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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

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.

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.

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)**

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

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)

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)**

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

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)

- 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)

- 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