



**education**

**MPUMALANGA PROVINCE  
REPUBLIC OF SOUTH AFRICA**

**PREPARATORY EXAMINATION**

**GRADE 12**

**LIFE SCIENCES P1**

**SEPTEMBER 2021**

**MARKING GUIDELINES**

**MARKS: 150**

**This marking guideline consists of 10 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**  
Marks for 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 if it appears on marking guidelines.

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**  
Marking guidelines will allocate marks for units separately, except where it is given in the question.
16. **Be sensitive to the sense of an answer, which may be stated in a different way.**
17. **Caption**  
All illustrations (diagrams, sketches, 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 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.
19. **Changes to the memorandum**  
No changes must be made to the marking guideline without consulting the cluster leader who in turn will consult with the curriculum implementer.

**SECTION A****QUESTION 1**

1.1	1.1.1	B✓✓		
	1.1.2	C✓✓		
	1.1.3	B✓✓		
	1.1.4	B✓✓		
	1.1.5	B✓✓		
	1.1.6	C✓✓		
	1.1.7	C✓✓		
	1.1.8	C✓✓		
	1.1.9	C✓✓		
	1.1.10	A✓✓	10 x 2	<b>(20)</b>
1.2	1.2.1	FSH✓/Follicle stimulating Hormone		
	1.2.2	Gestation✓		
	1.2.3	Vagina✓		
	1.2.4	Dendrites✓		
	1.2.5	Geotropism✓ /gravitropism		
	1.2.6	Aldosterone✓		
	1.2.7	Peripheral✓ nervous system		
	1.2.8	Binocular✓ vision		
	1.2.9	Hypothalamus✓		
	1.2.10	Aqueous humor✓	(10 x 1)	<b>(10)</b>
1.3	1.3.1	A only✓✓		
	1.3.2	None✓✓		
	1.3.3	None✓✓		
	1.3.4	B only✓✓	(4 x 2)	<b>(8)</b>
1.4	1.4.1	(a) Amnion✓		(1)
	1.4.2	(b) Chorion✓		(1)
	1.4.3	C✓ - allantois✓		(2)
	1.4.4	Yolk sac ✓		(1)
				<b>(5)</b>
1.5	1.5.1	Fertilisation✓		(1)
	1.5.2	Fallopian tubes✓		(1)
	1.5.3	(a) Jelly layer✓		(1)
		(b) Nucleus ✓		(1)
	1.5.4	Mitochondria✓		(1)
	1.5.5	- D✓		
		- E✓		
		<b>(Mark first TWO only)</b>	Any	(2)
				<b>(7)</b>
			<b>TOTAL SECTION A:</b>	<b>50</b>

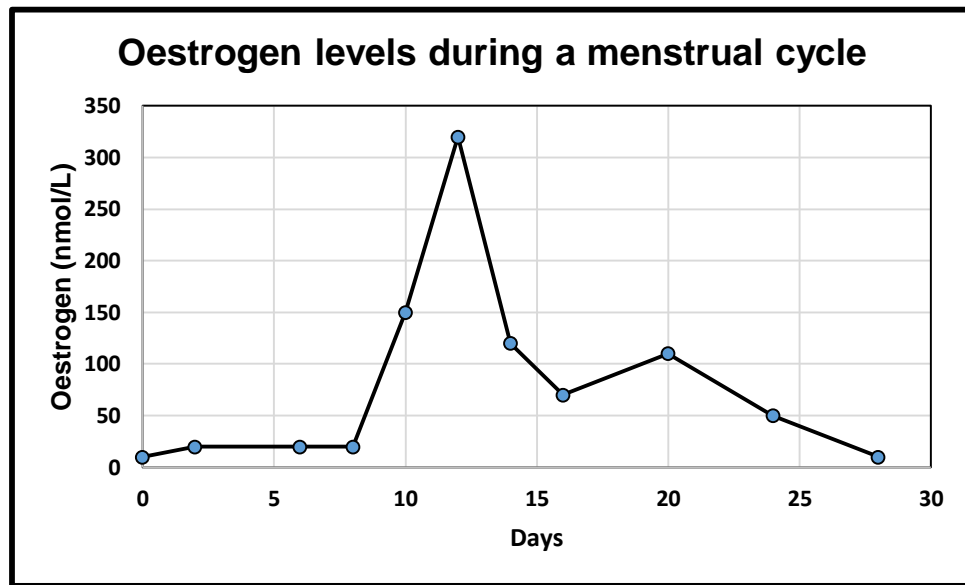
**SECTION B****QUESTION 2**

2.1

- 2.1.1 - C✓ - Vas deferens✓  
- D✓ - Urethra✓  
**(Mark first TWO only)** (4)
- 2.1.2 (a) Provide nutrients✓ (1)  
(b) To neutralize acidity of the vagina✓/ urethra (1)
- 2.1.3 - The temperature must be 2°C below body temperature✓/35°C  
- to produce normal/ healthy sperm✓ (2)
- 2.1.4 There will be pressure around the urethra✓/ urethra will be closed off (1)
- 2.1.5 - Under the influence of testosterone✓  
- diploid cells✓  
- in the seminiferous tubules✓ of the testes undergo  
- meiosis✓  
- to form haploid sperm✓ Any (4)  
**(13)**

2.2

2.2.1



Description	Mark allocation
Heading (H)	1
Type of graph (T)	1
Label and unit for axes (L)	1
Correct scale on x and y axis (S)	1
Plotting (P)	1 (1-6 points correct) 2 (all points correctly plotted)

(6)

2.2.2

- (a) - Progesterone levels increase✓  
- since the corpus luteum has been formed✓
- (b) - The progesterone levels remained high✓  
- meaning that the corpus luteum did not degenerate✓  
- as a result endometrium is maintained✓

(2)

Any (2)  
**(10)**

2.3

2.3.1 Placenta✓

(1)

2.3.2 Umbilical vein✓

(1)

- 2.3.3 - It is a hollow organ✓  
to accommodate the developing foetus✓  
- It is a muscular organ✓  
that can contract and relax✓ during birth  
- It is made up of elastic muscles  
that can stretch✓ to accommodate the developing baby  
**(Mark first ONE only)**

Any (1 x 2) (2)

- 2.3.4 (a) - Diffuses from the mother's blood✓  
 - through the placenta✓  
 - which is then transported by the umbilical vein✓ to the foetus (3)
- (b) - since the child has poor motor co-ordination✓  
 - it means that the cerebellum is affected✓ (2)
- (9)**
- 2.4
- 2.4.1 - Adrenalin✓  
 - Aldosterone✓  
**(Mark first ONE only)** Any (1)
- 2.4.2 - Stimulates conversion of glycogen to glucose✓/increases blood glucose levels  
 - Stimulates conversion of glucose to glycogen✓ /reduces the blood glucose levels / Stimulates the absorption of glucose by cells  
**(Mark first TWO only)** (2)
- 2.4.3 - Gland 2/thyroid gland secretes more thyroxin✓  
 - which stimulates an increase in metabolic rate✓/respiration  
 - to provide more energy✓ for flight or flight (3)
- 2.4.4 - Excrete large volume of urine✓  
 - Feel thirsty frequently✓ / drink a lot of liquids (2)
- 2.4.5 Gland 1✓ (1)
- 2.4.6 Less TSH stimulates the:  
 - thyroid glands to produce less thyroxin✓  
 - Less thyroxin stimulates a decrease in metabolic activities✓  
 - Therefore, less glucose is used✓  
 - and is stored as fats✓ Any (3)
- (12)**
- 2.5
- 2.5.1 Sweat pore✓ (1)
- 2.5.2 When blood vessels will remain dilated:  
 - Blood flow to the skin will remain high✓  
 - More heat will be lost✓ to the surface of the skin  
 - Body temperature would decrease✓ below normal (3)
- 2.5.3 - Part 3 /sweat gland are active✓/ produces more sweat  
 - and more heat is lost by evaporation✓ (2)
- (6)**  
**[50]**

**QUESTION 3**

3.1

- 3.1.1 Growth direction of plant shoots✓ (1)
- 3.1.2 - Same type/ species of seeds✓/only bean seed were used  
 - Beans were grown under same environmental conditions✓  
 - Same age of beans✓/ grown for 7 days  
 - Same type of black plastic bag used✓  
 - All covered with a box✓  
 - Exposed to light from the same direction✓  
 - Observation done at the same time✓/ after seven days  
**(Mark first TWO only)** Any (2)
- 3.1.3 To increase the reliability of the results✓ (1)
- 3.1.4 (a) - Auxins from the tip of the stem move to the dark side✓  
 - High concentration of auxins on this side stimulates cell elongation✓/ growth  
 - the uneven growth✓  
 - cause the stem to bend towards light source✓ (4)
- (b) - Auxins from the tip of the stem are still produced✓  
 - but move slowly down the stem✓  
 - Causing the stem to grow slowly upwards✓ (3)
- (11)**
- 3.2
- 3.2.1 Interneuron✓/connector neuron (1)
- 3.2.2 - A reflex action is the fast automatic response to the stimulus✓  
 - A reflex arc is the path taken by an impulse✓ during a reflex action (2)
- 3.2.3 - The receptor/finger receives the stimulus of heat✓ /pain  
 - and converts it into an impulse✓  
 - The sensory neuron carries the impulse✓ from the receptor  
 - to the interneuron✓/connector neuron  
 - The interneuron transmits the impulse to the motor neuron✓  
 - The motor neuron carries the impulse to the effector✓/muscle to move the finger away Any (5)
- 3.2.4 A person can feel the stimulus ✓/heat, but is unable to react ✓ / no response (2)  
**(10)**



## NSC – Marking guidelines

## 3.3

- 3.3.1 Sclera✓ (1)
- 3.3.2 Controls the amount of light entering the eye✓/ the size of the pupil (1)
- 3.3.3 Pupillary✓\* mechanism  
 - Radial muscles contract✓  
 - Circular muscles relax✓  
 - The pupil dilates✓/increases  
 - so that more light enters the eye✓ \*1 Compulsory + Any 3 (4)
- 3.3.4 - The lens becomes cloudy✓  
 - therefore, no light will pass through✓  
 - To stimulate the receptors✓/ to reach the retina (3)  
**(9)**

## 3.4

- 3.4.1 - The pinna of the ear traps sound waves✓  
 - The auditory canal directs the sound waves to the tympanic membrane✓  
 - The sound waves cause the tympanic membrane to vibrate✓  
 - The vibrations of the tympanic membrane cause the ossicles to vibrate✓  
 - The ossicles pass the vibrations to the oval window✓  
 - The vibration of the oval window cause pressure waves in the inner ear✓/perilymph/endolymph  
 - The pressure waves stimulate the organ of Corti✓  
 - The organ of Corti converts the stimuli to nerve impulses✓  
 - The auditory nerve transmits the impulses✓  
 - to the cerebrum for interpretation✓ Any (8)
- 3.4.2 - The pressure will not be equalised on both sides of the tympanic membrane ✓  
 - Due to build-up of pressure in the middle ear✓  
 - The tympanic membrane may bulge✓ and burst Any (2)
- 3.4.3 - Water will enter the middle ear rather than drain out ✓  
 - This will result in water building up in the middle ear✓/middle ear cannot dry out  
 - which can result in middle ear infection✓/temporary loss of hearing/middle ear infection will not clear up/ prevent transmission of impulse Any (2)  
**(12)**

3.5

- 3.5.1 Corpus callosum✓ (1)
- 3.5.2 - Coordinates all voluntary movements✓  
- Controls muscle tension to maintain balance✓ (2)
- 3.5.3 (a) C✓ (1)
- (b) - Enzymes will denature✓  
- this will cause the reactions to slow down✓/ stop (2)
- 3.5.4 A✓- Cerebrum✓ (2)

**(8)**  
**[50]****TOTAL SECTION B: 100**  
**GRAND TOTAL: 150**