education

Department of Education
FREE STATE PROVINCE

PREPARATORY EXAMINATION

GRADE 12

LIFE SCIENCES P1



These marking guidelines consist of 11 pages.

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PRINCIPLES RELATED TO MARKING LIFE SCIENCES

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 a part of it is required**
   Read all and credit the relevant part.

4. **If comparisons are asked for, but descriptions are given**
   Accept if the 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 the answer, 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.

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14. **If only the letter is asked for, but only the name is given (and vice versa)**
Do not credit.

15. **If units are not given in measurements**
Candidates will lose marks. Memorandum 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 a caption.

18. **Code-switching of official languages (terms and concepts)**
A single word or two that appear(s) in any official language other than the learner's 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 applies to all official languages.

19. **Changes to the marking guidelines**
No changes must be made to the memorandum. The provincial internal moderator must be consulted.

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SECTION A

QUESTION 1

1.1	1.1.1	D✓✓		
	1.1.2	C✓✓		
	1.1.3	A✓✓		
	1.1.4	D✓✓		
	1.1.5	A✓✓		
	1.1.6	A✓✓		
	1.1.7	B✓✓		
	1.1.8	C✓✓		
	1.1.9	B✓✓		
	1.1.10	C✓✓	(10 x 2)	**(20)**
1.2	1.2.1	Alzheimer✓		
	1.2.2	Astigmatism✓		
	1.2.3	Grommets✓		
	1.2.4	Dorsal✓ root		
	1.2.5	Reflex action✓		
	1.2.6	Altricial✓ development		
	1.2.7	Prolactin✓		
	1.2.8	Corpus callosum✓		
	1.2.9	Neuron✓	(9 x 1)	**(9)**
1.3	1.3.1	Both A and B✓✓		
	1.3.2	B only✓✓		
	1.3.3	Both A and B✓✓	(3 x 2)	**(6)**
1.4	1.4.1	Ovarian cycle✓		(1)
	1.4.2	(a) Graafian follicle✓		(1)
		(b) Corpus luteum✓		(1)
		(c) LH✓/ Luteinizing hormone		(1)
	1.4.3	23✓		(1)
	1.4.4	Mitosis✓		(1)
	1.4.5	Ovulation✓		(1) **(7)**

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1.5.	1.5.1	Pituitary gland✓/ Hypophysis	(1)
	1.5.2	Growth✓ hormone/GH/ Somatotropin	(1)
	1.5.3	(a) C✓ – Pancreas✓/Islets of Langerhans	(2)
		(b) D✓ – Testes✓	(2)
		(c) B✓ – Thyroid gland✓	(2)
			(8)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 (a) Middle ear✓ (1)

(b) Tympanic membrane✓/Tympanum (1)

(c) Organ of Corti✓ (1)

2.1.2 - Pressure wave will not be converted to an impulse ✓
- this will lead to hearing loss ✓/ impulse will not be transported to cerebrum. (2)

2.1.3 - Eustachian tube will be blocked✓/filled with mucus
- Pressure will not be equalised✓
- On either side of the tympanic membrane✓causing
- Pressure build-up in the middle ear✓ causing pain

(Any 3) (3)
(8)

2.2 - A change in the direction and speed of the body
- causes the movement of fluid✓ in
- which stimulates the cristae✓
- in the ampulla✓ / the semi-circular canals
- The pressure wave was converted into an impulse✓
- which was transported along the auditory nerve✓
- to the cerebellum✓ and interpreted✓
- which then sent impulses to the skeletal muscles✓ to restore balance and equilibrium (Any 6)

(6)

2.3 2.3.1 (a) Adrenal✓ gland (1)

(b) Aldosterone✓ (1)

2.3.2 - Water levels is the blood are above normal ✓
- The receptors in the hypothalamus are stimulated✓
- and sends impulses to the pituitary gland✓
- to stop secreting/to secrete less ADH✓
- No ADH/less ADH travels in the blood to the kidneys✓
- The renal tubules✓/distal convoluted tubules and collecting ducts
- become less permeable to water✓
- Less water is re-absorbed level in the blood✓
- The water levels in the blood decrease and return to normal ✓ (Any 5) (5)

(7)

2.4 2.4.1 (a) Sclera✓ (1)

(b) Choroid✓ (1)

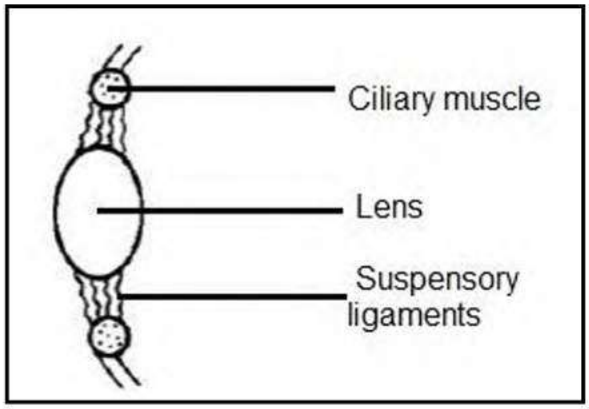
(c) Optic nerve✓ (1)

2.4.2
- Yellow spot/part C contains a high concentration of cones✓
- Blind spot/part E contains no photoreceptors✓/rods and cones (2)

2.4.3
- Part F/Pupil constricts✓/becomes smaller
- Circular muscles in the **iris** ✓ contract✓
- The radial muscles in the (iris)✓ will relax✓ (5)
-

(NB. They must indicate the muscle in the **iris**. If a learner did not mention iris no mark allocation. Be sensitive if a learner wrote. Circular mussel in the iris relax and radial muscle contract, then he did refer to iris. No need to mention iris in both bullets)

2.4.4 Parts of the eye responsible for accommodation



*** No mark allocation for ciliary body- mut be ciliary muscle**

Guidelines for assessing the drawing

Criteria	Elaboration	Mark
Heading	- Parts of eye accommodation	1
Correct diagram	- Only parts of accommodation drawn	1
Labels	- Any 1–2 correct label - All 3 correct labels	1 2

(4)
(14)

2.5 2.5.1 Seminal vesicle✓ (1)

2.5.2
- Alkaline fluid will not be secreted✓
- To neutralise the acid in the urethra✓ /vagina
- Sperm cells will denature✓/die/ form abnormal sperm cells
- Decrease in male fertility✓ (Any 3) (3)

2.5.3
- Under the influence of testosterone✓
- diploid cells in the seminiferous tubules in the testes✓
- undergo meiosis✓
- to produce haploid sperm cells✓ ((4)

(8)

2.6 2.6.1 Epididymis✓ (1)

2.6.2 656 men✓ participated in the investigation (1)

2.6.3
- Loose underwear allows the testes to be further away from the body✓
- The temperature of the testes is 2–3^0 C lower than the body temperature✓
- Allowing optimum sperm production✓ (3)

2.6.4.
- It has an acrosome✓
- which contains enzymes that penetrate the outer membrane of the ovum✓

(2)

(**Mark the first ONE only**) **(7)**

[50]

QUESTION 3

3.1 3.1.1 Skin✓ (1)

3.1.2
- The secretion/sweat is released externally✓
- via a duct✓

(2)

3.1.3
- (Receptors detect the high temperature) (In the paper- no marks allocation)
- B/Blood vessels in the skin dilate✓/vasodilation occurs
- **More** blood flows to the **skin surface**✓
- **More** heat is lost ✓
- A/sweat glands produce more sweat✓/become more active
- **More** evaporation✓ from skin surface
- **More heat** is lost from the skin✓

(Any 5) (5)
(8)

3.2.1 23 mmol/L✓ (1)

3.2 3.2.2
- Receptors in the carotid artery are stimulated✓ and
- impulses are sent to the medulla oblongata✓
- The medulla oblongata stimulates the heart✓
- to beat faster✓ causing
- more carbon dioxide to be sent to the lungs✓
- The breathing muscles✓/intercostal muscles and diaphragm
- contract more actively✓ and
- the rate and depth of breathing increases✓
- more carbon dioxide is exhaled✓ out of the body
- The carbon dioxide level in the blood decreases returns back to normal ✓

(Any 7) (7)
(8)

3.3.1 Chorion✓ (1)

3.3 3.3.2
- Shock absorber✓/ protect against mechanical injuries
- Temperature regulator✓
- Prevents dehydration✓
- Medium for the foetus to move✓ in

(Mark the first TWO only) (2)

3.3.3
- The chorion forms ✓
- Chorionic villi✓ and
- Attaches to the endometrium✓

(3)

3.3.4
- Secretes progesterone✓
- which further increases the thickness of the endometrium✓
- making it more (vascular and glandular)✓

(3)

3.3.5

Umbilical artery	Umbilical vein
- Carries deoxygenated blood✓ from the foetus to placenta	- Carries oxygenated blood✓ from the placenta to foetus
- Carries toxic substances from the foetus to placenta✓	- Carries nutrients from the placenta to the foetus✓

(5)

T✓1 mark + (4) **(14)**

3.4 3.4.1
- Great White shark✓
- Nurse shark✓
- Thresher shark✓

(Mark the first ONE only) (1)

3.4.2
- To increase the chances of fertilisation✓
- since it is external fertilisation ✓
- eggs/ ovum's may be lost✓/ predation✓/water currents (3)

3.4.3 - Lemon shark has a womb✓ and the embryo is fed by the placenta✓/ umbilical cord

- while the Bamboo shark embryos are fed by the yolk✓ in the egg✓ (3)

(Any 3)

(7)

3.5 3.5.1 (Different) Concentration of auxin✓ (1)

3.5.2 It is a control group✓
To ensure that the results are caused by (different concentrations of) auxins✓ (2)

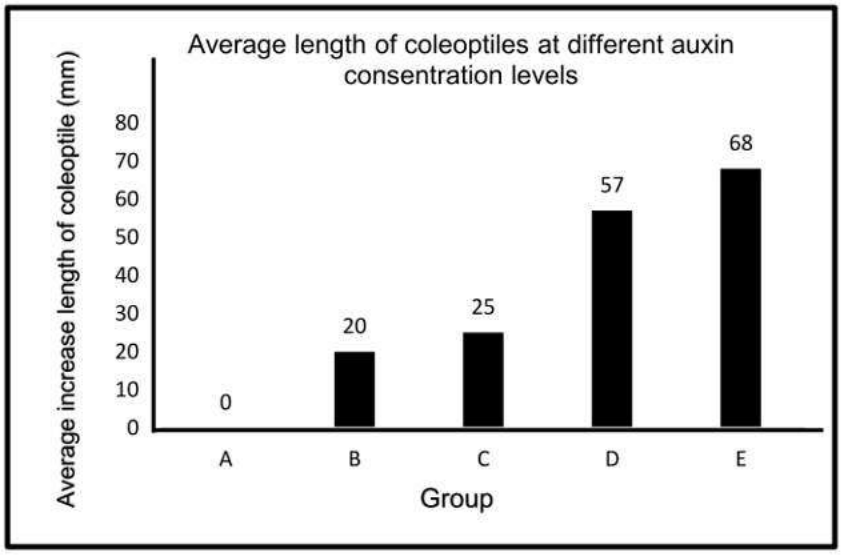
3.5.3 Same length of the coleoptiles✓
Same species of bean plants✓
Same time for growth (4 days)✓
All the tips of the coleoptiles were removed✓
Injections at the cur surface ✓
(Mark the first TWO only) (2)

3.5.4 When the concentration of auxin increases, the (average) length of coleoptiles increases✓✓

OR

When the concentration of auxin decreases, the (average) length of coleoptiles decreases✓✓

3.5.5



(2)

Criteria for marking graph:

Criteria	Mark allocation
Bar graph is drawn **(T)**	(1)
Caption of the graph includes both variables **(C)**	(1)
Correct labels on X-axis and Y-axis and with correct unit on Y-axis **(L)**	(1)
Correct scale for X-axis and Y-axis and bars with equal width with equal spaces for X-axis **(S)**	(1)
Plotting correctly done for: **(P)** 1–4 coleoptile lengths All 5 coleoptile lengths	 (1) (2)

(6)
(13)
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150

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