PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
   Stop marking when maximum marks is 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 is incorrect, do not credit. If sequence and links becomes correct again, resume credit.

9. **Non-recognized 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. Indicate that the candidate's numbering is wrong.

11. **If language used changes the intended meaning**
    Do not accept.

12. **Spelling errors**
    If recognizable accept provided it does not mean something else in Life Sciences or if it is out of context.

13. **If common names are given in terminology**
    Accept, provided it was accepted at the National memo discussion meeting.

Ruddlatt INT MOD 25/11/2014

P.M. Wiese External Moderator Umalusi

P. Preethlall UMALUSI

14. **If only the letter is asked for but only name is given (and vice versa)**
No credit.

15. **If units are not given in measurements**
Memorandum will allocate marks for units separately, except where it is already given in the question.

16. Be sensitive to **the sense of an answer, which may be stated in a different way**.

17. **Caption**
Credit will be given for captions to all illustrations (diagrams, graphs, tables, etc.) except where it is already given in the question.

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. **Changes to the memorandum**
No changes must be made to the marking memoranda. In exceptional cases, the Provincial Internal Moderator will consult with the National Internal Moderator (and the External moderators if necessary).

20. **Official memorandum**
Only memoranda bearing the signatures of the National Internal Moderator and the Umalusi moderators and distributed by the National Department of Basic Education via the provinces must be used.

P. M. Viese
External Moderator
Umalusi

P. Preethlall
UMALUSI

SECTION A

QUESTION 1

1.1	1.1.1	A✓✓		
	1.1.2	B✓✓		
	1.1.3	A✓✓		
	1.1.4	D✓✓		
	1.1.5	C✓✓		
	1.1.6	A✓✓		
	1.1.7	C✓✓		
	1.1.8	D✓✓		
	1.1.9	C✓✓		
	1.1.10	B✓✓	(10 x 2)	**(20)**
1.2	1.2.1	Meninges✓		
	1.2.2	Gibberellin✓		
	1.2.3	Peripheral ✓nervous system		
	1.2.4	Parasympathetic✓system		
	1.2.5	Chorion✓		
	1.2.6	Aldosterone✓		
	1.2.7	(Umbilical) vein✓		
	1.2.8	TSH✓ /thyroid stimulating hormone		
	1.2.9	Gestation✓/pregnancy		
	1.2.10	Acrosome✓		**(10)**
1.3	1.3.1	A only✓✓		
	1.3.2	B only✓✓		
	1.3.3	None✓✓		
	1.3.4	B only✓✓		
	1.3.5	Both A and B✓✓		
			(5 x 2)	**(10)**
1.4	1.4.1	A✓ - Iris✓		(2)
	1.4.2	C✓ - Choroid✓		(2)
	1.4.3	E✓ - Optic nerve✓		(2)
	1.4.4	D✓ - Fovea✓/yellow spot		(2)
	1.4.5	B✓ - Cornea✓		(2)
				(10)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 A - Urethra✓
B - Vas deferens✓/sperm duct
F - Fallopian tube✓/oviduct (3)

2.1.2 (a) - Protects the sperm cell against the acidic environment of the vagina✓
- Increases the motility of the sperm✓
- Provides nutrients✓
(Mark first ONE only) Any (1)

(b) - Place for foetus to develop ✓
- Maintain pregnancy✓
- Assist in childbirth✓
- Implantation✓ of blastula
- Protects the foetus✓/prevents infections(mucus plug forms by cervix)
- Passage for sperm cells✓between vagina and fallopian tubes
(Mark first ONE only) Any (1)

2.1.3 (a) D✓ (1)
(b) G✓ (1)

2.1.4 (a) Spermatogenesis✓ (1)
(b) Oogenesis✓ (1)

2.1.5 - Serves as a birth canal✓
- Allows for passage of blood/ endometrial lining/amniotic fluid/placenta
- Facilitates sexual intercourse ✓/receives semen
- Secretes acid which prevents infections✓
(Mark first TWO only) Any (2)

2.1.6 - To keep the testes at a temperature that is lower than body temperature✓/optimum temperature for sperm production
- which is necessary for the production of healthy sperm✓/so that healthy sperms can survive (2)
(13)

2.2 2.2.1 FSH✓
OR
Oestrogen✓
(Mark first ONE only) Any (1)

2.2.2 -The follicle✓develops✓ during this period stimulated by increased levels of FSH
-The lining of the endometrium✓ thickens✓ during this period stimulated by increased levels of oestrogen
(Mark first ONE only) Any(1 x 2) (2)

2.2.3 - Corpus luteum has not disintegrated✓
- it continues to secrete progesterone✓
- so the endometrial lining remains thickened✓ (3)

2.2.4 - The zygote✓
- undergoes mitosis✓
- until a ball of cells is formed✓
- called a morula✓
- The morula continues to divide and forms a mass of cells with a hollow cavity✓
- called a blastocyst✓
- the outer membrane of the blastocyst forms chorionic villi✓/ attachment villi
- which attaches it to the endometrium✓ Any (5)

2.2.5 (a) For family planning✓/ to know when they can get pregnant (1)

(b) LH✓/FSH/oestrogen
- There is a rise in levels✓ of LH/FSH/oestrogen
- around the time of ovulation✓ (3)
(15)

2.3 2.3.1 (a) A and B✓ (1)

(b) A and C✓ (1)

2.3.2 - To ensure that the results are attributed to gravity✓
- and not light✓/ to eliminate the effect of light (2)

2.3.3 B – No growth will be observed✓
C – Roots will grow **horizontally**✓/**not change** direction (2)

2.3.4 - Auxins will move to the lower side of the root✓/attracted by gravity
- and a high concentration will inhibit growth on the lower side of the roots✓
- while growth will occur faster on the upper side of the root✓
- causing the root to bend downwards✓ Any (3)

2.3.5 - Used same type of plant✓/pea only
- Seedlings were the same age✓/germination period was 7 days
- All groups were exposed to the same environment✓/light intensity/ placed in dark cupboard
- Same number of seedlings for each group✓
- Root tips were cut at the same length✓
- All seedlings placed in same position✓/horizontally
- Allowed same amount of time for the 3 groups✓
- Appropriate controls were set up✓ Any (3)

(Mark first THREE only) **(12)**
[40]

QUESTION 3

3.1 3.1.1 Number of kilograms of wheat per hectare✓/Yield (1)

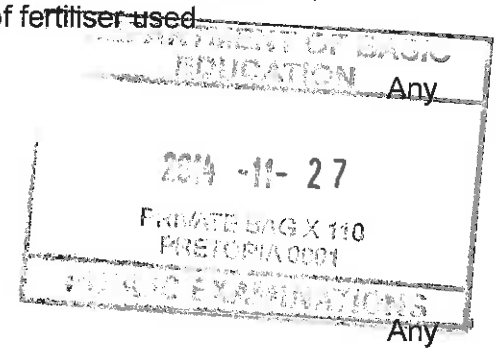
3.1.2 To compare✓the yield obtained when using two types of fertiliser with the yield of the hectare with no fertiliser✓

OR

It acts as a control✓- to ensure that the results obtained are due to the addition of fertilisers✓ and not any other factor

Any(1x2) (2)

3.1.3 - She could have increased the sample size✓/number of plots/ number of plants for each type of fertiliser used
- Repeated the investigation✓
(Mark first ONE only) Any (1)



3.1.4 - Depletes nutrients in the soil✓
- Leads to decrease in yield✓
- Increases pests✓
- Leads to soil erosion✓
- Decreases biodiversity✓
(Mark first THREE only) Any (3)

3.1.5 - The excessive use of fertilisers increases the nutrient content✓of the surrounding river /eutrophication occurs/ water becomes polluted
- This causes an increase in algal growth✓ /algal bloom
- The algae block out light✓
- reducing photosynthesis✓
- Plants and animals depending on them die✓
- increasing decomposition✓
- leading to a depletion of oxygen✓
- and reducing the biodiversity✓/reducing the number of animal and plant species in the river Any (4)

(11)

3.2 3.2.1 (a) - Carbon footprint is a measure of the total amount of greenhouse gas emissions✓/(example of greenhouse gas)
- of an individual✓ /defined population/ company per year (2)

(b) - Food security refers to the availability and access✓
- to adequate, safe and nutritious food✓ to people at all times✓
Any (2)

3.2.2 - Energy used to produce and transport wasted food is lost✓
- The fossil fuels used in production and transport of wasted food✓
- and the decomposition of wasted food✓
- releases greenhouses gases ✓/examples of greenhouse gases
- leading to the enhanced greenhouse effect✓ which eventually leads to global warming (4)

P.M. Viese External Moderator Umalusi P. Preethlall UMALUSI

3.2.3
- Buy only what is needed in sufficient quantities✓
- Give to others what is not used instead of throwing away✓
- Educate about efficient farming methods✓
- Educate about ways to preserve food✓
- Improve storage facilities✓
- Improve the shelf-life of food✓

(Mark first TWO only) Any (2)
(10)

3.3 3.3.1 Constricted✓ (1)

3.3.2
- Less blood flows✓to the skin
- so less heat is lost to the environment✓ by radiation
- Less sweat is formed✓because less blood flows to the sweat glands
- therefore less evaporation✓ of sweat
- and hence less cooling✓ of the skin
- Body heat is conserved✓

Any (4)

3.3.3
- Hypothalamus is stimulated✓
- sends message to the blood vessels of the skin to dilate✓/ vasodilation occurs
- More blood flows✓to the surface of the skin
- More heat is lost by radiation✓from the skin surface
- More sweat is formed✓ because more blood flows to the sweat glands
- and therefore more heat is lost by increased evaporation✓of sweat

Any (4)
(9)

3.4 3.4.1
- The blood glucagon levels increase✓/from 100 to 210 (picograms/ml)
- from 0 to 20 min✓
- and become constant✓thereafter

(3)

3.4.2
- during exercise more energy is needed✓
- therefore the rate of cellular respiration increased✓
- Increased cellular respiration requires more glucose✓
- hence more glucagon is secreted✓
- to stimulate the conversion of glycogen to glucose✓

Any (3)

3.4.3 Decrease✓ (1)

3.4.4
- The lack of insulin✓/defective insulin
- decreases the conversion✓
- of glucose to glycogen✓

(3)
(10)
[40]

P. M. Wiese External Moderator Umalusi
P. Preethlall UMALUSI

SECTION C

QUESTION 4

As the ball moved towards the goalkeeper:

- Accommodation✓ took place
- Ciliary muscles contracted✓
- Suspensory ligaments became slack✓
- This reduced the tension on lens✓
- Lens became more convex✓/round
- Refractive power of the lens increased✓
- Image of the ball fell on the retina✓ Any (5)

Hearing
The shout of his team-mate was heard by the goal keeper as follows:

- The sound waves were directed by the pinna✓
- through the auditory canal✓
- to the tympanic membrane✓/eardrum
- causing it to vibrate✓
- The vibrations of the tympanic membrane were transferred to the ossicles✓ in the middle ear
- which eventually caused the oval window to vibrate✓
- This set up pressure waves in the cochlea✓
- This stimulated the Organ of Corti✓ in the cochlea
- to convert this stimulus into a nerve impulse✓
- which was then transmitted along the auditory nerve✓
- and interpreted in the cerebrum✓ Any (7)

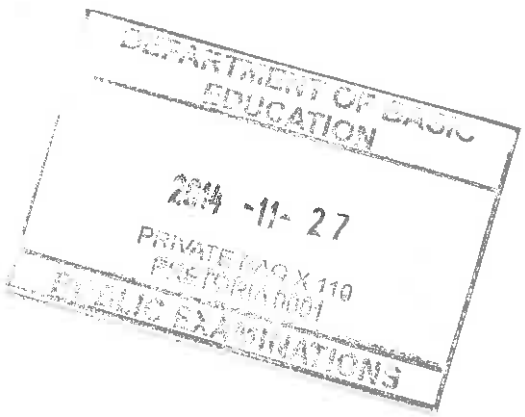
Balance and equilibrium
As he dived:

- A change in the direction and speed✓of the body
- causes the movement of fluid in the semicircular canals✓
- which stimulates the cristae✓
- A change in the position of the head✓
- stimulated the maculae✓in the utriculus and sacculus
- The stimuli were converted into impulses✓
- which were transported along the auditory nerve✓
- and interpreted in the cerebellum✓
- which then sent impulses to the muscles✓
- to restore balance and equilibrium✓ Any (5)
Content (17)
Synthesis (3)

ASSESSING THE PRESENTATION OF THE ESSAY

Relevance	Logical sequence	Comprehensive
All information provided is relevant to the topic	Ideas arranged in a logical/ cause-effect sequence	Answered all aspects required by the essay
Only information relating to accommodation, hearing and balance & equilibrium is included. (There is no irrelevant information)	Logical sequence of events in accommodation, hearing and balance & equilibrium.	Includes sufficient information on all 3 processes, i.e. accommodation**(min 3/5)**, hearing**(min 4/7)** and balance & equilibrium**(min 3/5)**
1 mark	1 mark	1 mark

TOTAL SECTION C: 20
GRAND TOTAL: 150



G.M. Riese
External Moderator
Umalusi

P. Preethlall
UMALUSI