



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**QUALITATIVE ANALYSIS OF LEARNER RESPONSES
AND
EVALUATION OF THE QUESTION PAPERS (PER PAPER)
NATIONAL SENIOR CERTIFICATE 2025
WESTERN CAPE EDUCATION DEPARTMENT**

SUBJECT	LIFE SCIENCES		
QUESTION PAPER	1	2	3
DURATION OF PAPER	2 HOURS 30 MINUTES		
INTERNAL MODERATOR	M FORTUIN		
CHIEF MARKER	K NIEKERK		
DATES OF MARKING	FROM: 28 NOVEMBER 2025		TO: 10 DECEMBER 2025
HEAD OF EXAMINATION	MS LM BREDEKAMP		

REPORT 2: QUALITATIVE ANALYSIS OF LEARNER RESPONSES

SECTION 1: (GENERAL OVERVIEW OF LEARNER PERFORMANCE IN THE QUESTION PAPER AS A WHOLE)

This analysis provides valuable feedback to schools, subject advisors, teachers, and candidates regarding common errors, supporting improved teaching and learning of Life Sciences. A sample of 100 scripts representing low (0-59 marks), average (60-104 marks), and high performance (105-150 marks) was randomly selected across multiple centres. Per-item mark capture was completed for Rasch analysis.



Microsoft Excel
97-2003 Worksheet

Learner performance ranged from poor to very good, with marked variation between centres and schools. Successful performance requires:

- Comprehensive content knowledge
- Conceptual understanding
- Analytical and deductive reasoning across topics.

Candidates underperformed relative to expectations, particularly given feedback about the examination's accessibility. Analysis revealed:

- Misinterpretation of questions
- Responses lacking substance or providing generic answers
- Inadequate learning and preparation
- Difficulty with scientific terminology in explanations
- Some candidates struggled with language usage and were not able to use the correct scientific terms in explanations.

An analysis of the sample 100 scripts per question, showed the results in the figure below.

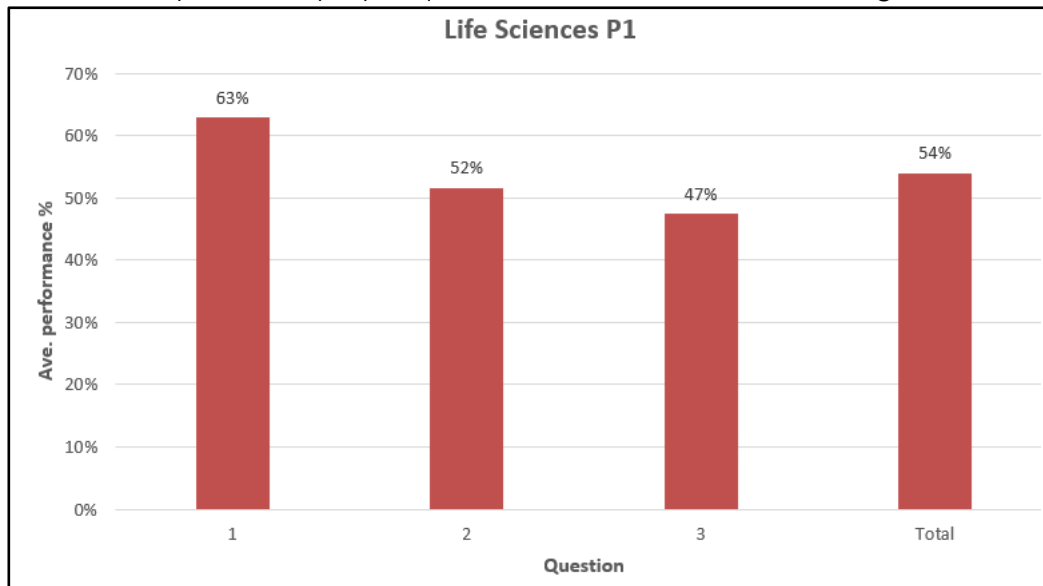


Figure 1: Life Sciences P1 Novemebr 2025- per question analysis

Average Performance per question in Life Sciences, Paper 1:

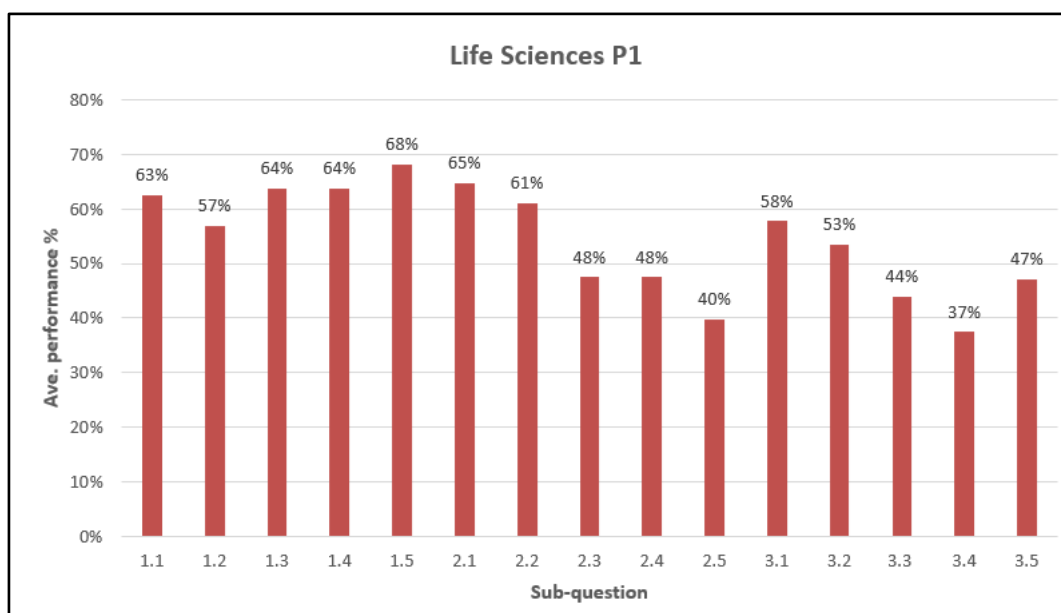
Overall performance showed improvement in Questions 2 and 3 compared to 2024, with an average of 54% for the paper. However, Question 1 performance declined.

Performance in Life Sciences paper 1 for the over the past 3 years:

	2023	2024	2025
QUESTION 1	68%	67%	63%
QUESTION 2	60%	50%	52%
QUESTION 3	53%	40%	47%
TOTAL FOR PAPER	60%	52%	54%

An analysis of each sub- section was done

Sub-question	Topic	Ave. performance %
1.1	Multiple choice questions	63%
1.2	Biological terms	57%
1.3	Satement/Item	64%
1.4	Plant responses	64%
1.5	Structure of a neuron	68%
2.1	Bird eggs and development	65%
2.2	Male reproductive system	61%
2.3	Menstrual cycle	48%
2.4	Thermoregulation	48%
2.5	Growth hormone investigation	40%
3.1	Eye structure & astigmatism	58%
3.2	Human nervous system	53%
3.3	Eye accomodation	44%
3.4	Structure of the human ear	37%
3.5	Insulin & diabetes	47%



Overall performance showed improvement in Questions 2 and 3 compared to 2024, with an average of 54% for the paper. However, Question 1 performance declined.

SECTION 2: COMMENT ON CANDIDATES' PERFORMANCE IN INDIVIDUAL QUESTIONS

(It is expected that a comment will be provided for each question)

QUESTION 1

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Section A: QUESTION 1

Question #	Description	Total marks
1.1	10 X 2 MCQs	20 marks
1.2	8 X 1 Biological terms	8 marks
1.3	3 X 2 Column/Statement	6 marks
1.4	Plant responses	8 marks
1.5	Structure of a neuron	8marks
TOTAL SECTION A:		50 marks

All questions in Section A are considered fair and appropriate.

Generally, well answered (63%), though below the previous year's 67%. Candidates performed well across subsections except 1.2 (Biological terms), which remains a persistent challenge.

Sub-question	Topic	Ave. performance %
1.1	Multiple choice questions	63%
1.2	Biological terms	57%
1.3	Statement/Item	64%
1.4	Plant responses	64%
1.5	Structure of a neuron	68%

(b) Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

Question 1.1 – Multiple Choice Questions:

- 1.1.8- Most candidates incorrectly selected Option B instead of the correct Option D. Candidates associated the round-headed sperm with lack of acrosome affecting motility, failing to link structure to function for fertilisation—the key skill being assessed.

Question 1.2- Biological terms:

Poorest performance of all Question 1 subsections.

- 1.2.1 – Confusion between LH (forms corpus luteum) and progesterone (secreted by corpus luteum).
- 1.2.2 – Confusion between eye disorders (cataracts versus astigmatism).
- 1.2.6 – Incorrect reference to "chorionic villi" instead of "chorion".
- 1.2.7 – Persistent confusion regarding plant hormone roles; most answered "gibberellins" incorrectly.

Question 1.3 – Statement/item:

- 1.3.2 – Inability to distinguish between muscles involved in pupillary mechanism versus accommodation; many incorrectly selected "Both A and B"

Question 1.4- Plant responses caused by hormones:

- 1.4.1 (b) – Many candidates provided only one option (B) instead of both A and B, failing to

identify that Diagram A showed both growth and germination

- 1.4.2 – Candidates described the plant response rather than naming it

Question 1.5- Structure of a neuron:

- 1.5.1 – Several centers incorrectly classified neurons as "unipolar" or "afferent," losing marks. The Examination Guidelines clearly specify classification as sensory, motor, and interneurons only.
- 1.5.2(a) – Many wrote "dendrite" instead of "axon," ignoring the direction of impulse transmission.
- 1.5.4 – Many candidates could not identify multiple sclerosis associated with Part F degeneration. Some centres incorrectly referred to "muscular sclerosis"

(c) Provide suggestions for improvement in relation to Teaching and Learning.

Emphasise proper instruction reading and mark allocation awareness.

For multiple-choice questions, stress that only the correct LETTER should be written

Clarify that writing more than one letter forfeits all marks, even if the first option is correct.

Implement comprehensive strategies for teaching appropriate terminology with correct spelling

Distinguish between terminology for teaching (knowledge broadening) versus terminology for assessment.

Refer consistently to Examination Guidelines for assessable terminology.

Address that strong candidates often lose marks for using incorrect terminology.

Terms that are closely related and often confused are:

- Blindspot vs yellow spot
- Chorion and chorionic villi
- Chorion and choroid
- Absciscic acid and gibberellins

Use diagrams consistently when teaching structure and function to reinforce conceptual understanding.

Emphasise differences between instructional verbs:

- Describe (provide characteristics/features/process)
- Name (provide specific term/title)
- Explain (provide reasons/causes and effects)

Consult Examination Guidelines for Grade 12 requirements regarding neuron types, structure, and function.

(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.

For Teachers:

- Emphasise question instructions, particularly Question 1.2 (biological terms)
- Clarify that abbreviations are no longer accepted in this section
- Stress importance of correct spelling
- Provide comprehensive terminology lists for each curriculum section
- Implement regular consolidation of terminology
- Familiarise themselves with accepted biological terms via Examination Guidelines 2021

For Subject Advisors:

- Assist teachers in identifying content links and gaps
- Utilise the SCP one-pager showing content connections across Grades 10-12
- Leverage BOT materials emphasising biological terms in pre- and post-tests
- Ensure diagnostic report mediation to all teachers

Caution on Past Paper Usage:

- Avoid "teaching to the memorandum" as scenarios change
- Recognise that concessions in previous papers may not apply to future examinations
- Ensure candidates understand content and questions, not just memorised responses
- Differentiate teaching to accommodate all cognitive levels

QUESTION 2

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

QUESTION 2: [50MARKS] – consisted of 5 sub-sections:

Question #	Description	Total marks
2.1	Bird eggs and development	8 marks
2.2	Male reproductive system	11 marks
2.3	Menstrual cycle	14 marks
2.4	Thermoregulation	6 marks
2.5	Growth hormone investigation	11 marks
TOTAL QUESTION 2:		50 marks

All questions in Section B are considered fair and appropriate.

2.1	Bird eggs and development	65%
2.2	Male reproductive system	61%
2.3	Menstrual cycle	48%
2.4	Thermoregulation	48%
2.5	Growth hormone investigation	40%

Performance - 52% (compared to 50% in 2024). Questions 2.3 (menstrual cycle), 2.4 (thermoregulation), and 2.5 (growth hormone investigation) were poorly answered.

(b) Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

Question 2.1 – Bird eggs and development:

Generally, well answered, but misinterpretation in 2.1.1 often resulted in loss of all 8 marks due to dependent subsequent questions.

- 2.1.1 – Candidates failed to:
 - Link high yolk percentage to MORE energy/nutrients (losing second mark)
 - Analyse data showing high % yolk provides more nutrients
 - Present evidence for precocial development
 - Demonstrate understanding of altricial versus precocial development

Answer in cause-effect format (merely restated question stem).

- 2.1.3- Incorrect response to 2.1.2 led to wrong explanation for parental care requirements. Candidates repeated "parental care" concept rather than explaining why it's required

Question 2.2 – Male reproductive system:

- 2.2.1 (a) – Candidates identified cells (seminiferous tubules/cells of Leydig) instead of the gland (testes) that secretes testosterone.
- 2.2.2 – Candidates:
Stated scrotum's function rather than explaining it
Often received partial credit for "keeps testes at temperature lower than body temperature"
Failed to explain WHY this is necessary for sperm production (merely repeated "for sperm production" from question)
- 2.2.3 – Question required two actions: NAME and DESCRIBE. Many candidates:
Only described the process, missing compulsory mark for naming
Incorrectly identified diploid cells in seminiferous tubules
Referred to "diploid sperm cells undergoing meiosis" (misunderstanding haploid versus diploid)

Question 2.3 – Menstrual cycle:

- Overall: Poorly answered. Candidates discussed all hormones in every answer rather than being specific. Frequently stated WHAT occurs without EXPLAINING. Weaker centres scored 0, obtaining marks only from graph interpretation.
- 2.3.1 – Candidates could not:
Explain endometrium decrease (days 0-7)
Distinguish between ovarian hormones and pituitary hormones
Avoid confusing menstruation with menstrual cycle
Provide specific, context-appropriate responses
- 2.3.2 – Many could not describe changes causing endometrium thickening (merely stated "vascular and glandular" without indicating "increase in")
- 2.3.4 – Graph caption poorly answered. Candidates:
Referenced "menstrual cycle taking place over 28 days" instead of on specific days
Failed to include all variables or misinterpreted data
Referred to entire menstrual cycle rather than specific days
Were confused by numerical values in bar graph format
Lost marks for drawing scale and transposing axes

Question 2.4 – Thermoregulation:

- 2.4.1 – Some candidates incorrectly identified "medulla oblongata" (instead of hypothalamus) as controlling thermoregulation. Others wrote "cerebellum."
- 2.4.2 – Many incorrectly identified Diagram Z as representing cold-day arteriole (thinking more blood must flow because it's cold).
- 2.4.3 – Candidates:
Explained from "cold day" perspective / discussed vasoconstriction

Included sweat gland responses (not penalised but shows lack of specificity)
 Failed to include essential elements: '**more**' blood flows to **skin**, **more** heat is lost

Question 2.5 – Growth hormone investigation:

- Overall: Poorly answered. Scientific method remains challenging.
- 2.5.1 Candidates:
 - Could not extract variables correctly from AIM
 - Referenced "average height" (from results, not AIM)
 - Failed to identify dependent variable
 - Common incorrect answers: "average height," "growth hormone," "dose of hormone"
- 2.5.2 – Candidates:
 - Scored only 1-2 marks
 - Struggled with concept that variable is "age" (wrote "2 years old")
 - Lacked specificity (wrote "boys" instead of "all boys" or "gender")
 - Incorrectly included: "a dose of 0.028 mg given each month"
- 2.5.3 – Poorly answered. Candidates:
 - Misunderstood PURPOSE of control/independent variable
 - Provided generic answer: "it's a control to compare results against"
 - Restated AIM or omitted that it's ADDED growth hormone
- 2.5.4 – Many lost 1 mark for:
 - Not including unit (mg)
 - Providing incorrect unit (mg/kg)
- 2.5.5 – Most candidates:
 - Described results rather than drawing conclusion
 - When conclusions were provided, omitted ADDED growth hormone or "with ISS"

(c) Provide suggestions for improvement in relation to Teaching and Learning.

- The difference between describing and explaining must be emphasized in teaching. When data is provided, require evidence-based responses using the data.
 - Clarify characteristics of precocial versus altricial development.
 - Labelling anatomy is an important and overlooked skill. Let learners draw / print an unlabeled diagram in the center of an A4 landscape page. While/after teaching, get learners to use 3 different colours to annotate their diagram as in 3 levels as follows:
 - Label (L): Label the part
 - Structure (S): Note any special structural adaptation for that part (if any)
 - Function (F): Keyword notes on the parts function
 - This strategy can be used for all anatomy in Paper 1 content.
- Cells versus Glands
 - Distinguish clearly between cells and glands
 - Example: Gland secreting testosterone (testes) ≠ Cells secreting testosterone (cells of Leydig)
 - Describing versus Explaining
 - Describing function: States what it does
 - Explaining function: States what it does AND why this is necessary.

- **Multiple Instructional Verbs**
Train candidates to read and underline instructional verbs
Example: "Name and describe the process of sperm production"
Use spermatogenesis description directly from Examination Guidelines (minimum required standard)
Avoid outdated terminology (e.g. spermatogonia from old syllabus)
Reference gametogenesis descriptions in 2021 Exam Guidelines
- **Menstrual Cycle**
Ensure comprehensive teaching of:
Timing of specific events
Hormones involved in each event
Effects of each hormone
Clear distinction between ovarian hormones and pituitary hormones
- **Graph Assessment**
Share and discuss marking criteria with candidates during feedback
Explain each criterion and requirements explicitly
Apply same criteria for teaching graphs from Grade 8 onwards
Ensure understanding of:
Appropriate scales
Axis labels and variables
Data representation
Caption requirements
- **Thermoregulation**
Emphasise:
Vasodilation versus vasoconstriction
Arterioles dilate or constrict (by changing diameter)
More/less blood to skin
More/less heat lost
Distinguish stimuli: blood vessels vs. sweat glands vs. both
- **Scientific Investigations**
Ensure conceptual understanding of scientific process, not just memorisation
Each investigation is unique; answers must be context-specific
Teach understanding of:
Investigative questions
Conclusions (responding to/referencing aim)
Validity improvement and WHY
Fixed variables and their purpose
Purpose of controls/independent variables
Reliability importance and improvement strategies
Practice diverse investigation examples
- **Calculations**
Encourage inclusion of units in all calculations

(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.

Structure and Function Teaching:

Use comprehensive diagrams for reproductive and nervous systems.

Emphasise consequences of malfunction of the different parts.

Focus on examination techniques: identifying instructional verbs and responding appropriately.

Beyond Memorisation:

Discourage studying past memoranda alone (contexts change)

Ensure sound understanding of knowledge for application to different situations

Stimulate cognitive skills, not just content recall

Reading and Specificity:

Train candidates to read questions carefully

Require specific, context-appropriate answers

Assessment Exposure:

Include questions across all cognitive levels in informal and formal assessments

Provide thorough feedback after all assessments

Explain where and why mistakes occurred

Cognitive Levels:

Teach at all cognitive levels, not just knowledge

Avoid "teaching to memoranda"

Focus on content application in varied situations

Question Modeling Strategy:

After teaching a section:

Show 2-3 questions from past papers or other textbooks

Work through them together, demonstrating approach and interpretation

Provide 2-3 similar questions for independent practice

Always provide comprehensive feedback

QUESTION 3

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

QUESTION 3: [50 MARKS] – consisted of 5 sub-sections:

Question #	Description	Total marks
3.1	Eye structure & astigmatism	8 marks
3.2	Human nervous system	13 marks
3.3	Eye accommodation	5 marks
3.4	Structure of the human ear	14 marks
3.5	Insulin and diabetes	10 marks
TOTAL QUESTION 3:		50 marks

Questions ranged appropriately from easy to very difficult, providing adequate differentiation across performance levels.

Performance: 47% in 2025 (compared to 40% in 2024). This question remained the poorest answered of all three questions, though showing improvement.

3.1	Eye structure & astigmatism	58%
3.2	Human nervous system	53%
3.3	Eye accommodation	44%
3.4	Structure of the human ear	37%
3.5	Insulin & diabetes	47%

Questions 3.3 (eye accommodation), 3.4 (human ear structure and balance), and 3.5 (insulin and diabetes) were poorly answered.

(b) Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

Question 3.1 – Eye structure and astigmatism:

- 3.1.2- Candidates could not describe cornea appearance in astigmatism:
Confused astigmatism with cataracts (describing "cloudy lens")
Unaware that astigmatism involves uneven cornea
Described cornea based on diagram appearance rather than condition.
- 3.1.3 – Persistent confusion between refraction and reflection, including which parts are involved in refraction
- 3.1.4 – Described treatment using "convex or concave lenses" (incorrect for astigmatism)

Question 3.2 – Human nervous system:

- 3.2.2 - Several candidates provided only LETTER instead of LETTER and NAME as instructed.
- 3.2.2(c) – Candidates:
Confused control of skeletal muscles (cerebrum) with coordination of skeletal muscles (cerebellum)
Incorrectly selected B (cerebellum) instead of A (cerebrum)
- 3.2.3 – Very few candidates achieved full 5 marks. Common errors:
Described impulse pathway "via dorsal root of spinal cord" instead of "via dorsal root of spinal nerve"
Same error for ventral root
Used "stimuli" instead of "impulse"
Omitted key terms: synapse, ventral root, dorsal root of spinal nerve
Attributed wrong functions to parts (e.g. "sensory neuron receives the stimulus")

Question 3.3 – Eye accommodation:

- Candidates:
Could not distinguish between near vision and distant vision accommodation
Wrote both scenarios (only first response marked, forfeiting all 5 marks)
Still referred to "suspensory ligaments contracting"
Confused pupillary mechanism with accommodation
Confused concepts:
CORRECT: "Light will be refracted less" (degree of refraction)
INCORRECT: "Less light will be refracted" (amount of light)

Question 3.4 – Structure of the human ear:

- 3.4.2 – Candidates incorrectly identified middle ear and eustachian tube as "normally filled with fluid" (only filled during infection)
- 3.4.3 – Candidates could not:
Identify receptors (cristae) involved in speed and direction changes of head movement
Incorrectly included both maculae and cristae, or only maculae
Referred to "impulse sent to brain" instead of cerebellum
Stated "impulses sent to effector" instead of skeletal muscles

Failed to emphasise that skeletal muscles restore balance (not just "muscles" or "effector")

Made careless errors: "auditory canal" instead of "auditory nerve"

- 3.4.4(a)- Very poorly answered. Candidates failed to recognise that:

Damaged hair cells cannot convert stimuli to impulses

No impulses are sent to cerebellum

Many stated "no impulses sent to brain" instead of cerebellum

Struggled to apply knowledge of organ of Corti to this question

- 3.4.4(b) – Very poorly answered. Candidates could not:

Explain how earplugs prevent hair cell damage

Identify correct stimulus at correct ear location:

No sound waves in auditory canal

No vibrations in middle ear

No pressure waves in cochlea

Referred to "sound" or "noise" generically

Synthesise appropriate response based on hearing knowledge

Question 3.5 – Insulin and diabetes:

- 3.5.1 – Candidates identified cells (islets of Langerhans) instead of organ (pancreas) that secretes insulin.

- 3.5.3 – Very poorly answered. Candidates could not:

Interpret data and graphs to identify TWO differences between long-acting and rapid-acting insulin treatment

Distinguish between:

CORRECT: "insulin in blood remaining constant" or "fluctuating"

INCORRECT: "graph increasing and decreasing"

Most candidates only drew a table (awarded 1 mark)

- 3.5.5- Candidates could not link:

Lack of energy after rapid-acting treatment without meal

Further decrease in glucose levels

Glucose needed for cellular respiration to provide energy

(c) Provide suggestions for improvement in relation to Teaching and Learning.

Eye Structure and Function:

- Use diagrams consistently during teaching
- Explain disorders comprehensively (not just definition, but effect on vision)
- Emphasise differences between pupillary mechanism and accommodation
- Clarify that suspensory ligaments do NOT contract or relax (not muscles)
- Correct terminology: suspensory ligaments become taut or slacken.

Human Nervous System:

- Teach using diagrams for structure, function, and consequences of malfunction
- Distinguish between:
 - Control of voluntary movements (cerebrum)
 - Coordination of voluntary movements (cerebellum)

- Emphasise reading instructional verbs: "LETTER and NAME" requires both

Reflex Arc Pathway:

- Consult Examination Guidelines for prescribed pathway
- Include: "dorsal root of spinal nerve" and "ventral root of spinal nerve"
- Ensure accurate terminology throughout

Ear Structure and Function:

- Teach using appropriate diagrams
- Distinguish clearly between stimulus and impulse
- Emphasise different stimuli in ear and their locations:
 - Sound waves (external ear/auditory canal)
 - Vibrations (middle ear)
 - Pressure waves (cochlea)

Balance versus Hearing:

- Balance: Impulses received by cerebellum
- Hearing: Impulses received by cerebrum
- Receptors: Cristae - Respond to head movement/rotation ; Maculae- Respond to head position/linear acceleration.

Insulin Production

Distinguish clearly:

- Gland secreting insulin- Pancreas
- Cells secreting insulin- Islets of Langerhans (β -cells)

Graph Interpretation Practice:

- Provide extensive practice responding to graph-based questions
- Demonstrate using graph information for specific responses

Emphasise distinctions:

- Low and high vs. lower and higher
- Decreasing/increasing vs. lower and higher*

Glucose and Energy Concepts:

- Teach that glucose decreases if no food intake
- Adding insulin further reduces glucose (converts to glycogen)
- No glucose available for cellular respiration = no energy production

(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.

Answering "Explain" Questions:

This skill remains challenging and requires proper cognitive modeling, not simply instructing candidates to "give cause and effect."

Avoiding Generic Responses:

- Candidates must stop providing generic answers from previous question papers
- Teachers should assess correct context usage, not just correct words

- Ensure sound understanding for application to different situations

Content vs. Cognitive Skills:

- Teach content AND stimulate cognitive skills
- Train candidates to read questions carefully
- Require specific, context-appropriate answers

Assessment Exposure:

- Expose candidates to questions across all cognitive levels in both informal and formal assessments
- Provide comprehensive feedback during and after assessments
- Explain where and why mistakes occurred

Subject Advisor Role:

- Mediate diagnostic report recommendations during JIT sessions and school visits
- Support implementation of improvement strategies

CAPS versus Exam Guidelines:

- Distinguish clearly between:
 - Content taught (CAPS)
 - Content assessed (Examination Guidelines)
- Guide candidates to focus on assessment requirements
- Provide candidates with Examination Guidelines copies
- Mediate guidelines with candidates