LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

GRADE 12

LIFE SCIENCES

PREPARATORY EXAMINATION

2022

MARKING GUIDELINES

MARKS: 150

This MARKING GUIDELINES consists 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 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 and 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 are 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.

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 given in terminology**
    Accept, provided it was accepted at the National memo discussion meeting.

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14. **If only letter is asked for and 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.

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SECTION A

QUESTION 1

1.1

1.1.1	C✓✓	
1.1.2	B✓✓	
1.1.3	C✓✓	
1.1.4	B✓✓	
1.1.5	A✓✓	
1.1.6	C✓✓	
1.1.7	C✓✓	
1.1.8	C✓✓	
1.1.9	D✓✓	
1.1.10	A✓✓	
		(10 x 2) **(20)**

1.2

1.2.1	Prostate gland✓	
1.2.2	Meninges✓	
1.2.3	Adrenalin✓	
1.2.4	Acrosome✓	
1.2.5	Round window✓/fenestra rotunda	
1.2.6	Blastula✓/Blastocyst	
1.2.7	Photoreceptors✓	
1.2.8	Stereoscopic✓vision/binocular	
1.2.9	Menstruation✓	
1.2.10	Spermatogenesis✓	(10 x 1) **(10)**

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1.3

1.3.1 B only✓✓

1.3.2 A only ✓✓

1.3.3 None✓✓ (3 x 2) **(6)**

1.4

1.4.1 (a) B✓ – Sensory neuron✓ (2)

(b) F✓ – Motor neuron✓ (2)

(c) G✓ – Effector ✓/ muscle (2)

1.4.2 A to **G** ✓ (1)
(7)

1.5

1.5.1 (a) Hypothalamus✓ (1)

(b) Adrenal gland✓ (1)

1.5.2 (a) B✓ – Pituitary gland✓/Hypophysis (2)

(b) C ✓- Thyroid gland✓ (2)

1.5.3 Goitre ✓ (1)
(7)

TOTAL QUESTION 1: [50]

TOTAL SECTION A : 50

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SECTION B

QUESTION 2

2.1

2.1.1 (a) Umbilical cord✓ (1)

(b) Endometrium✓/uterus wall (1)

2.1.2 - Carbon dioxide✓

- Nitrogenous wastes✓/ examples (2)

2.1.3 - It allows free movement of the foetus✓
- It acts as a shock absorber✓/prevents mechanical injury to the foetus
- It protects the foetus against dehydration✓
- It protects the foetus against temperature changes✓

(Mark first TWO only) Any (3)

2.1.4 - Uterine walls are made up of muscles✓ which contract and relax to push foetus✓/afterbirth forward (1 x 2) (2)

2.1.5 - Respiratory✓/Gaseous exchange system
- Digestive✓system
- Excretory✓system

(Mark first TWO only) Any (2)

(11)

2.2 - Fertility is reduced✓
- because the temperature is always high✓
- This will lead to production of abnormal sperms/no sperms/fewer sperms✓ **(3)**

2.3 (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)

(4)

(18)

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2.4

2.4.1 - Gibberellins stimulates cell elongation✓/cell enlargement/ elongation of internodes/cell growth (1)

2.4.2 (120 – 80) ✓ mm = 40✓ mm✓ (3)

2.4.3 - Increase the number of plants used in each treatment✓
- Repeat the investigation✓
- Increase the period of the investigation✓
(Mark first TWO only) Any (2)

2.4.4 - Same species of pea plants✓
- Same age✓
- Same height✓
- Same environmental conditions✓
- Same number of pea plants✓
(Mark first TWO only) Any (2)

2.4.5 Auxins diffused from the paste into the plants✓
Inhibiting growth of the lateral branches✓
Once all the auxins were used up✓ from the paste
The growth of the lateral branches increased✓ (4)
(12)

2.5

2.5.1 Brain✓ and spinal cord✓ (2)

2.5.2 - (Electrical) insulation✓
- Speed up the transmission of impulses✓ (2)

2.5.3 Viruses✓
Heredity✓
Environment✓
Auto-immunity✓ Any (2)

2.5.4 Vision problems✓
Weakness✓/fatigue
Pains✓
Spasms✓
Cognitive problems✓
Problems with bladder control✓ Any (2)
(8)

2.6 - Every organ and gland is controlled by two sets of nerves✓/double innervations
- that act antagonistically/oppose each other✓
- to control involuntary actions✓/brings about homeostasis
- Sympathetic✓ nerves
- stimulates a response✓/example
- Parasympathetic✓ nerves
- inhibits a response✓/example Any **(4)**

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2.7

2.7.1 (a) Altricial✓development (1)

(b) Precocial✓ development (1)

2.7.2 - Eyes are open when they are born✓
- Their bodies are covered with fur ✓
- They are able to move about soon✓ after birth
- They are able to feed themselves✓
- They are independent of their parents✓ Any (2)

2.7.3 The chances of producing offsprings are greater✓ in ovovivipary since the eggs are protected✓ within the mother
the young ones are better developed to cope in the environment✓

In ovipary many eggs laid may be eaten by predators✓
the young are not well developed ✓
and therefore have a smaller chance of survival✓Any (2 x 2) (4)
(8)

TOTAL QUESTION 2: 50

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QUESTION 3

3.1

3.1.1 (a) C✓ (1)

(b) E✓ (1)

3.1.2 Long sightedness✓/hypermetropia/hyperopia (1)

3.1.3 The eyeball being too rounded✓
the inability of the lens of the eye to become more convex✓ (2)

3.1.4 - The eyes are focused on the flower✓
- The lens of the eye adjusts its convexity✓ to accommodate
- the distance between the flower and the lens✓
- The trees are at a different distance from the lens✓
- The lens cannot adjust its convexity to accommodate two different distances at the same time✓ Any (4)
(9)

3.2

3.2.1 (a) F✓ (1)

(b) - Diameter of the pupil is the largest✓
- indicating dim light conditions✓ (2)

3.2.2 -***Pupillary mechanism**✓
- Radial muscles of the iris contract✓
- Circular muscles relax✓
- The pupil dilates✓/becomes wider/bigger
*** 1 COMPULSORY MARK** (4)
(7)

3.3

3.3.1 (a) Diameters of the follicles✓ (1)

(b) Days ✓of the menstrual cycle (1)

3.3.2 - Seek permission from participants✓
- Decide on the sample size✓
- Decide on the equipment for measuring✓
- Decide on the age- group of participants✓
- Decide on using women with regular menstrual cycles✓
- Decide on the recording tool✓/instrument/method
- Decide on the duration✓
- Learning how to use the equipment

Any (3)

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3.3.3 - The follicles decrease in size✓
- as ovulation has taken place✓
- The resulting corpus luteum becomes smaller✓
- because fertilisation did not take place✓ Any (3)

3.3.4 - The production of FSH✓
- will be inhibited✓
- which will stop/inhibit the development/growth of a follicle✓
- therefore the follicle will remain the same✓ Any (3)
(11)

3.4

3.4.1 (a) Ossicles✓ (1)

(b) Cochlea✓ (1)

3.4.2 Structure C (tympanic membrane) has a larger surface area than B✓✓ (oval window) (2)

3.4.3 - Maculae✓ are stimulated
- by changes in the position of the head✓
- and convert the stimulus to nerve impulses✓
- The impulses are transmitted by the vestibular/auditory nerve✓
- to the cerebellum✓ to be interpreted
- The cerebellum sends impulses via motor neuron✓
to skeletal muscles✓ to restore balance Any (5)
(9)

3.5

3.5.1 - Gland that secretes hormones✓
- directly into the blood ✓ (2)

3.5.2 (a) Insulin ✓ (1)

(b) Glucagon✓ (1)

3.5.3 Pancreas✓ (1)

3.5.4 - There will be no conversion of glucose into glycogen✓
- in the liver✓/muscles
- no absorption of glucose by the cells✓
- the blood glucose levels will remain high✓
- and may lead to diabetes mellitus✓ Any (4)
(9)

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3.6 - The receptor cells in the hypothalamus are stimulated✓
- the hypothalamus sends impulses to the pituitary gland✓
- which secretes ADH✓
- ADH causes the permeability of renal tubules to increase✓
- this causes the renal tubules to reabsorb more water✓ to the surrounding blood vessels✓
- the blood becomes more dilute✓
- a smaller volume of concentrated urine is excreted✓

Any **(5)**

TOTAL QUESTION 3: [50]

TOTAL SECTION B: [100]

GRAND TOTAL: 150

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