



Province of the  
**EASTERN CAPE**  
EDUCATION

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**SEPTEMBER 2021**



**LIFE SCIENCES P1  
ISIKHOKELO SOKUMAKISHA**

**AMANQAKU: 150**

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Esi sikhokelo sokumakisha sinamaphepha ayi 11.

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**IMIGOMO YOKUMAKISHA I LIFE SCIENCES**


1. **Xa kunikwe iimpindulo ezingaphezu kwamanqaku anikiweyo**  
Yeka ukumakisha wakufumana amanqaku alindelekileyo ubonise ngomgca ogoso ubhale igama 'aphelele' kwisiphelo sephepha esingasekunene.
2. **Xa, umzekelo, kulindeleke izizathu ezithathu ze kunikwe ezihlanu**  
Makisha ezokuqala ezintathu nokuba azamkelekanga.
3. **Xa kunikwe inkqubo yonke ndaweni yesiqingatha sayo**  
Yifunde yonke ze ukredithe iindawo ezamkelekileyo.
4. **Xa kubuzwe ufaniso, kodwa kunikwe inkcazelo**  
Yamkele ukuba umahluko / ukufana kucacisiwe.
5. **Xa kufuneka itheybhile, kodwa kunikwe umhlathi**  
Abafundi baya kuphulukana namankqaku ngokungazobi itheybhile.
6. **Ukuba iidayagram ezihamba neziqwengana zentetho zinikwe endaweni yenkcaza**  
Abafundi baya kuphulukana namanqaku.
7. **Ukuba iiflowu tshati zinikwe endaweni yenkcaza**  
Abafundi baya kuphulukana namanqaku.
8. **Ukuba ulandelelwano olufanelekileyo alukho nonxulumano alunangqiqo**  
Kuloo ndawo lubonakala lukhona, kreditha. Apho lungekhoyo ngokuya uqhubeka, ungakredithi. Xa luphinde lwakhona, kreditha.
9. **Iibriveyshin ezingamkelekanga**  
Yamkele ukuba iqalwe yachazwa kwimpindulo. Ukuba ayichazwanga, ungayikredithi iibriveyshin engamkelekanga, kodwa impindulo eyenye yikredithe.
10. **Ukunambarisha okungamkelekanga**  
Ukuba impindulo isendaweni elindelekileyo ngokolandelelwano, kodwa ukunambarisha kuphazanyiwe, yamkelekile.
11. **Xa ulwimi olusetyenzisiweyo lunika intsingiselo eyenye**  
Ungayamkeli.
12. **Upelo oluneempazamo**  
Ukuba lunengqiqo, lwamkele kodwa lungabi nanto yimbi luyithethayo kwiLife Sciences okanye luphume ecaleni.
13. **Xa amagama esiqhelo anikwe kwiteminoloji**  
Wamkele xa unashinal ewamkele esakuhlalutya isikhokelo sokumakisha.
14. **Xa kubuzwe unobumba ze kunikwe igama (nevays vesa)**  
Ungakredithi.

15. **Xa iiyunit zinganikwanga ezintweni ezimetiweyo**  
Abafundi baya kuphulukana namnqaku. Isikhokelo sokumakisha siyakubanamanqaku eeyunits qha
16. **Uyilumkele intsingiselo eyamkelekileyo yempendulo, enokubhalwa ngendlela enomahluko.**
17. **Isihloko**  
Yonke imizobo (dayagram, graf, theybhile, njalo njalo) mazibenesihloko.
18. **Ukusebenzisa iilwimi ezahlukeneyo ezamkelekileyo (izigaba zentetho)**  
Igama elinye okanye amabini avela ngolunye ulwimi ingeyilulo olo kubuzwe ngalo, wakredithe ukuba afanelekile. Makucelwe imaka elwaziyo ulwimi olusetyenziswe ngumfundi imakishe. Le nto izichaphazela zonke iilwimi ezamkelekileyo.



## ICANDELO A

## UMBUZO 1

- 1.1 1.1.1 D ✓✓  
 1.1.2 A ✓✓  
 1.1.3 B ✓✓  
 1.1.4 A ✓✓  
 1.1.5 A ✓✓  
 1.1.6 C ✓✓  
 1.1.7 C ✓✓  
 1.1.8 A ✓✓  
 1.1.9 C ✓✓  
 1.1.10 A ✓✓ (10 x 2) (20)
- 1.2 1.2.1 Meninjisi ✓  
 1.2.2 Periferal ✓ nevas sistim  
 1.2.3 Dendrayt ✓  
 1.2.4 Jiyotropism ✓  
 1.2.5 Rawund windo ✓  
 1.2.6 Thayiroksin ✓ / adrenalini  
 1.2.7 Adrenal glend ✓  
 1.2.8 Vajayna ✓ (8 x 1) (8)
- 1.3 1.3.1 B only ✓✓  
 1.3.2 Zombi A no B ✓✓   
 1.3.3 B qha ✓✓ (3 x 2) (6)
- 1.4 1.4.1 D → C → A ✓✓ (2)  
 1.4.2 Ukukhusela ✓ / ukunciphisa ingozi emzimbeni. (1)  
 1.4.3 - Isihlunu ✓  
 - Iglend ✓ (Nayiphi eyi 1 x 1) (1)  
**(Makisha eyokuqala ibeNYE qha)**  
 1.4.4 (a) C ✓ – Intanyuron ✓ / konekta nyuron (2)  
 (b) B ✓ – Ventral rhuti ✓ (2)  
 (c) A ✓ – Moto nyuron ✓ (2)

- |     |       |     |                                     |     |
|-----|-------|-----|-------------------------------------|-----|
| 1.5 | 1.5.1 | (a) | Thyroid gland ✓                     | (1) |
|     |       | (b) | Testis ✓                            | (1) |
|     | 1.5.2 | (a) | Pituitary gland / Hypophysis ✓      | (1) |
|     |       | (b) | TSH ✓ / Thyroid stimulating hormone | (1) |
|     |       | (c) | Adrenal gland ✓                     | (1) |
|     | 1.5.3 | A   | ✓                                   | (1) |

**EWONKE AMANQAKU ECANDELO A: 50**



## ICANDELO B

## UMBUZO 2

- 2.1 2.1.1 Extenal ✓ fertilizeyshin (1)
- 2.1.2 -Amaqanda ayafetilayzwa kwistraktsha ✓ esingaphandle samadoda (brud pawush) / amaqanda akafetilayzwa ngaphakathi kwisini sokuzala sezingabafazi. (1)
- 2.1.3 - Amaqanda amaninzi agalelwa ✓ kwisingxobo (pouch) ukwandisa amathuba efertilizeyshin ✓  
 - Ifertilizeyshi yenzeka ngaphakathi esingxotyeni ✓ ukwandisa amathuba efertilizeyshin ✓  
 - Ukudevelopha kweelava/amantshontsho kwenzeka esingxotyeni ✓ ngako oko zikhuselekile kwiiprideyta ✓ / nakwiimo zezulu (Naziphi eziyi 2 x 2) (4)
- 2.1.4 - Ukudevelopha kwamantshontsho kwenzeka kwisingxobo sezingamadoda ✓  
 kanti kwivivipari kwenzeka ngaphakathi esibekekweni ✓  
 - Amantshontsho afumana ukutya kwiyok yeqanda ✓ kwiiseahorse Kwivivipari amantshontsho afumana ukutya emgcantsini (placenta) ✓  
 - Amanzi afumaneka esingxotyeni ancedisa kwiexkrishin negesiyas extsheynji ✓  
 Kwivivipari umgcantsi wenza iexkrishin negesiyas extsheynji ✓  
**(Inqaku lokuqala libeliNYE qha)** (Nayiphi eliyi 1 x 2) (2)
- 2.2 2.2.1 Ixesha lokudevelopha kwentshontsho ✓✓ / fitus phakathi kokumitha nokuzala. (2)
- 2.2.2 Iintsuku eziyi22 ✓ (1)
- 2.2.3 Umlinganiselo weprojesteron ✓ (1)
- 2.2.4 Makufane:  
 - Ispisis seempuku ✓  
 Ikonsentayshin yeprojecteron ekutofwe ngayo ✓  
 - Udidi /ibrand yeprojecteron ✓  
 - Inqanaba lokuxakeka kweempuku ✓  
 - limeko zempilo zeempuku ✓  
 - Udidi lokutya ✓ (Naziphi eziyi 2 x 1) (2)  
**(Makisha awokuqala AMABINI qha)**
- 2.2.5 - Iovari ikhupha iprojecteron ✓ ngako oko,  
 - Ukususwa kweovari kunika umphandi ithuba lokuba akwazi ukutofa ngemilinganiselo eyahlukeneyo yeprojecteron ✓  
 - ukufanisa igalelo layo ekumitheni ✓ (3)

- 2.2.6 - Inani leempuku ezimithi zagqiba lahlulahlulwe ngenani leempuku kwiqela ngalinye ✓  
- Iziphumumo zaphindaphindwa ngo100 ✓ (2)
- 2.2.7 - Isebenza njenge kontrol ✓  
- ukuze ikwazi ukufaniswa ✓ namanye amaqela  
- ukuqonda ukuba iprojesteron inegalelo na ekumitheni ngokupheleleyo ✓ (Naziphi eziyi 2 x 1) (2)
- 2.3 2.3.1 (a) **A** – Suspensori ligament ✓ (1)  
(b) **B** – Ayris ✓ (1)
- 2.3.2 Ikhuselela imehlo ✓ (1)
- 2.3.3 - Iciliyari mascle iyoluleka ✓  
- lisaspensori ligament zitsaleke ✓  
- Itenshin kwilens yonyuke ✓  
- Ilens ibeflet ✓ / ibeconvex kancinci  
- Amandla okureflekta elens ayehla ✓ / imitha yelanga igotywa kancinci  
- imitha yelanga ibetha kwiretina ✓  
- Kuphume umfanekiso ocacileyo (Naziphi eziyi 4 x 1) (4)
- 2.3.4 - Akusayi kubakho impuls ihambayo ✓  
- isiya kwicerebrum ✓  
- ikhokelele ekuphulukaneni nokubona ✓ (3)
- 2.4 2.4.1 Yindlela yokugcina imeko yangaphakathi ingatshintshi ✓✓ (2)
- 2.4.2 - Iirisepta (zengqele) / themorisepta eziseluswini ziyachukumiseka ✓  
- ukukhupha iimpals eya kwihypothalamus ✓  
- ihypothalamus ithumela impals  
- emithanjeni yegazi eziseluswini  
- nakwiigland zombilo ✓  
- Imithambo yegazi yolusu iyakonstrikta ✓ (vasokonstrikshin)  
- Libalincinci igazi eliya eluswini ✓  
- Ukuze bubebuncinci ubushushu ✓ obuphuma emzimbeni  
- Libalincinci kwakhona igazi eliya kwiigland zombilo  
- Ubencinci ubilo oproduswayo ✓  
- Ukuze bubebuncinc ubushushu obuphuma ngeevaporeyshin ✓ yombilo  
- Ubushushu bangaphakathi bomzimba buyanyuka bugcinwe (Naziphi eziyi 7 x 1) (7)
- 2.4.3 - Iienzaym azisebenzi ✓  
- nto leyo yenza ziyeke iimetabolik prowuses ✓ / zihle  
- ikhokelele ekuyekeni kwamalungu omzimba ✓ / kungabikho respireyshin / kungaphumi eneji (3)

- 2.5 2.5.1. Prosteyt gland ✓ (1)
- 2.5.2 lhambisa isimen nomchamo ✓ (1)
- 2.5.3 - litestis zifuna 2 °C yobushushu obungaphantsi kobo bomzimba ✓  
- Ukuprodyusa isperms eziqhelekileyo neziphilileyo ✓  
- Ngako oko, ngeemini ezishushu, iskrotam siyoluleka ukulungiselela ukuba iitestis zibekude nomzimba ✓  
- ukulungiselela ukuba zingasondeli emzimbeni ✓  
- ukugcina ubushushu buphantsi ✓ (Naziphi eziyi 3 x 1) (3)
- 2.5.4 - Inye qha ivas diferens evalwe ngoqhaqho ✓  
- Ngako oko, isimen enesperm yaahamba ngelinye icala ✓ / isperms zakwazi ukufika kwiitestis (2)

**[50]**



**QUESTION 3**

- 3.1 3.1.1 Oditari nev ✓ (1)
- 3.1.2 Yenza ipresha elinganayo macala omabini etimpanik membreyn ✓ (1)
- 3.1.3 (a) Pina ✓ (1)
- (b) Ogan of koti ✓ / kokliya (1)
- 3.1.4 (a) - liosikle azinako ukuvaybreyta ✓  
 - ngako oko, iivaybreyshin azinakugqithela kwioval windo ✓  
 - nto leyo ithintela ubukho beepresha weyv kwindlebe engaphakathi ✓/  
 - logan of koti ayizuchukumiseka ukuba ikhupke iimpals ✓ / akukho impals izothunyelwa engqondweni ukuze kuviwe (Naziphi eziyi 3 x 1) (3)
- (b) - Indawo uD / timpanik membreyn ayizukwazi ukwenza iivaybreyshin ✓  
 - Akukho vaybreyshin ziyakuthunyelwa kwiosikle ✓ / ioval windo  
 - Ngako oko, akukho presha weyv ziyakwenziwa kwindlebe engaphakathi ✓  
 - logan of Koti ayizuchukumiseka ukuba ikhuphe iimpals ✓ / akukho impals izothunyelwa engqondweni ukuze kuviwe. (Naziphi eziyi 3 x 1) (3)
- 3.1.5 - iikristaye ziyachukumiseka ✓  
 - ukuze zitshintshe istimulas sibeyi impals ✓  
 - ehamba ngeoditari nev ✓  
 - isiya kwicerebelam ✓ apho itolikwa khona  
 - icerebelam ithumela iimpals kwiiskeletal maskli ✓ ukubuyisela ibalansi (Naziphi eziyi 4 x 1) (4)
- 3.2 3.2.1 (a) - Ukususa iiockzin ✓ eziprodyuswa kwiapikal bad (1)
- (b) - Tukunika iiockzin thuba lokungena kwiaga blokho ✓ (1)
- 3.2.2 - Iiockzin zizakuya kwicala lasekunene ✓ lestem  
 - Iyakubaphezulu ikonsentreyshin yeeockzin kwicala lasekunene ✓ lestem  
 - Ikonsentreyshin ephezulu yeeockzin iyakukhokelela sel elongeyshin ✓ /ukukhula kwicala lasekunene  
 - Oku kukhula ngokungalingani ✓  
 - kuyakwenza ukuba istem sigobele kwicala lasekhohlo ngokugoba kwencam yestem igobela ngasekhohlo ✓\*  
**\*1 Inyanzelekile + Naziphi eziyi 3 (4)**

- 3.2.3 - iiozin ziyakusuka kwicala elikhanyayo ✓ (ekhohlo)  
 - ziye kwicala elimnyama ✓ (ekunene)  
 - Ikonstreyshin ephezulu yeeokzin kwicala elimnyama iyakukhokelela kwisel elongeyshin ✓/ ukukhula okugqithisileyo kunecala elikhanyayo  
 - Oku kukhula ngokungalingani ✓  
 - Kwenza istem sigobele ekhohlo sisiya kwicala elikhanyayo ✓\* (ekhohlo) \*1 Inyanzelekile + Naziphi eziyi 3 (4)
- 3.2.4 - Kuzakudevelopha amasebe asemacaleni amaninzi ✓  
 Ukunyusa isivuno ✓  
 - Isiqhamo esifumaneka emasebeni siyakwenza kubelula ukuvuna ✓ (Nayiphi eyi 1 x 2) (2)  
**(Makisha eyokuqala ibeNYE qha)**
- 3.3 3.3.1 (a) Insulin ✓ (1)  
 (b) Penkriyas ✓ (1)
- 3.3.2 Negative feedback ✓ mekanism / homiostaysis (1)
- 3.3.3 Ngexesha lokuzila ukutya akutyiwa ngako oko  
 - Iqondo leswekile yegazi libangaphantsi kwelifanelekileyo ✓  
 - Ipenkriyas ayisakuchukunyiswa ukuba ikhuphe iinsulin ✓/iyakukhupha encinci / iqondo leinsulin liyakwehla. (2)
- 3.3.4 - Xa iqondo leswekile yegazi lihlelangaphantsi kwelo lesiqhelo ✓  
 - Ipenkriyas iyachukunyiswa ukukhupha iglukagon ✓ / homon **B**  
 - Ekhokelela ekutshintshweni kweglaykojin ibeyiswekile yegazi ✓  
 - Nto leyo inyusa iswekile yegazi ✓ ibuyele kweyesiqhelo. (4)
- 3.4.1 (a) Amniotic fluid ✓ (1)  
 (b) korion ✓ (1)
- 3.4.2 Umbilical vein ✓ (1)
- 3.4.3 - Idibanisa intshontsho nomama ✓  
 - Ivumela ukuhamba kokutya okunyibikileyo okusuka kumama kusiya entshontshweni ✓  
 - Ivumela ukuhamba kweoksijin esuka kumama isiya entshontshweni ✓  
 - Ivumela ukuhamba kwekhabon diyokzayd esuka entshontshweni  
 - Isiya kumama ✓  
 - Ivumela ukuhamba kwenitrojin esukritari weysti esuka entshontshweni isiya kumama ✓  
 - Ikhupha iprojesteron ✓ egcina ikhusele umitho  
**(Makisha ezokuqala eziMBINI qha)** (Nayiphi eyi 2 x 1) (2)

- 3.4.4 - Izaygoti idivayida ngemitosis ✓  
 - Kuphume (eluqilima) ibhola yeesel ✓  
 - ebizwa ngemorula ✓  
 - nayo ethi idivayide kuphume ibhola yeesel evulekileyo ✓  
 - ebizwa ngeblastosist ✓ / blastula  
 - The blastosist/blastula iyaimplanta kwiendometriyum ✓ / Le ibizwa ngokuba yiimplanteyshin  
 - Ileya engaphandle yentshontsho ibayikoriyononion ✓  
 - Ze ileya engaphakathi ibeyiamniyon ✓  
 - Eneamnoyik fluwid ngaphakathi ✓  
 - Emva kweimplanteyshin ikoriyon idevelopha izinto ezininzi ezingathi yiminwe ✓  
 - ezibizwa ngekorionik vili ✓  
 - lendometriyam nekorionikchorionic vlli zenza iplasenta ✓  
 (Naziphi eziyi 8 x 1) (8)

- 3.4.5 - Ikeviti evulekileyo ✓  
 Ukwamkela intshontsho elikhulayo ✓  
 - Inezihlunu ✓  
 ezikwaziyo ukushwabana ziphinde zoluleke ukuze umntwana azalwe ✓  
 - Siyanwebeka ✓  
 Sikwazi ukuvuleka ukulungiselels intshontsho elidevelophayo ✓  
 (Naziphi eziyi 2 x 1) (2)  
**[50]**



**EWONKE AMANQAKU ECANDELO B: 100**

**AMANQAKU EWONKE: 150**