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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

LIFE SCIENCES P1

2022

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 8 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 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.

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 memoranda without consulting the provincial internal moderator who in turn will consult with the national internal moderator (and the Umalusi moderators where necessary).

20. Official memoranda

Only memoranda bearing the signatures of the national internal moderator and the Umalusi moderators and distributed by the National Department of Basic Education via the provinces must be used.

SECTION A**QUESTION 1**

1.1	1.1.1	B✓✓		
	1.1.2	B✓✓		
	1.1.3	D✓✓		
	1.1.4	C✓✓		
	1.1.5	B✓✓		
	1.1.6	A✓✓		
	1.1.7	B✓✓		
	1.1.8	B✓✓		
	1.1.9	C✓✓	(9 x 2)	(18)
1.2	1.2.1	Round window✓/ Fenestra rotunda		
	1.2.2	Acrosome✓		
	1.2.3	Fallopian tube✓		
	1.2.4	Astigmatism✓		
	1.2.5	Optic✓ nerve		
	1.2.6	Alzheimer's✓ disease		
	1.2.7	Endometrium✓		
	1.2.8	Blastula✓/blastocyst		
	1.2.9	Puberty✓		
	1.2.10	Binocular✓ /stereoscopic vision	(10 x 1)	(10)
1.3	1.3.1	A only✓✓		
	1.3.2	B only✓✓		
	1.3.3	B only✓✓	(3 x 2)	(6)
1.4	1.4.1	(a) Accommodation✓		(1)
		(b) Pupillary mechanism✓/Pupillary reflex		(1)
	1.4.2	(a) B✓ and D✓ (Mark first TWO only)		(2)
		(b) A✓ and B✓ (Mark first TWO only)		(2)
	1.4.3	(a) C✓ and D✓ (Mark first TWO only)		(2)
		(b) A✓ and C✓ (Mark first TWO only)		(2)
				(10)
1.5	1.5.1	(a) Myelin sheath✓		(1)
		(b) Axon✓		(1)
	1.5.2	(a) A✓		(1)
		(b) C✓		(1)
	1.5.3	D✓ Synapse✓		(2)
				(6)
TOTAL SECTION A:				50

SECTION B**QUESTION 2**

2.1	2.1.1	Cerebellum✓		(1)
	2.1.2	<ul style="list-style-type: none"> - Higher thought processes✓/(intelligence/memory/reasoning) - Interpretation of all senses✓ - Controls all voluntary actions✓ (Mark first TWO only)	Any	(2)
	2.1.3	(a) Growth hormone✓/GH		(1)
		(b) Prolactin✓		(1)
	2.1.4	<ul style="list-style-type: none"> - Meninges✓ - Cranium✓ (Mark first ONE only)	Any	(1)
	2.1.5	<ul style="list-style-type: none"> - It receives✓/ interprets impulses - from receptors✓ in the skin and - sends impulses to the blood vessels of the skin✓/ influences blood flow to the skin and - the sweat glands✓/influences sweat secretion 		(4)
	2.1.6	(a) Carotid artery✓		(1)
		(b) Heart✓ muscle <ul style="list-style-type: none"> - Diaphragm✓ - Intercostal muscles✓ (Mark first TWO only)	}/Breathing muscles✓ Any	(2) (13)
2.2	2.2.1	Vas deferens✓		(1)
	2.2.2	<ul style="list-style-type: none"> - Sperm storage✓ - Sperm maturation✓ (Mark first ONE only)	Any	(1)
	2.2.3	<ul style="list-style-type: none"> - The semen will not contain sperm✓ because - they are not transported✓ - but will contain all other secretions of the accessory glands✓/ examples thereof - the vasectomy occurred before✓ the accessory glands 	Any	(3)
	2.2.4	<ul style="list-style-type: none"> - The temperature of the testes inside the body will be too high✓ - No/abnormal sperm will be produced✓ - The man will be infertile✓/not able to reproduce 		(3)
	2.2.5	<ul style="list-style-type: none"> - Under the influence of testosterone✓ - diploid cells✓/germinal epithelial cells - in the seminiferous tubules✓/testes - undergo meiosis✓ - to form haploid sperm cells✓ 	Any	(4) (12)

2.3 Protection

- The (amniotic) egg is retained inside the mother's body✓*
- to protect the embryo from predators✓
- The allantois✓ protects the embryo
- by removing waste products✓
- The embryo is protected from shocks✓/sudden changes in temperature/dehydration by the:

- Chorion✓
- Amnion✓
- Amniotic fluid✓ inside the amniotic membrane
- Shell✓/outer covering
- Air pocket✓

Compulsory 1* + Any 4 5

Nourishment (N)

- The embryo receives nutrients✓
- from the egg yolk✓ in the yolk sac
- and from the albumen✓

Any 2 2
(7)2.4 2.4.1 $71.53 - 34.72✓ = 36.81✓ \text{ ml/h}$ (2)

- 2.4.2
- The high level of ADH✓ at night
 - Increases the permeability of the renal tubules✓/collecting duct/distal convoluted tubules in the kidney
 - More water is re-absorbed✓/less water is excreted
 - Less urine is produced✓
- (4)

- 2.4.3
- Less urine produced✓/more water is retained
 - A person will not need to urinate often✓/ will not be thirsty/ sleep will not be interrupted
- (2)

- 2.4.4
- Water will not be reabsorbed from the renal tubules✓
 - The volume of water in the blood will be low✓
 - The pituitary gland will be stimulated✓
 - to release more ADH✓ all the time
- Any (3)
(11)

- 2.5 2.5.1
- Caffeine✓
 - Nicotine✓
- (Mark first TWO only)** (2)

- 2.5.2
- The bitter taste✓ will prevent herbivores✓ from feeding on them
 - The caffeine will kill pathogenic fungi✓protecting the plants from disease✓/death
- Any (2 x 2) (4)
(Mark first TWO only)

- 2.5.3 Thorns✓ (1)
(Mark first ONE only)

(7)
[50]

QUESTION 3

- 3.1
- 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✓ **(5)**
- 3.2
- 3.2.1
- Must have regular menstrual cycles✓
 - They must not become pregnant✓
 - Diet Any (2)
- (Mark first TWO only)**
- 3.2.2
- 250 females per group were used✓/1000 females participated
 - Measurement was done for 5 cycles✓ **(2)**
- (Mark first TWO only)**
- 3.2.3
- Older groups of women have a higher (average) FSH level than the younger groups✓✓
- OR**
- Younger groups of women have a lower (average) FSH level than the older groups✓✓ **(2)**
- (Mark first ONE only)**
- 3.2.4
- The Graafian/developing follicles secretes oestrogen✓
 - but since the number of follicles are low✓/depleted
 - less/no oestrogen will be secreted✓ **(3)**
- 3.2.5
- A high concentration of progesterone✓
 - inhibits the pituitary gland✓/results in reduced FSH secretion
 - This will decrease the validity of the investigation✓ Any (3)
- (12)**
- 3.3
- After implantation the chorion✓
 - develops many finger-like outgrowths✓
 - called chorionic villi✓
 - The endometrium✓
 - together with the chorionic villi forms the placenta✓
 - The umbilical artery✓
 - and the umbilical vein✓ develops
 - inside a hollow tube✓
 - to form the umbilical cord between the foetus and the placenta✓ Any **(6)**
- 3.4
- 3.4.1
- (a) Auditory canal✓ **(1)**
- (b) Ossicles✓ **(1)**

3.4.2	- Collects the sound waves✓ - Directs the sound waves towards the auditory canal✓ (Mark first ONE only)	Any	(1)
3.4.3	- Part D/the ossicles do not vibrate freely✓ - Fewer/no vibrations will be sent to the oval window✓/inner ear - Fewer/no pressure waves will be set up in the cochlea✓ - The receptors/organ of Corti will be stimulated less✓/not stimulated - The cerebrum is stimulated differently✓/not stimulated - which leads to hearing loss✓	Any	(4)
3.4.4	- It equalises pressure✓ - on either side of the tympanic membrane✓		(2)
3.4.5	Grommet✓		(1)
3.4.6	C✓		(1)
3.4.7	- The cristae are stimulated✓ - to convert the stimuli to impulses✓ - The impulses are sent to the cerebellum✓ - where they are interpreted✓ - The cerebellum sends impulses to the skeletal muscles✓ to maintain balance	Any	(4) (15)
3.5	3.5.1	Islets of Langerhans✓	(1)
	3.5.2	(a) - Type I✓ - No insulin will be produced✓ - The presence of GAD-antibodies indicates that pancreas cells are being destroyed✓ (b) - Type I✓ - A lower than normal C-peptide level indicates that the insulin producing cells of the pancreas was destroyed✓ - therefore no insulin will be produced✓	(3) (3)
	3.5.3	- The insulin levels will remain high✓ because - the blood glucose levels remain high✓ - the pancreas will continue secreting insulin✓	(3)
	3.5.4	- The glucose cannot be absorbed into the cells✓ - therefore it cannot be used in cellular respiration✓/ to release energy	(2) (12) [50]
TOTAL SECTION B:			100
GRAND TOTAL:			150