



education

Department of
Education
FREE STATE PROVINCE

PREPARATORY EXAMINATION

GRADE 12

LIFE SCIENCES P1

SEPTEMBER 2022

MARKS: 150

MARKING GUIDELINES

These marking guidelines consist of 10 pages.

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.

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 is applicable to all official languages.
19. **Changes to the memorandum**
No changes must be made to the memoranda. The provincial internal moderator must be consulted.

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	D ✓✓		
	1.1.6	B ✓✓		
	1.1.7	C ✓✓		
	1.1.8	C ✓✓		
	1.1.9	C ✓✓		
	1.1.10	D ✓✓		
			(10 x 2)	(20)
1.2	1.2.1	Parental care ✓		
	1.2.2	Hormones ✓		
	1.2.3	Amniotic ✓ fluid		
	1.2.4	Gibberellin ✓		
	1.2.5	Acrosome ✓		
	1.2.6	Synapse ✓/synaptic cleft		
	1.2.7	Semen ✓		
	1.2.8	Menstruation ✓		
	1.2.9	Conjunctiva ✓		
			(9 x 1)	(9)
1.3	1.3.1	B only ✓✓		
	1.3.2	None ✓✓		
	1.3.3	B only ✓✓		
			(3 x 2)	(6)
1.4	1.4.1	(a) Fallopian tube ✓		(1)
		(b) Cervix ✓		(1)
	1.4.2	(a) B ✓		(1)
		(b) A ✓		(1)
	1.4.3	- Responsible for the protection of the embryo ✓ from implantation to birth		
		- provides space for the developing foetus ✓		(2)
	1.4.4	Seminal vesicles ✓		(1)
				(7)

- | | | | |
|------|-------|---|------------|
| 1.5. | 1.5.1 | (a) Goitre ✓ | (1) |
| | | (b) A lack of iodine ✓ in the diet | (1) |
| | 1.5.2 | (a) Short-sightedness ✓/Myopia | (1) |
| | | (b) Astigmatism ✓ | (1) |
| | 1.5.3 | (The reflection of light from) an irregularly shaped cornea ✓ | (1) |
| | 1.5.4 | Deafness ✓/hearing loss/hearing impairment | (1) |
| | 1.5.5 | (a) Cataracts ✓ | (1) |
| | | (b) Middle ear infection ✓ | (1) |
| | | | (8) |

TOTAL SECTION A: 50

SECTION B

QUESTION 2

- | | | | | |
|-----|-------|--|--------------|------------|
| 2.1 | 2.1.1 | - The jelly layer provides protection ✓ for the early developmental stages of the fertilised egg
- Facilitates the movement of the ovum/embryo through the fallopian tube ✓ | (Any) | (1) |
| | 2.1.2 | It provides the sperm with energy ✓ for locomotion. ✓ | | (2) |
| | 2.1.3 | Part A is haploid ✓/has 23 chromosomes to ensure that after fertilisation the zygote has a diploid ✓ number of chromosomes/46 chromosomes. | | (2) |
| | 2.1.4 | zygote → morula → blastula/blastocyst ✓✓ → foetus | | (2) |
| | | | | (7) |
| 2.2 | 2.2.1 | External ✓ fertilisation | | (1) |
| | 2.2.2 | - The frogs are close to each other ✓
- Many males mate with a female ✓
- Many gametes ✓ (ova and sperm) are released | (Any) | (2) |
| | | (Mark first TWO only) | | |

- 2.2.3 - Prevent dehydration ✓ of the developing tadpoles/embryos
 - Protect the developing tadpoles/embryos from predation ✓
 - Prevent microbial degradation ✓ and
 - Provide a healthy environment ✓ for the embryos
(Mark first TWO only) **(Any)** **(2)**
(5)
- 2.3 2.3.1 The pathway along which nerve impulses are carried from a receptor to an effector to bring about a reflex action. ✓✓ **(2)**
- 2.3.2 A person would be able to feel the sensation ✓ but is unable to react ✓ to the stimuli. **(2)**
- 2.3.3 Multiple sclerosis ✓ **(1)**
- 2.4 2.4.1 Smooth muscles ✓
 Heart ✓ muscle
 Glands ✓ **(Any)** **(2)**
(Mark first TWO only)
- 2.4.2 - Every organ/gland are controlled by two sets of nerves ✓
 - that act antagonistically ✓
 Autonomic nervous system is divided into
 - Sympathetic nerves ✓ and
 - Parasympathetic nerves ✓
 - Sympathetic nerves stimulate ✓
 - fight of flight function ✓ in emergency situations
 - Parasympathetic inhibits ✓ a response and
 - restores the body to normal ✓ **(Any)** **(5)**
(12)
- 2.5 2.5.1 (a) Corpus luteum ✓ **(1)**
- (b) Placenta ✓ **(1)**
- 2.5.2 Pituitary gland ✓/Hypophysis **(1)**
- 2.5.3 - The foetus was born ✓ after 40 weeks, and
 - milk is the only food source ✓ for the baby/milk must be produced/After birth, prolactin stimulates milk production/lactation to feed the baby **(2)**
- 2.5.4 There is no need to maintain the endometrium any longer ✓ and allows the placenta's removal/release ✓ **(2)**

- 2.5.5 - The drop in progesterone level
 - stimulates the pituitary gland ✓/hypophysis
 - to secrete FSH ✓
 - The high level of FSH stimulates the development of a primary follicle ✓
 - into a graafian follicle ✓ that
 - leads to ovulation ✓ (5)
(12)
- 2.6 2.6.1 (a) Semi-circular canals ✓ (1)
- (b) Cochlea ✓ (1)
- 2.6.2 - The pinna directs sound waves ✓
 - into the auditory canal ✓
 - The auditory canal transmits sound waves to the tympanic membrane ✓
 - The tympanic membrane transmits sound waves to the middle ear ✓/ossicles as vibrations
 - The ossicles transmit ✓
 - and amplify ✓ the vibrations
 - to the oval window ✓
 - which vibrates ✓ and transmits the vibrations to the inner ear (Any) (7)
- 2.6.3 - The auditory nerve ✓*
 - No impulses can be transmitted to the cerebrum ✓ and cerebellum ✓
 - which leads to a loss of hearing ✓ and
 - a loss of balance ✓ (*Compulsory mark + 4) (5)
(14)
[50]

QUESTION 3

- 3.1 3.1.1 Insulin ✓ (1)
- 3.1.2 (a) Pancreas ✓ (1)
- (b) Islets of Langerhans ✓ (1)
- 3.1.3 - Negative feedback reaction ✓
 - The glucose concentration in the blood drops below normal ✓
 - The alpha cells/islets of Langerhans/pancreas detect the drop and secretes glucagon ✓
 - in the blood ✓
 - which is transported to the liver ✓/muscle cells
 - Glucagon stimulates the conversion of glycogen to glucose ✓
 - The glucose concentration in the blood returns to normal ✓ (6)
- (Any)** (9)
- 3.2 3.2.1 Umbilical cord ✓ (1)
- 3.2.2 - The umbilical arteries ✓ *
 - carry deoxygenated blood ✓/waste products
 - to the placenta ✓
 - and an umbilical vein ✓*
 - carries oxygenated blood ✓/nutrients
 - from the placenta to the foetus
- (2 *Compulsory marks + 2 x 1)** (4)
(5)
- 3.3 3.3.1 (a) Different light conditions ✓ (1)
- (b) Diameter of the pupil ✓ (1)
- 3.3.2 Only one person ✓ participated in the experiment/small sample size
 The experiment was not repeated ✓/only done once (2)
- 3.3.3 $\left. \frac{8-5}{8} \right\} \times \frac{100}{1}$ ✓
 = 37,5 ✓% (3)
- 3.3.4 Iris ✓ (1)
- 3.3.5 Pupil mechanism ✓ (1)

- 3.3.6 Circular muscles of the iris relax ✓
Radial muscles of the iris contract ✓
Pupil diameter increases ✓ (3)
- 3.3.7 (a) 5 ✓mm (1)
(b) 3 ✓ (1)
(14)
- 3.4 3.4.1 A ✓- Pituitary gland ✓/Hypophysis (2)
- 3.4.2 - No development of secondary male features ✓/Any example
- No sperm will develop ✓/sperm count will be low (2)
- 3.4.3 - The adrenal glands are stimulated ✓
- to secrete more aldosterone ✓
- More sodium ions are reabsorbed ✓
- from the distal convoluted tubules ✓/collecting ducts
- into the surrounding blood capillaries ✓
- Salt levels in the blood return to normal ✓ **(Any)** (4)
- 3.4.4 Water ✓
pH ✓
carbon dioxide ✓
glucose ✓
temperature ✓ **(Any)** (2)
(Mark first TWO only)
(10)
- 3.5 3.5.1 Auxins ✓ (1)
- 3.5.2 The growth movement of part of a plant in response to a unilateral light stimulus. ✓✓ (2)
- 3.5.3 - Auxins diffuse through the agar to the stem ✓
- Auxins are light sensitive ✓/are destroyed by light/Auxins move away from light ✓
- There is a higher concentration of auxins on the dark side of the stem ✓
- Growth is stimulated ✓ on the dark side which grows faster ✓
- causing the stem to grow/bend towards the light ✓ **(Any)** (6)

- 3.5.4 - Light will not reach the tip of the stem ✓
- Therefore, auxins are distributed evenly ✓ throughout the tip of the stem
- The stem will grow straight up ✓/no bending towards the light
- (3)
(12)
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150