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.

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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 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.

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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	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

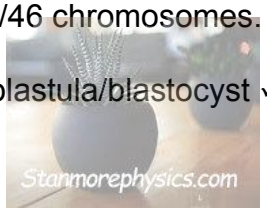
QUESTION 2

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 ✓ **(Any)** (6)

(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

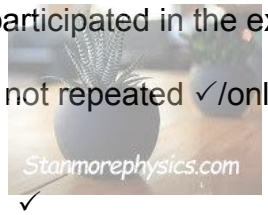
(2 *Compulsory marks + 2 x 1) (4)

(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 $\left[\frac{8-5}{8}\right]$ ✓ x $\frac{100}{1}$ ✓

= 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

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