1.4.2 • Whip-like/back and forth/side to side/propelling movements√
 • transporting the sperm towards ovum.√ (2)

- 1.4.3 Fallopian tube√ (1)

- 1.4.4 Zygote√ (1)

- 1.4.5 • The proportion of the size of the sperm cells are too big√
 • in relation to the size of the ovum.√
OR
 • In real life the sperm cells are much smaller √
 • than the ovum.√ (Any 1x2) (2)

[12]

TOTAL SECTION A: [50]

SECTION B

QUESTION 2

- 2.1.1 a) Long-sightedness✓/hypermetropia (1)
- b)
- Spectacles with convex lenses✓
 - To bend light more✓ / increase refraction of light / bend light more inwards (2)
- 2.1.2 a) Accommodation✓ (1)
- b)
- Ciliary muscle relax✓
 - Ciliary body moves away from the lens.✓
 - The suspensory ligaments tighten✓/taut
 - More tension on the lens ✓
 - The lens becomes less convex.✓
 - Less refraction of light ✓ by lens (Any FOUR) (4)
- 2.1.3 • He would lack binocular vision✓ */ stereoscopic vision (**compulsory mark**)
- No 3-dimensional vision✓/No depth perception
 - Distance✓ to trees can't be judged
 - Size ✓of trees can't be judged
- (1 compulsory mark + any TWO effects) (3)
- [11]**
- 2.2.1 a) Fallopian tube✓ (1)
- b) Vagina✓ (1)
- 2.2.2 • In endometriosis the abnormal tissue growth is on the Fallopian tube✓ / ovaries / inside of uterus / in the endometrium.
- In adenomyosis the abnormal tissue growth is in the myometrium✓ / muscle wall of uterus / outside the uterus. (2)

- 2.2.3
- Prevents ovulation✓
 - no ovum to be fertilised✓/ no fertilisation.

OR

- Can paralyse smooth muscle✓ of Fallopian tube
- It cannot propel the ovum/zygote forward ✓

OR

- Scar tissue may obstruct the pathway of the sperm✓
- therefore, ovum can't be fertilised✓/ fertilisation cannot take place

(Any 1x2)

(2)

- 2.2.4 a) Follicle✓ cells

(1)

b)

- Responsible for development of secondary sexual characteristics✓/eg.
- Induces growth of endometrium.✓
- Controls bone mass.✓

(Mark first TWO answers only) (Any TWO correct answers)

(2)

- 2.2.5
- Both conditions can cause heavy menstrual bleeding with excess blood loss✓ that
 - depletes the body's iron stores✓ that are needed to replace lost blood.

(2)

[11]

- 2.3.1 The testicles were cut✓ along the long axis✓ / in half along the longest part.

(2)

- 2.3.2 a) seminiferous tubule✓ sperm tube

(1)

b) scrotum✓

(1)

c) epididymis✓

(1)

- 2.3.3 A✓

(1)

- 2.3.4
- The walls consist of smooth muscle✓
 - that will contract✓
 - to propel✓/push/move
 - the sperm cells✓
 - towards the urethra✓

(Any THREE correct answers)

(3)

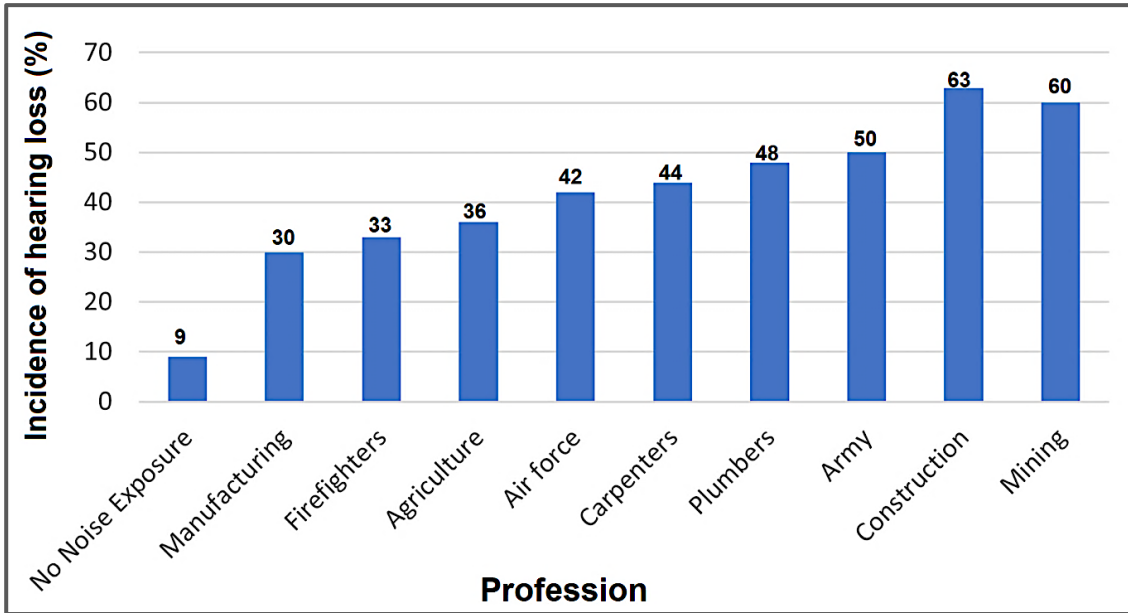


- 3.5
- The muscles in the scrotum/B will contract✓
 - to pull the testicles closer to the body✓ / reduce the surface area of the scrotum
 - to conserve heat✓ / decrease heat loss
 - for optimum sperm production.✓
- (4)
-
- 2.3.6
- Decrease testosterone production✓
 - and this will decrease the sex drive✓ of the offenders
 - to prevent similar crimes✓ in the future.
- (3)
-
- 2.3.7
- To prevent the enlargement of the larynx✓/voice box.
 - This prevents the deepening of the voice✓
 - During puberty✓
- (3)
-
- [19]**
-
- 2.4.1 a) Pituitary✓ gland / hypophysis
- (1)
- b) TSH✓ / Thyroid stimulating hormone
- (1)
-
- 2.4.2
- Regulates metabolism✓
 - Influences heart rate✓
 - Influences the functioning of the nervous system✓
- (Mark first TWO answers only) (Any TWO correct answers)**
- (2)
-
- 2.4.3
- The pituitary gland✓ / hypophysis
 - secretes less TSH✓/hormone X.
 - The thyroid gland✓
 - secretes less thyroxine✓/hormone Y
 - and the thyroxine levels return to normal✓.
- (5)
-
- [9]**
-
- [50]**

QUESTION 3

3.1.1 Type of profession ✓ (1)

3.1.2 Heading: Bar graph to illustrate the incidence of hearing loss at 50 years of age in different professions



Criteria	Mark allocation
Correct heading (H) (both variables mentioned)	1 mark
Correct type of graph (T)	1 mark
Correct labels for X- and Y-axis and correct unit (L)	1 mark
Appropriate scale for Y-axis, bars on X-axis and spaces between bars are equal in width (S)	1 mark
Plotting points (P)	
• 8–10 bars correctly plotted	3 marks
• 5–7 bars correctly plotted	2 marks
• 1–4 bars correctly plotted	1 mark

(7)

3.1.3 9:63 ✓

1:7 ✓

(2)

- 3.1.4
- (Mechanical) vibrations from the middle ear are not converted ✓
 - into nerve impulses. ✓
 - No nerve impulses are sent to the cerebrum ✓
 - so that it becomes aware of sound ✓ / to hear the sound.
- (Any THREE correct answers)** (3)

- 3.1.5
- Supply employees with hearing protective wear.✓
 - Install sound proofing material✓ to reduce noise levels.
 - Understand the risks of workplace noise exposure.✓
 - Educate/Train them on how to use hearing protective wear.✓

(Mark first TWO answers only) (Any TWO correct answers)

(2)

[15]

3.2.1 **The SAME:**

- Type of food✓
- Amount of food✓
- Time intervals✓
- Duration of the investigation✓
- Age✓ of the women
- Physical activities✓ after breakfast
- Stress levels✓
- Medication taken✓
- Health ✓

(2)

(Mark first TWO answers only) (Any TWO correct answers)

3.2.2 305✓ mg/dL✓

(2)

- 3.2.3
- Blood glucose level started off higher✓.
 - Blood glucose rose higher✓ / reached higher levels.
 - Blood glucose rises more rapidly✓
 - Blood glucose takes longer to get back to the normal level✓ / to level off.
 - Blood glucose drops below normal level✓ / lower than the normal female's blood glucose.

(Any TWO correct answers) (Mark first two only)

(2)

- 3.2.4
- Insulin must be taken✓
 - Ensure that breakfast is low in glucose✓/sugar/carbohydrates.

(2)

- 3.2.5
- Pancreas✓ / Islets of Langerhans/β-cells
 - secrete more insulin.✓
 - Insulin is transported to the liver✓/muscles
 - where excess glucose will be converted into glycogen.✓

OR

- Pancreas✓ / Islets of Langerhans/ β-cells
- secrete more insulin✓.
- where it causes the cell membrane of muscle cells to become more permeable✓ and
- absorb more glucose.✓

(4)

[12]



- 3.3.1 • The presence of a ripe banana/Ethylene gas will accelerate the ripening of pears.✓✓
OR
 • The absence of a ripe banana/Ethylene gas will not accelerate the ripening of pears.✓✓ (2)
- 3.3.2 • To prove that the starch is converted to sugar✓ as the fruit ripens.✓ (2)
- 3.3.3 • Test more pears✓/Test more than 4 pears
 • Test other fruit✓
 • Repeat the investigation✓
(Any 2) (Mark first two) (2)
- 3.3.4 3✓ and 4✓ (2)
- 3.3.5 • The fruit can be harvested before it is ripe.✓
 • Less damage caused to fruit during picking ✓/ transporting/packing. (2)
- [10]**
- 3.4.1 • Central✓ nervous system / CNS
 • Peripheral✓ nervous system / PNS (2)
- 3.4.2 a) Grey matter✓ (1)
- b) Central canal✓ (1)
- c) Dorsal root✓ (1)
- 3.4.3 • Acts as a shock absorber✓ against mechanical shock
 • Nourishes✓ the CNS / supplies the CNS with nutrients
 • Removes waste products✓ from the CNS
(Mark first TWO answers only) (Any TWO correct answers) (2)
- 3.4.4 Motor✓/multipolar neuron (1)
- 3.4.5 • Nerve impulse from the cerebrum✓
 • cannot be transmitted to the motor neurons✓
 • to stimulate movement ✓ (3)

- 3.4.6
- Knee jerk✓ / patellar reflex
 - Sudden withdrawing of hands and legs✓ when experiencing pain/exposed to pain stimulus/eg.
 - Stretch reflex✓ (2)
 - Yawning
 - Sneezing
 - Blinking
 - Coughing

(Mark first TWO answers only) (Any TWO correct answers)

(Any other correct reflex action)

[13]

[50]

TOTAL SECTION B: [100]

GRAND TOTAL: [150]