GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PREPARATORY EXAMINATION

2016

MEMORANDUM

LIFE SCIENCES (FIRST PAPER) (10831)

9 pages

GAUTENG DEPARTMENT OF EDUCATION

PREPARATORY EXAMINATION – 2016

LIFE SCIENCES
(First Paper)

MEMORANDUM

PRINCIPLES RELATING TO THE MARKING OF LIFE SCIENCES

1. **If more information than marks allocated is given**
   Stop marking when maximum marks are 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 become 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**
    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 captions.
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.
19. **Changes to the memorandum.**
    No changes may be made to the ratified memorandum without consultation with the Provincial Internal Moderator.

SECTION A

QUESTION 1

1.1

1.1.1	B √√	
1.1.2	C √√	
1.1.3	D √√	
1.1.4	A √√	
1.1.5	C √√	
1.1.6	B √√	
1.1.7	A √√	
1.1.8	C √√	
1.1.9	B √√	
1.1.10	D √√	
		(10x2) **(20)**

1.2

1.2.1	Organ of Corti / Cochlea √	
1.2.2	Endocrine √	
1.2.3	Glucagon √	
1.2.4	Eustachian√ tube	
1.2.5	Oval window √	
1.2.6	Geotropism / gravitropism √	
1.2.7	Homeostasis √	
1.2.8	Medulla Oblongata √	
1.2.9	Poaching √	
1.2.10	Wetlands √	**(10)**

1.3

1.3.1	B only √√	(1)
1.3.2	None √√	(2)
1.3.3	None √√	(3)
		(6)

1.4

1.4.1	Negative feedback mechanism √	(1)
1.4.2	Thyroxin √	(1)
1.4.3	TSH√ / thyroid stimulating hormone	(1)
1.4.4	Increases √ TSH √ secretion	(2)
1.4.5	Raises body temperature √	(1)
		(6)

1.5

1.5.1	E √ amniotic fluid √	(2)
1.5.2	B √ placenta √	(2)
1.5.3	A √ umbilical cord √	(2)
1.5.4	D √ cervix √	(2)
		(8)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1

2.1.1	As the age of the mother increases √ so does the incidence of Down's syndrome√	(2)
2.1.2	3.5 – 1√ = 2.5 √ %	(2)
2.1.3	Non-disjunction√ of chromosomes	(1)
2.1.4	It creates gametes that will either have 24√ chromosome or 22 chromosomes√	(2)
2.1.5	The incidence of Down's Syndrome increases √ sharply from the age of 36 years / increasing age / over 40√ and she should consider the likelihood of having a child with Down's syndrome √	(3)
		(10)

2.2

2.2.1	Reflex arc √	(1)
2.2.2	(a) A √ (b) B √	(2)
2.2.3	It allows the organism to react very quickly √ to avoid injury from the potentially harmful stimulus as a protective mechanism √	(2)
2.2.4	Will be able to feel the stimulus√ Will not be able to react / respond√ to stimulus	(2)
		(7)

2.3

2.3.1 Eggs are laid and hatching takes place outside the mother's body√ (1)

2.3.2 Placenta √ (1)

2.3.3
- Pigeons can live in various terrestrial habitats√ / further away from water
- as the shell and amnion√
- protect the embryo from desiccation (drying out) √
- The yolk serves as a source of food √for the developing embryo
- fluid filled amniotic cavity supports and protects√ embryo during development. (Any 3) (3)

2.3.4 Internal√ fertilization (1)
(6)

2.4

2.4.1 Auxin √ (1)

2.4.2
- using the pair of scissors cut a hole in the one side of the box √ near the top
- take the two similar plants √
- cover one plant with the box √
- facing the hole to the light source / window √
- so that the plant gets light from only one direction √
- place the other plant next to the covered plant √
- this plant receives light from all directions √
- leave for a few days and observe√ (Any 5) (5)

(6)

2.5

2.5.1 When all people at all times √ have access√ to sufficient / safe / nutritious√ food to maintain a healthy and active life. (Any 2) (2)

2.5.2 Africa √ (1)

2.5.3
- Overgrazing√
- The overuse / misuse of pesticides√
- The misuse of fertilisers√
- No crop rotation√ / crops planted on same piece of land year after year
- Poor soil management√ / wrong tilling of soil leading to soil erosion
- Waste of water / √poor irrigation techniques (Any 3) (3)

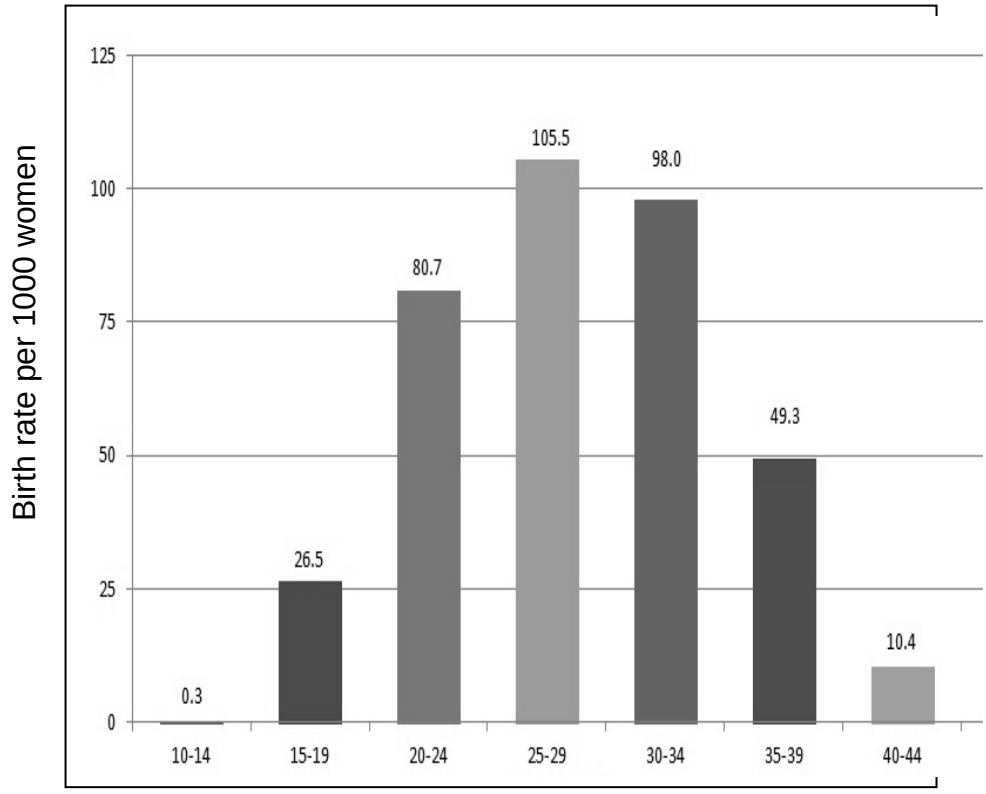
Mark first THREE only

2.5.4	War / genocide / political instability√ corrupt governments√ poverty, √ lack of education / high illiteracy levels, √ child labour √ **Mark first THREE only**	(Any 3)	(3)
2.5.5	Monoculture / farming√ Deforestation√ Urbanisation / golf estates√ Human population growth√ Mining√ Industrialisation√ Building dams√ Poaching√ Alien plant invasions√ **Mark first TWO only**	(Any 2)	(2)
			(11) **[40]**

QUESTION 3

3.1

3.1.1 The birth rate in women (per 1000) of various ages in the US in 2013



(6)

CRITERIA FOR MARKING GRAPH:
Caption √
Correct type of graph and bars of equal size √
X axis correct scale and label √
Y axis correct scale and label √
Plotting points : 1 – 3 correct √ OR 4 – 6 correct √√

3.1.2 (a) Ages of women √
(b) Birth rate per 1000 women√ (2)

3.1.3 The age group from 25 to 29 years √ (1)

3.1.4 At first the birth rate increases from age group 10-14 to age group 25-29√ Then the birth rate decreases from age group 25-29 to age group 40-44√ (Any 2) (2)

(11)

3.2

3.2.1 Diagram to illustrate the levels of certain hormones√ and events occurring in the ovarian cycle √ (2)

3.2.2 Ovulation √ (1)

3.2.3 Corpus luteum√ (1)

3.2.4 A – FSH / Follicle Stimulating Hormone √
B – LH / Luteinizing Hormone √ (2)

3.2.5
- FSH√ / hormone A
- stimulates the development of a primary follicle√ / structure D with the developing ovum in it √
- Around day 14√
- Luteinizing Hormone (LH) √ / hormone B
- causes the Graafian follicle to burst √
- and release the ovum √
- during the process of ovulation / process X √ (Any 7) (7)

3.2.6 Hormone A / FSH increases after day 25 √
Corpus luteum / structure C degenerates √ (2)
(15)

3.3

3.3.1 Feelings of pleasure √
followed by loss of memory, personality disturbance, depression and anxiety √ /
reduces physical skills √ (Any 2) (2)

3.3.2 Tetrahydrocannabinol / THC √ (1)

3.3.3 It reduces physical skills√
and concentration√
it would also affect the ability to judge the distance and the speed√ of other cars on the road √ / road users
Mark first three only (Any 3) (3)

3.3.4 It allows a signal / impulse to pass from one neuron to another in one direction only √ (1)

3.3.5
- Educate people on the dangers of using dagga / through school syllabus / television campaigns / community campaigns √
- Policing and law enforcement √
- Clinics to help addicts, so that they do not influence others to use√

Mark first one only (Any 1) (1)
(8)

3.4

3.4.1	Radiation and convection√ / radiated heat	(1)
3.4.2	To bring more blood to the surface of the skin√ in order to cool down the body	(1)
3.4.3	Increases the amount of blood flowing√ to the sweat glands. This stimulates the sweat glands√ and therefore more sweat is produced. √	(3)
3.4.4	Cold√ conditions	(1)
		(6)
		[40]

TOTAL SECTION B: 80

SECTION C

QUESTION 4

- The **sympathetic nervous system*** √ prepares the body for a 'fight or flight' reaction / emergency situation√
- It stimulates the release of adrenalin by the adrenal glands √ to enhance the function of the sympathetic nervous system√
- This causes the breathing rate to increase √ at the same time and
- causes the heart rate to increase√ / the heart is stimulated to contract harder and faster
- This causes an increase in blood pressure√ / blood is flowing round the body quicker
- The bronchioles dilate √ / relax,
- which allows more air into the lungs and takes in **more** oxygen√
- The increased oxygen is carried to essential tissues such as the nervous system, and skeletal muscles √
- The liver √
- is stimulated to break down glycogen√ and
- release more glucose into the blood stream √
- Increased metabolic rate√ of cells in muscles and brain so that more energy√
- can be released for muscle and brain activities√
- The pupils dilate √ allowing more light into the eye for better vision √
- Constriction of the blood vessels to the digestive system and skin√ / inhibits peristalsis so that more blood is available for the heart muscles and the brain
- This allows the individual to react to fight the dog / run away √

*** 1 compulsory mark + any 16 facts**

Max (17)

Content (17)
Synthesis (3)
(20)

ASSESSING THE PRESENTATION OF THE ESSAY

Relevance (R)	Logical sequence (L)	Comprehensive (C)
All information provided is relevant to the question.	Ideas are arranged in a logical / cause-effect sequence.	Answered all aspects of the essay.
All information provided is relevant to the effect of the sympathetic nervous system and adrenalin on the body.	Ideas are arranged logically starting with the sympathetic nervous system and linking it to adrenalin secretion and then in logical cause effect sequence.	The sympathetic nervous system and adrenalin is addressed in sufficient detail. At least 12 / 17 correct facts relating to the fight or flight response is mentioned.
1 mark	**1 mark**	**1 mark**

TOTAL SECTION C: 20

TOTAL: 150

ASSESSERING VAN DIE OPSTEL AANBIEDING

Relevansie (R)	Logiese volgorde (L)	Volledigheid (C)
Alle inligting gegee wat relevant is ten opsigte van die vraag	Idees gerangskik in ’n logiese volgorde / oorsaak-effek orde	Alle aspekte wat in die opstel vraag genoem is, is suksesvol gedek.
Alle inligting wat gegee is moet relevant wees ten opsigte van die effek van die simpatiese sunuweestelsel en adrenalien op die liggaam.	Idees is gerangskik in ’n logiese volgorde en begin met die simpatiese senuweestel en skakel in met adrenalien afskeiding, in ’n logiese oorsaak- effek volgorde.	Die simpatiese senuweestelsel en adrenalien is volledig geadreseer. Ten minste 12 / 17 korrekte feite wat verband hou met die veg- of vlug reaksie word genoem.
1 punt	**1 punt**	**1 punt**

TOTAAL AFDELING C 20

TOTAAL: 150

3.4

3.4.1	Uitstraling en konveksie√ / uitstraling van hitte	(1)
3.4.2	Om meer bloed na die oppervlak van die vel te bring√ om die liggaam af te koel	(1)
3.4.3	Toename in die hoeveelheid bloedvloei√ na die sweetkliere. Dit stimuleer die sweetkliere√ en daarom word meer sweet geproduseer. √	(3)
3.4.4	Koue√ toestande	(1)
		(6)
		[40]

TOTAAL AFDELING B: 80

AFDELING C

VRAAG 4

4.

- Die **simpatiese senuweestelsel*** √ berei die liggaam voor vir die "veg-of vlugreaksie" / noodsituasie √
- Dit stimuleer die vrystelling van adrenalien deur die adrenale klier (bynier) √ om die funksie van die simpatiese senuweestelsel te versterk √
- veroorsaak 'n verhoogde (toename) tempo van asemhaling√ terselfdertyd
- veroorsaak dit 'n verhoogde (toename) tempo waarteen die hart klop√ / die hart word gestimuleer om harder en vinniger saam te trek
- Dit veroorsaak 'n toename in bloeddruk√ / bloedvloei vinniger na die liggaam
- Die brongiole verwyd √ / ontspan,
- wat meer lug in die longe laat en meer suurstof word ingeneem√
- Die verhoogde suurstof word gedra na belangrike weefsels byvoorbeeld die senuweestelsel en skeletspiere √
- Die lewer√
- word gestimuleer om glikogeen af te breek √ en
- meer glukose in die bloed vry te stel √
- Toename in metaboliese aktiwiteit√ van selle in spiere en die brein sodat meer energie√
- vrygestel kan word vir spier en breinaktiwiteite√
- Die pupille verwyd √ wat meer lig in die oog inlaat vir beter sig √
- Vernouing van bloedvate na die spysverteringstelel en vel√ / inhibeer peristalse sodat meer bloed beskikbaar is vir hartspiere en die brein
- Dit stel die persoon in staat om te reageer en die hond te veg / weg te hardloop √

*** 1 verpligte punt + enige 16 feite**

Inhoud	(17)
Sintese	(3)
	(20)

3.2 3.2.1 Diagram om hormoonvlakke te illustreer√ en gebeure wat in die ovariese siklus plaasvind √ (2)

3.2.2 Ovulasie √ (1)

3.2.3 Korpus luteum√ (1)

3.2.4 A – FSH / Follikelstimulerende hormoon √
B – LH / Luteïniserende hormoon √
(2)

3.2.5
- FSH√ / hormoon A
- stimuleer die ontwikkeling van 'n primêre follikel √ / struktuur D met ontwikkelende ovum binne in √
- Min of meer by dag 14√
- Laat Luteïniserende hormoon (LH) √ / hormoon B
- die Graafse -follikel bars √
- en 'n ovum vrystel√
- gedurende die proses van ovulasie / proses X √ (Enige 7) (7)

3.2.6 Hormoon A / FSH neem toe na dag 25 √
Korpus luteum / struktuur C disintegreer √
(2)
(15)

3.3

3.3.1 Gevoel van genot√
Gevolg deur geheueverlies, persoonlikheidsteurnis, depressie en angstigheid √ /
Verlaag fisiese vaardigheid √ (Enige 2) (2)

3.3.2 "Tetrahydrocannabinol" / THC √ (1)

3.3.3 Dit verlaag fisiese vaardigheid√
en konsentrasie√
dit sal ook die vaardigheid om die afstand en die spoed te skat beïnvloed√ veral van ander voertuie op die pad√ / padgebruikers
Merk slegs eerste DRIE (Enige 3) (3)

3.3.4 Dit laat 'n impuls toe om van een neuron na 'n volgende oorgedra te word, slegs in een rigting √ (1)

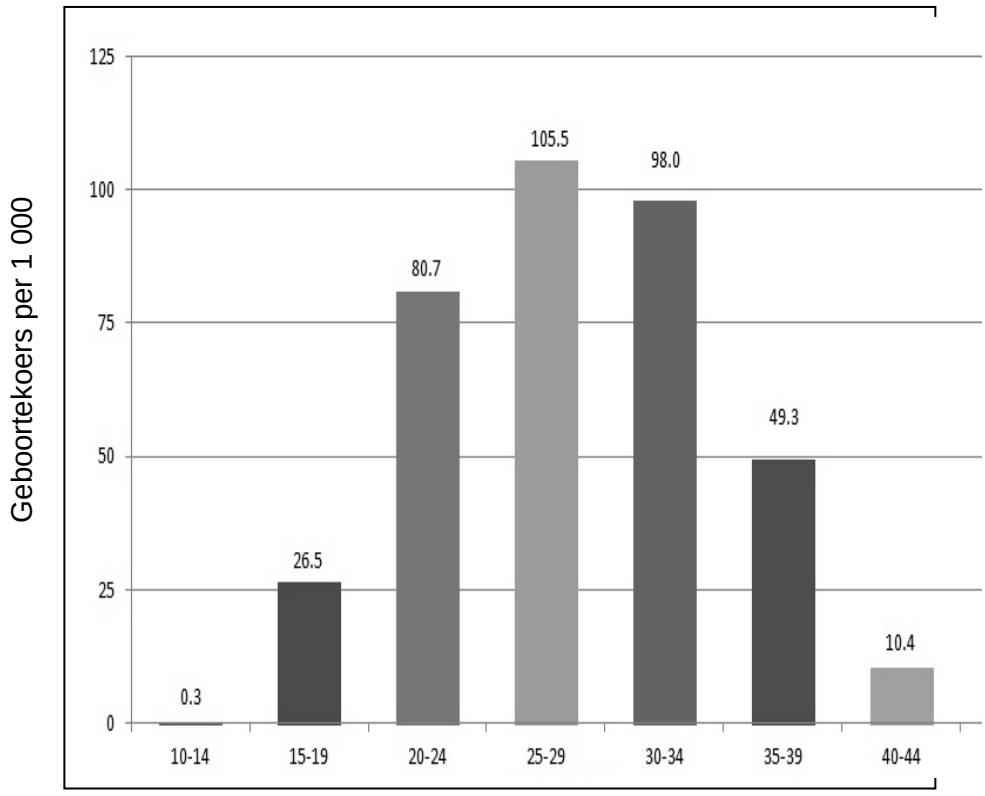
3.3.5
- Voed mense op oor die gevare van die gebruik van dagga / d.m.v die skool sillabus / televisie veldtogte / gemeenskap veldtogte √
- Beleide en wetgewing √
- Klinieke om verslaafdes te help, sodat hulle nie ander kan beïnvloed nie√

Merk slegs eerste EEN (Enige 1) (1)
(8)

VRAAG 3

3.1

3.1.1 Die geboortekoers in vrouens (per 1000) van verskeie ouderdomme in die VSA in 2013



(6)

KRITERIA VIR DIE NASIEN VAN DIE GRAFIEK
Opskrif √
Korrekte tipe grafiek en geskikte wydte van kolomme √
X-as korrekte skaal en byskrif √
Y-as korrekte skaal en byskrif √
Stip van punte : 1 – 3 korrek √ OF 4 – 6 korrek √√

3.1.2 (a) Ouderdom van vrouens √
(b) Geboortekoers per 1000 vrouens√ (2)

3.1.3 Die ouderdomsgroep van 25 tot 29 jaar √ (1)

3.1.4 In die begin het die geboortekoers toegeneem vanaf die ouderdomsgroep 10-14 tot die ouderdomsgroep 25-29 jaar√
Toe het die geboortekoers afgeneem vanaf die ouderdomsgroep 25-29 tot die ouderdomsgroep 40-44 jaar√

(Enige 2) (2)
(11)

2.5.4	Oorlog / rassemoord / politieke onstabiliteit,√ korrupsie√, in regering armoede, √ gebrek aan opvoeding / hoë vlakke ongelleterdheid, √ kinderarbeid √ **Merk slegs eerste DRIE**	(Enige 3)	(3)
2.5.5	Monokultuur / boerdery√ Ontbossing√ Verstedeliking / gholflandgoedere√ Menslike populasiegroei√ Mynbou√ Industralisasie√ Bou van damme√ Stropery√ Uitheemse plantindringing√ **Merk slegs eerste TWEE**	(Enige 2)	(2)
			(11)
			[40]

2.3

2.3.1 Eiers word gelê en broei mettertyd uit, buite die wyfie (ma) se liggaam√ (1)

2.3.2 Plasenta √ (1)

2.3.3
- Duiwe kan in 'n verskeidenheid terrestriële habitatte woon√ / ver weg van water
- die dop en amnion, √
- beskerm die embrio teen dehidrasie (uitdroging) √
- Die dooier / eiergeel dien as 'n bron van voedsel√ vir die ontwikkelende embrio,
- die vloeistof gevulde amnion ondersteun en beskerm die embrio vir ontwikkeling. (Enige 3) (3)

2.3.4 Inwendige√ bevrugting (1)
(6)

2.4

2.4.1 Ouksiene √ (1)

2.4.2
- gebruik die skêr en knip 'n gat aan die eenkant van die boks uit, √ naby die bokant van die boks
- neem die twee eenderse plante √
- maak een plant toe met die boks √
- draai die plant na die gat, sodat dit na 'n ligbron / venster gedraai is√
- sodat die plant slegs lig van eenkant af ontvang √
- plaas die ander plant langs die plant wat met die boks bedek is √
- die plant ontvang lig van alle kante af √
- los die plant vir 'n paar dae en observeer√ (Enige 5) (5)

(6)

2.5

2.5.1 Wanneer alle mense te alle tye √ toegang het√ tot genoeg / veilige / voedsame√ voedsel om 'n gesonde en aktiewe leefstyl te handhaaf (Enige 2) (2)

2.5.2 Afrika √ (1)

2.5.3
- Oorbeweiding√
- Die oorgebruik / wangebruik van plaagdoders√
- Die wangebruik van kunsmis√
- Geen gewasrotasie√ / gewasse word op dieselfde stuk grond jaar na jaar geplant / gekweek (monokultuur)
- Swak grondbestuur√ / verkeerde grondbewerking wat lei tot gronderosie
- Watervermorsing / √swak besproeiingstegnieke (Enige 3) (3)

Merk slegs eerste DRIE

1.5

1.5.1	E √ amniotiese vloeistof √	(2)
1.5.2	B √ plasenta √	(2)
1.5.3	A √ naelstring √	(2)
1.5.4	D √ serviks √	(2)
		(8)

TOTAAL AFDELING A: 50

AFDELING B

VRAAG 2

2.1

2.1.1	Soos die ouderdom van die ma toeneem √ sal die voorval Down se sindroom gevalle ook toeneem√	(2)
2.1.2	3.5 – 1√ = 2.5 √ %	(2)
2.1.3	Nie-disjunksie√ van chromosome	(1)
2.1.4	Dit kan gamete produseer met 24√ chromosome of 22 chromosome√	(2)
2.1.5	Die voorval Down se sindroom gevalle neem skerp toe √ van die ouderdom 36 jaar / toename in ouderdom / oor 40√ en sy moet die waarskynlikheid oorweeg om 'n kind met Down se sindroom te hê √	(3)
		(10)

2.2

2.2.1	Refleksboog √	(1)
2.2.2	(a) A √ (b) B √	(2)
2.2.3	Dit stel die organisme in staat om baie vinnig te reageer √ om teen 'n besering wat moontlik 'n skadelike stimulus kan wees, as 'n beskermende meganisme op te tree√	(2)
2.2.4	Sal in staat wees om stimulus te voel√ Sal nie kan reageer op die stimulus nie√	(2)
		(7)

AFDELING A

VRAAG 1

1.1

1.1.1	B √√	
1.1.2	C √√	
1.1.3	D √√	
1.1.4	A √√	
1.1.5	C √√	
1.1.6	B √√	
1.1.7	A √√	
1.1.8	C √√	
1.1.9	B √√	
1.1.10	D √√	
		(10x2) **(20)**

1.2

1.2.1	Orgaan of Corti / Koglea √	
1.2.2	Endokriene √	
1.2.3	Glukagon √	
1.2.4	(Buis van) Eustachius √	
1.2.5	Ovale venster √	
1.2.6	Geotropisme / gravitropisme √	
1.2.7	Homeostase √	
1.2.8	Medulla Oblongata √	
1.2.9	Stroping √	
1.2.10	Vleilande √	**(10)**

1.3

1.3.1	Slegs B √√	(1)
1.3.2	Geeneen √√	(2)
1.3.3	Geeneen √√	(3)
		(6)

1.4

1.4.1	Negatiewe terugvoermeganisme √	(1)
1.4.2	Tiroksien √	(1)
1.4.3	TSH√ / tiroïed-stimuleringshormoon	(1)
1.4.4	Toename in √ TSH √ sekresie / afskeiding	(2)
1.4.5	Laat liggaamstemperatuur toeneem √	(1)
		(6)

GAUTENGSE DEPARTEMENT VAN ONDERWYS

VOORBEREIDENDE EKSAMEN – 2016

LEWENSWETENSKAPPE
(Eerste Vraestel)

MEMORANDUM

BEGINSELS MET BETREKKING TOT DIE NASIEN VAN LEWENSWETENSKAPPE

1. **Indien meer inligting as die puntetoekenning gegee word**
   Hou op merk nadat die maksimum punte verkry is en trek ŉ kronkellyn en dui 'maks'-punte in die regterkantse kantlyn aan.
2. **Indien, byvoorbeeld, drie redes vereis en vyf word gegee**
   Merk net die eerste drie ongeag of almal of sommige korrek / nie korrek is nie.
3. **Indien die hele proses beskryf word terwyl slegs ŉ deel vereis word**
   Lees alles en krediteer die relevante dele.
4. **Indien vergelykings vereis word, maar beskrywings word gegee**
   Aanvaar indien die verskille / ooreenkomste duidelik is.
5. **Indien tabulering vereis word, maar paragrawe word gegee**
   Kandidate sal punte verbeur indien nie getabuleer nie.
6. **As geannoteerde diagramme aangebied word, terwyl beskrywings vereis word**
   Kandidate sal punte verbeur.
7. **Indien vloeidiagramme i.p.v. beskrywings aangebied word**
   Kandidate sal punte verbeur.
8. **Indien die volgorde vaag is en skakelings nie sin maak nie**
   Krediteer waar volgorde en skakelings korrek is. Waar volgorde en skakelings nie korrek is nie, moenie krediteer nie. As die volgorde en skakelings weer korrek is, gaan voort om te krediteer.
9. **Onherkenbare afkortings**
   Aanvaar indien dit aan die begin in die antwoord omskryf is. Indien dit nie omskryf is nie, moenie die onherkenbare afkorting krediteer nie, maar krediteer die res van die antwoord indien dit korrek is.
10. **Verkeerd genommer**
    Indien die antwoord die regte volgorde van die vrae pas, maar die verkeerde nommer word gegee, is dit aanvaarbaar.
11. **Indien taal wat gebruik word, die bedoelde betekenis verander**
    Moenie aanvaar nie.
12. **Spelfoute**
    Aanvaar as dit herkenbaar is, mits dit nie iets anders in Lewenswetenskappe beteken nie of as dit buite konteks is.
13. **Indien gewone name gegee word in terminologie**
    Aanvaar, mits dit by die nasionale memobespreking aanvaar is.
14. **Indien slegs die letter vereis word, maar slegs die naam word gegee (en andersom)**
    Moenie krediteer nie
15. **As eenhede nie in mate aangedui word nie.**
    Kandidate sal punte verbeur. Memorandum sal afsonderlik punte vir eenhede aandui.
16. **Wees sensitief vir die betekenis van die antwoord, wat soms op verskillende maniere aangebied kan word.**
17. **Opskrif**
    Alle illustrasies (diagramme, grafieke, tabelle, ens.) moet ŉ opskrif hê.
18. **Vermenging van amptelike tale (terme en konsepte)**
    ŉ Enkele woord of twee wat in enige amptelike taal voorkom anders as die leerder se assesseringstaal waarin die meeste van sy / haar antwoorde aangebied word, moet gekrediteer word, indien dit korrek is. ŉ Nasiener wat in die relevante amptelike taal vaardig is, moet geraadpleeg word. Dit geld vir alle amptelike tale.
19. **Veranderinge aan die memorandum**
    Geen veranderinge mag aan die goedgekeurde memorandum aangebring word sonder dat daar met die provinsiale interne moderator beraadslaag is nie.

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GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

VOORBEREIDENDE EKSAMEN

2016

MEMORANDUM

LEWENSWETENSKAPPE (EERSTE VRAESTEL) (10831)

9 bladsye