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KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

LIFE SCIENCES P1

PREPARATORY EXAMINATION

MARKING GUIDELINES - SEPTEMBER 2023

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MARKS: 150

This marking guideline consists of 9 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 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.

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SECTION A

QUESTION 1

1.1	1.1.1	B✓✓		
	1.1.2	B✓✓		
	1.1.3	A✓✓		
	1.1.4	C✓✓		
	1.1.5	A✓✓		
	1.1.6	D✓✓		
	1.1.7	B✓✓		
	1.1.8	C✓✓		
	1.1.9	D✓✓	(9 x 2)	**(18)**
1.2	1.2.1	Maculae✓		
	1.2.2	Abscisic acid✓		
	1.2.3	Synapse✓		
	1.2.4	Tropism✓		
	1.2.5	Apical dominance✓		
	1.2.6	Reflex action✓		
	1.2.7	Cones✓		
	1.2.8	Hypothalamus✓		
	1.2.9	Vasodilation✓		**(9)**
1.3	1.3.1	None✓✓		(2)
	1.3.2	Both A and B✓✓		(2)
	1.3.3	A only✓✓		(2)
				(6)
1.4	1.4.1	Sensory neuron✓		
	1.4.2	(a) Nucleus✓		(1)
		(b) Cell body✓		(1)
		(c) Dendrites✓		(1)
	1.4.3	(a) Carry impulses away from the cell body✓ **(Mark first ONE only)**		(1)
		(b) - Insulates the axon✓ - Speeds up the transmission of impulses✓ **(Mark first ONE only)**	Any	(1)
	1.4.4	**Y** to **X**✓		(1)
				(7)

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1.5	1.5.1	(a)	Semi-circular canals✓		(1)
		(b)	Ossicles✓		(1)
		(c)	Auditory nerve✓		(1)
	1.5.2	Grommet✓			(1)
	1.5.3	B✓			(1)
	1.5.4 (a)	-	It equalises pressure on either side of the tympanic membrane✓		(1)
	1.5.4 (b)	-	Traps sound waves✓		
		-	and direct them into the auditory canal✓	Any	(1)
	1.5.5	Cristae✓			(1)
	1.5.6	F✓ - Cochlea✓			(2)
					(10)
					50

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SECTION B

QUESTION 2

2.1	2.1.1	(a) LH✓		(1)
		(b) Progesterone✓		(1)
	2.1.2	Oestrogen✓		(1)
	2.1.3	- A Graafian follicle will not be stimulated✓ - No ova will be released ✓/ovulation will not occur - therefore, a woman will not be able to reproduce✓/fertilization will not occur.	Any	(3)
	2.1.4	- Hormone Y/Progesterone levels✓ - start to decrease✓ - due to the corpus luteum disintegrating✓	Any	(3) **(9)**
2.2	2.2.1	Adrenal✓ gland		(1)
	2.2.2	(a) Aldosterone✓		(1)
		(b) Adrenalin✓		(1)
	2.2.3	[(1 – 0,5) ÷ 0,5] ✓ × 100✓ = 100%✓		(3)
	2.2.4	- Increased salt concentration in the blood✓ - decreases the secretion of aldosterone✓ - This causes less salt to be reabsorbed✓/more salt to be excreted - which reduces water reabsorption✓ - More water remains in the renal tubules ✓ - resulting in more urine formed✓	Any	(5)
	2.2.5	- High aldosterone levels✓ in the blood - Will cause a high reabsorption of salt✓ into the blood - Causing more water to be reabsorbed✓ into the blood - Resulting in low volume of urine✓	Any	(3) **(14)**
2.3	2.3.1	Accommodation✓		(1)
	2.3.2	B✓ and D✓ **(Mark the FIRST TWO only)**		(2)
	2.3.3	- Circular muscles relax✓ - Radial muscles contract✓ - The pupil size increases✓ - More light enters the eye✓		(4)

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2.3.4 B✓ (1)

2.3.5 Astigmatism✓ (1)

2.3.6
- Wearing glasses with a corrective lenses✓ or lens.
- Laser surgery✓ Any (1)

(Mark the FIRST ONE only) **(10)**



2.4 2.4.1 (a) Corpus callosum✓ (1)

(b) Pituitary gland✓ (1)

(c) Spinal cord✓ (1)

2.4.2
- Control voluntary actions✓
- Responsible for higher thought processes✓ (memory, judgement etc)
- Interprets sensations✓ (any correct example) (3)

(Mark the FIRST THREE only)

2.4.3
- Cerebellum receives impulses✓
- from the receptors in the ear✓/cristae and maculae
- via the auditory nerve✓
- Cerebellum sends impulses to the skeletal muscles✓
- to restore balance✓ (3)

2.4.4
- Part E is responsible for breathing✓
- Breathing would stop✓
- resulting in death✓

OR

- Part E is responsible for heart beat✓
- Causing the heart to stop✓
- Resulting in death✓ Any (2)

2.4.5
- It is protected by meninges✓ against friction
- Kept moist by the cerebrospinal fluid✓ Any (1)

(Mark the FIRST ONE only) **(12)**

2.5
- The autonomic nervous system is made up of two branches/double innervation that work antagonistically✓,
- the sympathetic nervous system✓
- stimulates the involuntary processes✓ and
- the parasympathetic nervous system✓
- inhibits involuntary processes✓



(5)
[50]

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QUESTION 3

3.1 3.1.1 (a) Chorion✓ (1)

(b) Cervix✓ (1)

3.1.2
- Keeps foetus hydrated✓
- Keeps foetus within small temperature changes✓
- Acts as shock absorber✓/prevents mechanical injury
- Allows free foetal movements✓ Any (2)

(Mark the FIRST TWO only)

3.1.3
- Nitrogenous waste will not be excreted✓
- and will accumulate in the foetus✓
- resulting in slow/under development✓/death of the foetus

OR

- Oxygen and nutrients will not reach the foetus✓
- leading to poor/no development✓/suffocation
- leading to death of the foetus✓ (3)

3.1.4
- Excretory✓
- Digestive✓
- Respiratory✓/gaseous exchange
- Immune✓ system Any (2)

(Mark the FIRST TWO only)

3.1.5
- A diploid zygote is formed✓
- and it divides by mitosis✓
- to form a ball of cells✓
- called a morula✓
- which further divides by mitosis✓
- to form a hollow ball of cells✓
- called a blastocyst✓ Any (5)

(14)

3.2
- Diploid cells in the ovary undergo mitosis✓
- to form numerous follicles✓.
- At the onset of puberty✓
- and under the influence of FSH, ✓
- one cell inside a follicle enlarges and undergoes meiosis✓.
- Of the four cells that are produced, only one survives to form a mature, haploid ovum✓. Any **(4)**

3.3 3.3.1 (a) Testosterone levels✓ (1)

(b) Age✓ (1)

3.3.2
- Ask for permission for volunteers to participate✓
- Decide on the date, time and venue✓
- Decide on the sample size✓
- Decide on the age groups to use✓
- Decide on the method for recording the results✓
- Decide on the duration of the investigation✓ Any (3)

(Mark the FIRST THREE only)

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3.3.3 25 – 29✓ (1)

3.3.4
- Equal number of males per age group✓
- All males were of the same health status✓
- All males were on the same diet✓
- Same interval of blood tests✓
- Same duration of the investigation✓ Any (3)

(Mark the FIRST THREE only)

3.3.5
- Blood testosterone increases from 20 to 29 years✓ (accept if ranges are given)
- after which it decreases steadily with age✓ (2)

3.3.6
- Decrease in testosterone levels✓
- which will result in low sperm count✓/ decreased sexual urges
- therefore, causing decreased reproduction✓/infertility Any (3)

(14)

3.4 3.4.1
- Blood glucose level increases✓
- Pancreas is stimulated✓
- More insulin is secreted✓ into the blood
- Which is sent to the liver✓ and muscles
- To convert excess glucose✓ into glycogen✓
- And glucose level in the blood decreases✓ Any (5)

3.4.2 Diabetes mellitus✓ (1)

3.4.3
- High thyroxin levels increase metabolic rate✓/cellular respiration
- This results in more glucose and fats being burnt✓/broken down
- Resulting in weight loss✓ (3)

3.4.4 Thyroid gland✓ (1)

(10)

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3.5	3.5.1	Internal fertilisation✓		(1)
	3.5.2	- Sperms are deposited inside the female body✓ which increases the chances of fertilisation✓ - Protection provided by the mother's body✓ decreases mortality rate✓ **(Mark the FIRST TWO only)**	(2 × 2)	(4)
	3.5.3	Ovipary✓		(1)
	3.5.4	- Removes the debris from the egg✓ - Assist the hatchling to the water✓ - Opens the eggs carefully with her tongue✓ - Carries the hatchlings in her mouth✓ **(Mark the FIRST TWO only)**	Any	(2) **(8)** **[50]**

TOTAL SECTION B: 100
GRAND TOTAL: 150

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