



Province of the  
**EASTERN CAPE**  
EDUCATION



# **NATIONAL SENIOR CERTIFICATE**

**IBANGA 12**

**SEPTEMBER 2023**

**LIFE SCIENCES P1**

**AMANQAKU: 150**

**IXESHA: 2½ iiyure**

---

Eli phepha-mibuzo linamaphepha ayi15.

---

**IMIYALELO NOLWAZI**

Funda le miyalelo ilandelayo ngenyameko ngaphambi kokuba uphendule imibuzo.

1. Phendula YONKE imibuzo.
2. Bhala zonke iimpendulo kwiNCWADI YEEMPENDULO.
3. Qala iimpendulo kumbozo ngaMNYE ekuqaleni kwePHEPHA ELITSHA.
4. Nombola iimpendulo ngokuchanekileyo ngokwendlela yokunombola esetyenziswe kweli phepha lemibuzo.
5. Nika iimpendulo zakho ngokwemiyalelo yombuzo ngamnye.
6. Yenza YONKE imizobo ngepensile ulebhelise ngeinki eblowu okanye emnyama.
7. Zoba iidayagram, itheybhile okanye iitshati kuphela xa ucelwa ukuba wenze njalo.
8. Imibuzo yeli phepha AYIZOTYWANGA ngokwesikeyli.
9. SUKULISEBENZISA iphepha legrafu.
10. Sebenzisa ikhalityhuleyitha engenakulungiswa, iprothekhtha nekhampasi, apho kukho imfuneko.
11. Bhala ngokucocekileyo nangokucacileyo.

**ICANDELO A****UMBUZO 1**

1.1 lindlela ngeendlela ezinokuphendula le mibuzo ilandelayo zinikiwe. Khetha impendulo wandule ukubhala unobumba kuphela (A–D) ecaleni kwenombolo yombuzo (1.1.1 ukuya ku1.1.9) kwiINCWADI yeMPENDULO, umzekelo 1.1.10 D.

1.1.1 Yeyiphi ENYE kwezi gland zomzimba womntu eyiendocrine gland?

- A Prostate gland
- B Salivary gland
- C Thyroid gland
- D Sweat gland

1.1.2 Ngezantsi luludwe lwee-effect elenziwa ziihormone.

- (i) Iconstriction yemithambo yegazi ekwiskin.
- (ii) Libalininzi igazi eliya kwiskin.
- (iii) Ikhawulezisa ukutshintshwa kweglycogen ibeyiglucose
- (iv) Yehlisa ibreathing rate

Zeziphi kwezi effect eyenziwa yiadrenalin?

- A (i), (ii) and (iii) only
- B (ii), (iii) and (iv) only
- C (iii) only
- D (i) and (iii) only

1.1.3 Ubungakanani beglucose yegazi emntwini buchathazelwa yi ...

- A thyroxin, glucagon ne adrenalin.
- B insulin, glucagon ne adrenalin.
- C insulin, aldosterone ne glucagon.
- D thyroxin, insulin ne aldosterone.

1.1.4 Yeyiphi indawo kwibrain eprocessa iivisual impulse?

- A Cerebrum
- B Cerebellum
- C Medulla oblongata
- D Hypothalamus

1.1.5 Igrommet ifakwa kwitympanic membrane yendlebe ...

- A ukuze iibacteria ziphume kwindawo einfected.
- B ukuze umoya uqhubeke ungena kwimiddle ear.
- C ukuze iiear drop ziye ngqo kwindawo einfected.
- D ukuzama ukulandelela ihealing process yonke imihla.

1.1.6 Yeyiphi indawo yemehlo eneephotoreceptor?

- A Sclera
- B Choroid
- C Retina
- D Cornea

1.1.7 Iicontraceptive zisetyenziswa ngamabhinqa amaninzi ukuthintela ukumitha. Uphando lwaqhutywa ukufumanisa ukuba zisebenza kangakanani iicontraceptive ezahlukeneyo.

Sesiphi esiNYE kwezi ziphumo zilandelayo esinokusetyenziswa Ukuze kugqitywe ukuba yeyiphi eyona yona contraceptive isebenzayo?

- A Inani lamabhinqa amithayo.
- B Inani lamabhinqa aye angamithi.
- C Amatyeleli okopha kwamabhinqa.
- D Umlinganiselo wegazi ekuphulukanwa nalo ngemenstruation.

1.1.8 Yeyi iindawo yesperm ekhupha ienzyme enyibikilisa imembrane engaphandle yeovum?

- A Acrosome
- B Mitochondria
- C Nucleus
- D Chromatin

1.1.9 Ihuman immuno-deficiency virus (HIV) isuka emntwini onayo iye komnye umntu ngeebody fluid.

Umntu onayo owenze ivasectomy (ukuqhawulwa kuqhinwe ivas differentia) usenako ukugqithisa iHI virus xa esabelana ngesondo kuba ...

- A usenako ukukhupha isperm esinevirus.
- B unako ukukhupha iisecretion ezinevirus ezisuka kwiiaccessory gland.
- C intsalela yomchamo kwiurethra inayo ivirus.
- D inwebu yeurethra iphuma nevirus ngexesha lezesondo

(9 x 2) (18)

1.2 Nika **igama lebhayoloji** elifanelekileyo endaweni yezi nkcazelo zilandelayo. Bhala igama kuphela ecaleni kwenombolo yemibuzo (1.2.1 ukuya ku1.2.9) ENCWADINI YEEMPHENDULO.

- 1.2.1 Itube esongeneyo ngaphandle kweetestis egcina isperms de Zivuthwe
- 1.2.2 Utshintsho olwenzeka kwiovary nasesibelekweni sebhinqa oluthatha iinsuku eziyi28
- 1.2.3 Indawo yefertilisation
- 1.2.4 Iicell eziyibhola enesikroba ezisuka kwiovum edvelophayo
- 1.2.5 Istructure esifumana istimuli ezisuka kwienvironment
- 1.2.6 Amanzi azalisa indawo ephakathi kwecornea nelens
- 1.2.7 Ireceptor ezikwicochlea
- 1.2.8 Indawo yebrain elawula amaqondo ecarbon dioxide egazini
- 1.2.9 Iqela leendocrine cell kwipancreas ezikhupha i-insulin

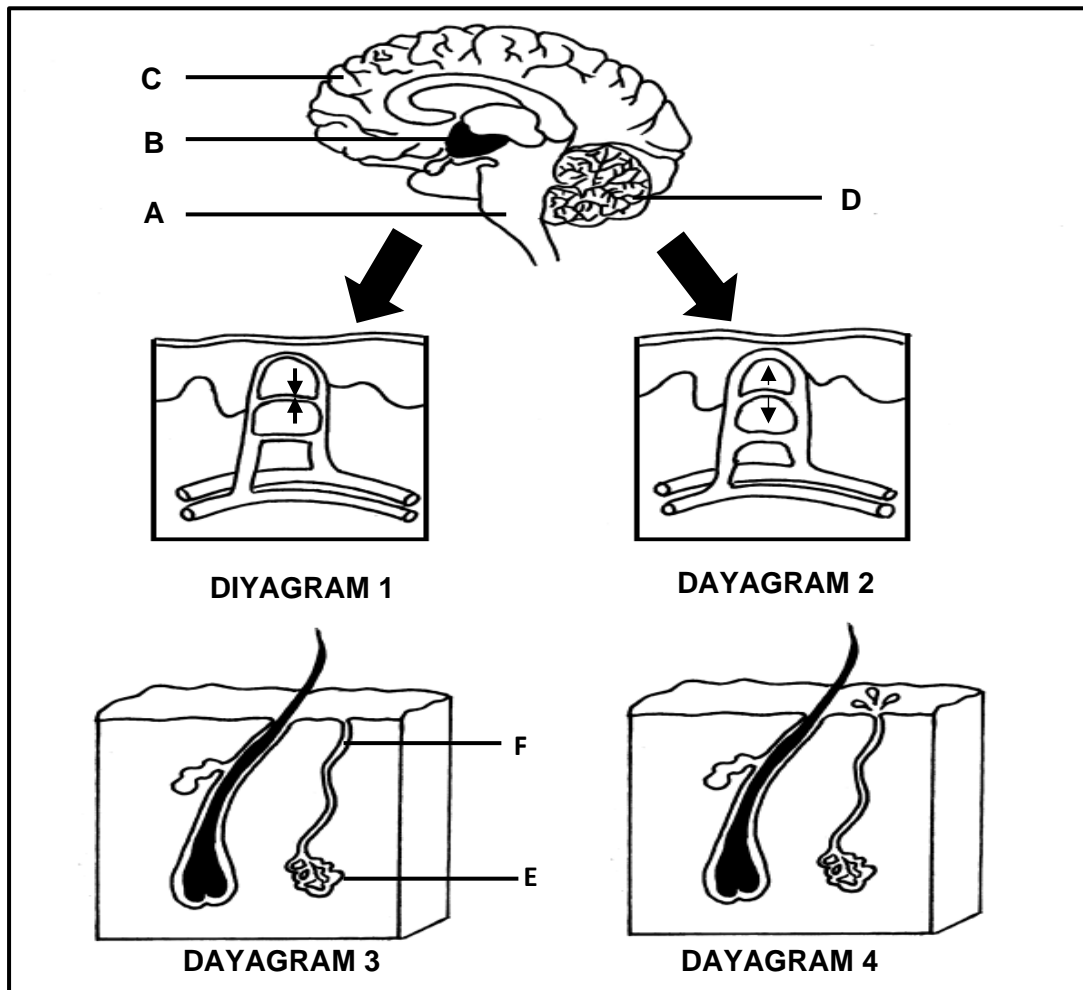
(9 x 1) (9)

1.3 Bonisa ukuba inkcazelo ekuKHOLUMNI I ziplaya ku**A KUPHELA**, ku**B KUPHELA**, ku**A noB** okanye **AKUKHO NANYE** kwiiayithem ezikuKHOLUMNI II. Bhala **A kuphela**, **B kuphela**, **A noB** okanye **ayisebenzi nakanye** ecaleni kwenombolo yemibuzo (1.3.1 ukuya ku 1.3.3) ENCWADINI YEEMPENDULO.

|       | <b>IKHOLAMNI I</b>                          | <b>IKHOLAMNI II</b>                                |
|-------|---|--|
| 1.3.1 | Ihormone yamadoda ekhutshwa ziitestis       | A: TSH<br>B: Thyroxin                              |
| 1.3.2 | Isecondary sexual characteristic zamabhinqa | A: Ukukhula kwamabele<br>B: Ukukhula kwepubic hair |
| 1.3.3 | Inwebu ekhusela ibrain nespinal cord        | A: Germinal epithelium<br>B: Meninges              |

(3 x 2) (6)

1.4 Idayagram 1, 2, 3 no4 ngezantsi, zibonisa ihomeostatic process emntwini.



1.4.1 Xela ihomeostatic process emelwe yidayagram engasentla. (1)

1.4.2 Xela iprocess emelwe ngu:

(a) DAYAGRAM 1 (1)

(b) DAYAGRAM 2 (1)

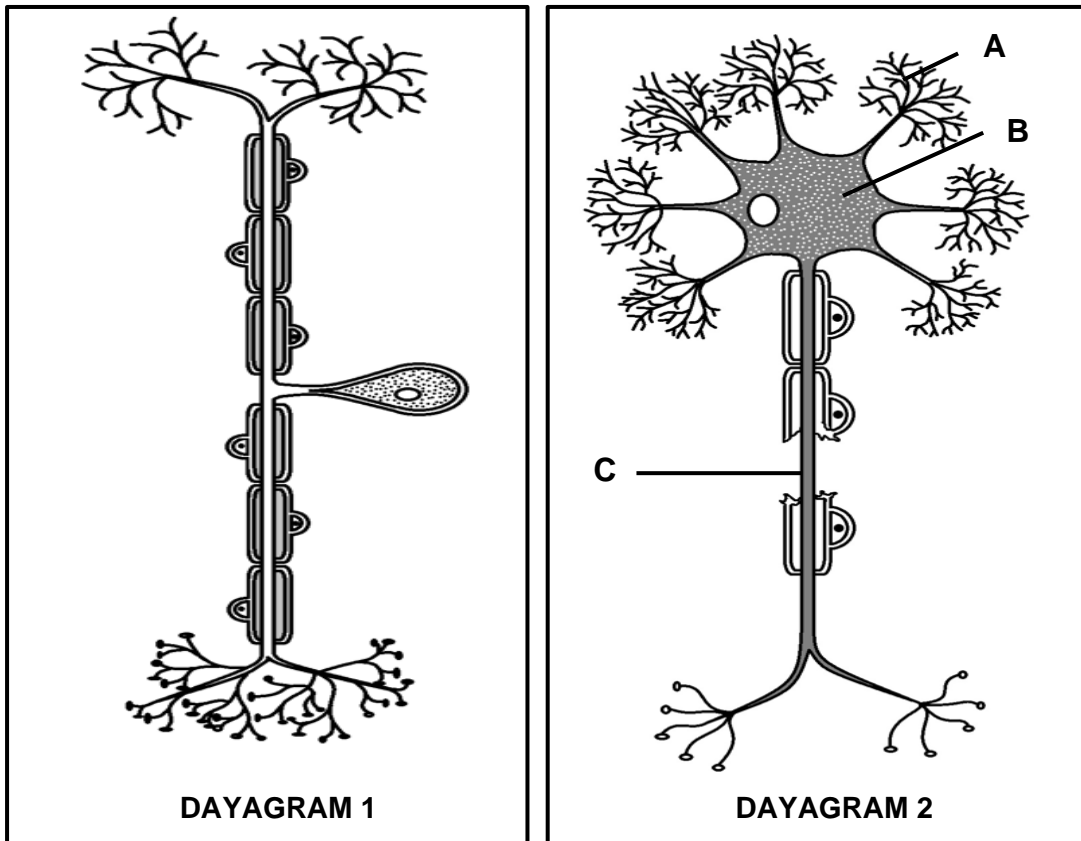
1.4.3 Nika iLETA neGAMA lendawo:

(a) elawula homeostatic process kule dayagram (2)

(b) ebaless active ngemini ebanda kakhulu (2)

1.4.4 Chaza ukubaluleka kweprocess eyenzeka kuDAYAGRAM 4. (2)

1.5 Idayagram engezantsi imele iineuron ezimbini zenervous system yomntu.



1.5.1 Xela indawo u**B**. (1)

1.5.2 Xela ii/indawo:

(a) Efumana i-impulses iyihambise iyise ku**B** (1)

(b) Ehambisa i-impulse esuka ku**B** (1)

1.5.3 Xela ineuron ekuDAYAGRAM 1. (1)

1.5.4 Nika udidi lweneuron edibanisa ineuron ekuDAYAGRAM 1 no2 kwicentral nervous system. (1)

1.5.5 UDAYAGRAM 2 ubonisa ukukhubazeka kweneuron.

Chaza:

(a) Ukukhubazeka okukwidayagram (1)

(b) Igalelo lokukukhubazeka ekuhambeni kweimpulse (1)

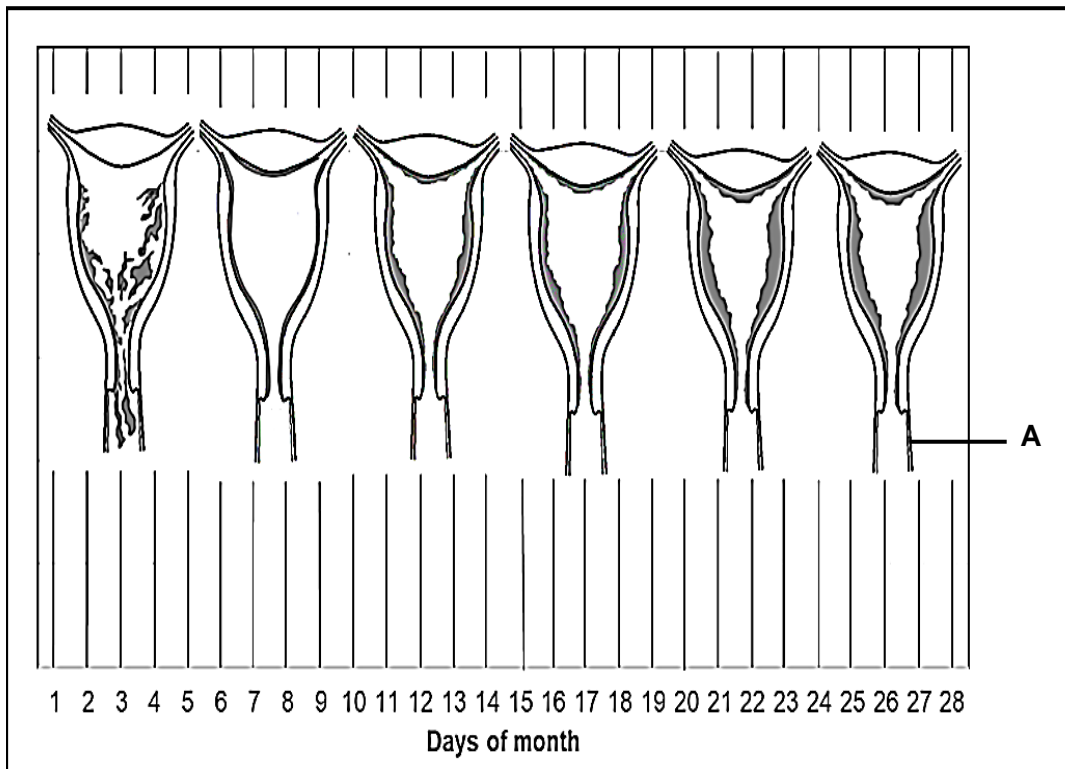
(c) Okanye unike igama elinye loku kukhubazeka (1)

**EWONKE AMANQAKU ECANDELO A: 50**

## ICANDELO B

### UMBUZO 2

- 2.1 Idayagram engezantsi imele istages zedevelopment yelining yesibelesko ngexesha lemenstrual cycle.



- 2.1.1 Xela:

- (a) Indawo uA (1)
- (b) Iprocess eyenzeka kwiintsuku eziyi4 zokuqala (1)

- 2.1.2 Xela iovarian hormone ephezulu ukusuka ku15–28 ezintsukwini. (1)

- 2.1.3 Cacisa ngokuzathuza ukutyeba kweuterine lining ukusuka ku7–13 ezintsukwini. (6)

- 2.2 Ezinye pills zokucwangcisa zineprogesterone ephezulu.

Cacisa ngokuzathuza ukuba kutheni ibhinqa elisebenzisa olu didi lwepilisi lungenakumitha. (4)

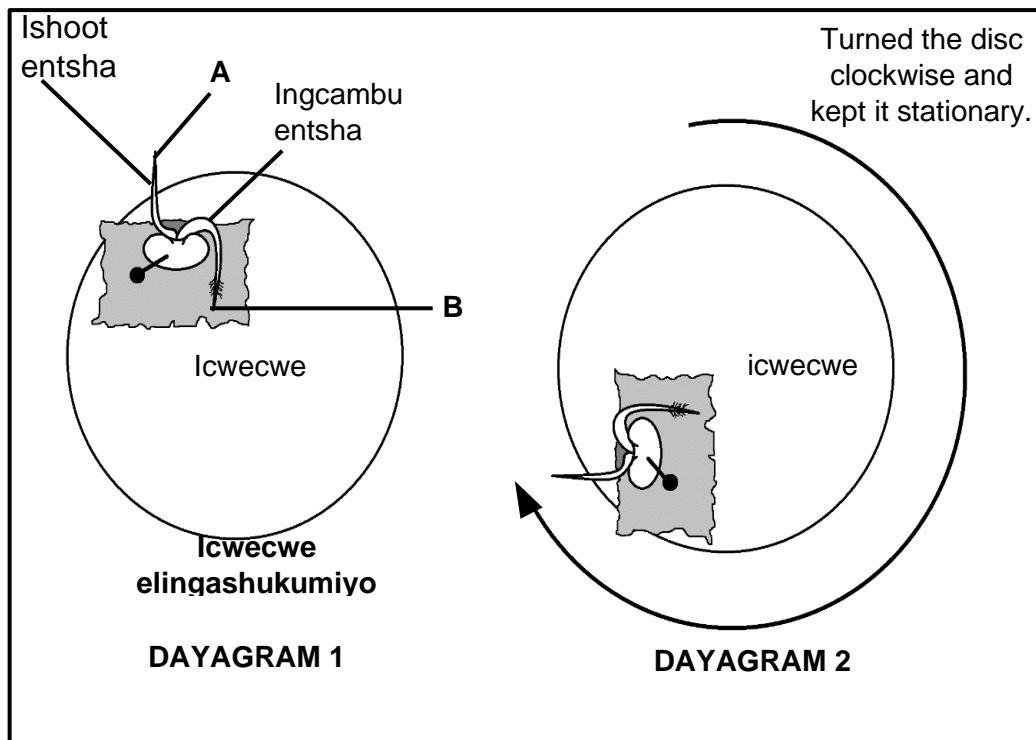
- 2.3 Chaza *i-oogenesis*. (5)



2.4 Uphando lwaqhutywa ukubonisa igalelo le external stimuli ekukhuleni kwesityalo.

Ikqubo yaba lolu hlobo:

- Izithole ezintshulayo zabethelelwa kwitissue emanzi kwicwecwe elithile njengoko kubonisiwe kwidayagram.
- Icwecwe lamiswa vertically upright endlwini emnyama.
- Izithole zazimana ukuncencestshelwa ngamanzi yonke imihla.
- Emva kweentsuku eziyi4, laguqulwa icwecwe labekwa ngohlobo oluku DAYAGRAM 2. Lagcinwa livertically upright lingashukumi.
- Emva kweveki, ii-observation zenziwa kwabhalwa phantsi icala esikhule saya kulo istem nengcambu.



2.4.1 Xela ipattern yedistribution yegrowth hormone ku:

- (a) **A** (1)
- (b) **B** (1)

2.4.2 Cacisa ngesizathu esiNYE sokuba kutheni icwecwe laligcinwe endlwini emnyama. (2)

2.4.3 Zoba idayagram ecacileyo ebonisa ukuba ishoot entsha nengcambu entsha ezikudayagram 2 zikhule zabheka ngaphi, emva kweveki. (3)

2.4.4 Cacisa ngokuzathuza ukuba ingcambu entsha ikhule yabheka ngaphi emva kokuba ibekwe kuDAYAGRAM 2. (7)

2.5 I concentration yetyuwa egazini ilawulwa yaldosterone.

2.5.1 Xela igland ekhupha aldosterone. (1)

2.5.2 Xela ukuba le gland ikweyiphi isystem yomzimba. (1)

2.5.3 Umntu utya isidlo esinetyuwa eninzi.

Cacisa ngokuzathuza:

(a) Ubungakanani bealdosterone egazini lalo mntu (3)

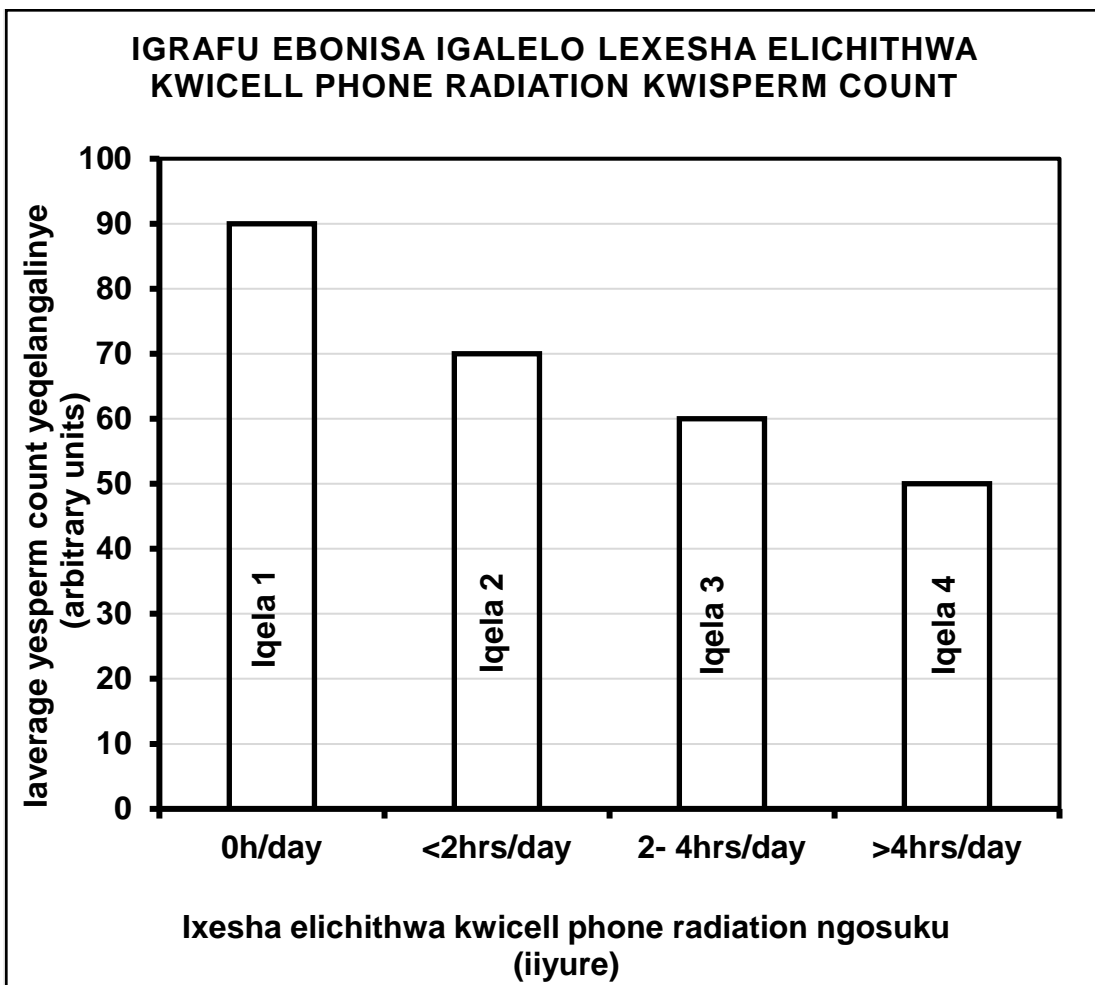
(b) Icomposition yomchamo (2)

2.6 Uphando lwaqhutywa ukuqonda igalelo lexesha elichithwa kwicell phone Radiation kwisperm count.

Inkqubo yaba ngolu hlobo:

- I100 yeevolunteer ezingamadoda aphilileyo, angatshayiyo, angaseli tywala aachongwa
- Abathathi nxaxheba:
  - Bohlulwa bangamaqela ayi4 ngokobungakanani bexesha abalichitha besebenzisa icell phone zabo ngosuku.
  - Banikwa uhlobo olunye lwecell phone emabalusenzise
  - Bayalelwa ukuba banxibe impahla yangaphantsi engabaminxiyo ixesha elingangeveki phambi kokuba kuthathwe isemen
- ISemen yathathwa emntwini ngamnye ebathathini nxaxheba beqela ngalinye.
- Iaverage yesperm count yeqela ngalinye yaqatshelwa
- Inkqubo yayiphindaphindwa emva kweenyanga ezimbini unyaka wonke.

Iziphumo zophando zibonisiwe kwigrafu engezantsi:



2.6.1 Xela:

(a) I-Independent variable (1)

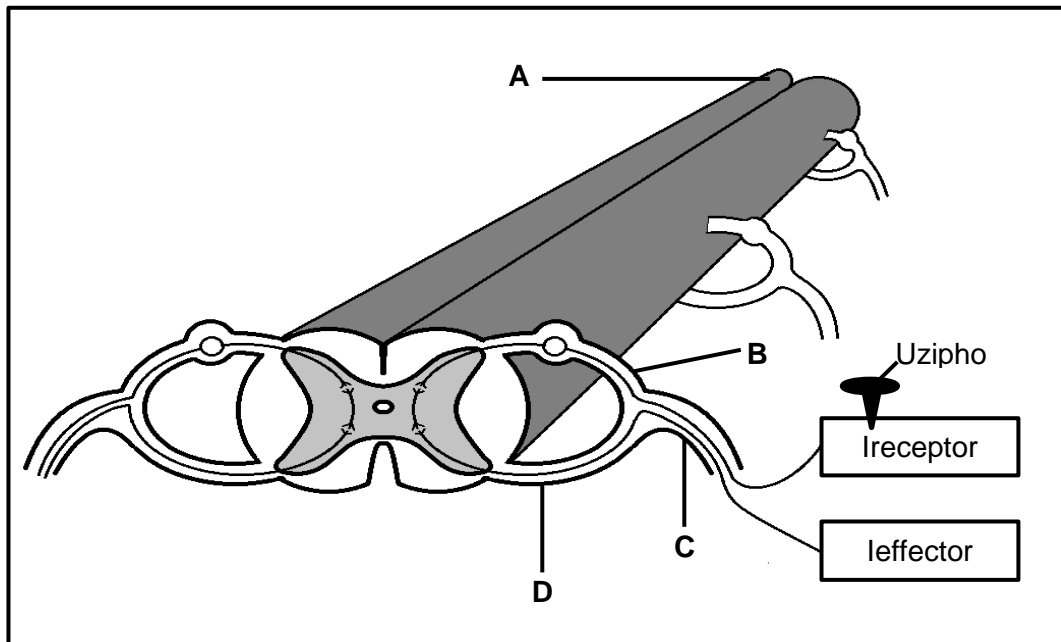
(b) Idependent variable (1)

- 2.6.2 Mangaphi amayteli ngonyaka abatesta iisample zesemen zeqela ngalinye labathathi nxaxheba? (1)
- 2.6.3 Xela ibeNYE indlela abaphandi abaqinisekisa ukuba investigation ireliable. (1)
- 2.6.4 Xela zibeNTATHU iivariable ezagcinwa zifana/zingatshintshi ukuphucula ivalidity yophando. (3)
- 2.6.5 Sebenzisa iziphumo zegrafu ukubhala iconclusion yophando. (2)
- 2.6.6 Nika isizathu sokuyalela bonke abathathi nxaxheba ukuba banxibe impahla yangaphantsi engaminxiyo iveki phambi kokuthatha isemen. (2)

**[50]**

UMBUZO 3

3.1 Idayagram ibonisa ireflex arc.



3.1.1 Nika iLETA esendaweni ye-central nervous system. (1)

3.1.2 Umntu wanyahlatywa sisikhonywane elunyaweni, waluphakamisa ngoko nangoko. Chaza indlela yereflex action ukusuka ekuhlatyweni kwakhe ukuya ekuluphakamiseni unyawo lwakhe. (5)

3.1.3 Idayagram engasentla, **A**, **B**, **C** no**D** zimele iiregion ezahlukeneyo zenervous system yomntu.

Kwingozi yemoto abantu bafumana iingozi ezahlukeneyo zenervous system. Esibhedlela ugqirha wasebenzisa ngocoselelo isixhobo esibuthuntu ukukrwela ngaphantsi iinyawo zesigulana ngasinye ukuzama ukuqonda ukonzakala kweenerve.

Bhala ILETA echanekileyo kuphela, emele iregion yenervous system eyonzakeleyo kwisivakalisi ngasinye esingezantsi.

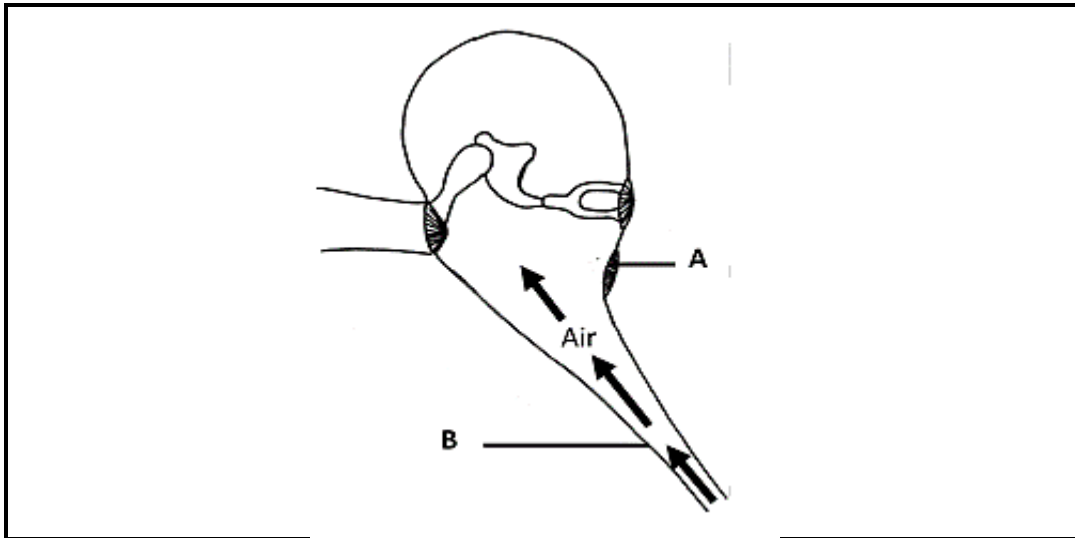
(a) Isigulana sikuva ukukrwelwa kodwa asikwazi kushukumisa nyawo. (1)

(b) Isigulana asikuva ukukrwelwa, kodwa siyakwazi ukushukumisa iinyawo zaso. (1)

(c) Isigulana asiva kukrwelwa singakwazi kushukumisa nyawo Kananjalo (1)

(d) Isigulana asiva kukrwelwa okanye asikwazi kushukumisa Ingalonamlenze (1)

3.2 Idayagram engezantsi imele imiddle ear yomntu.



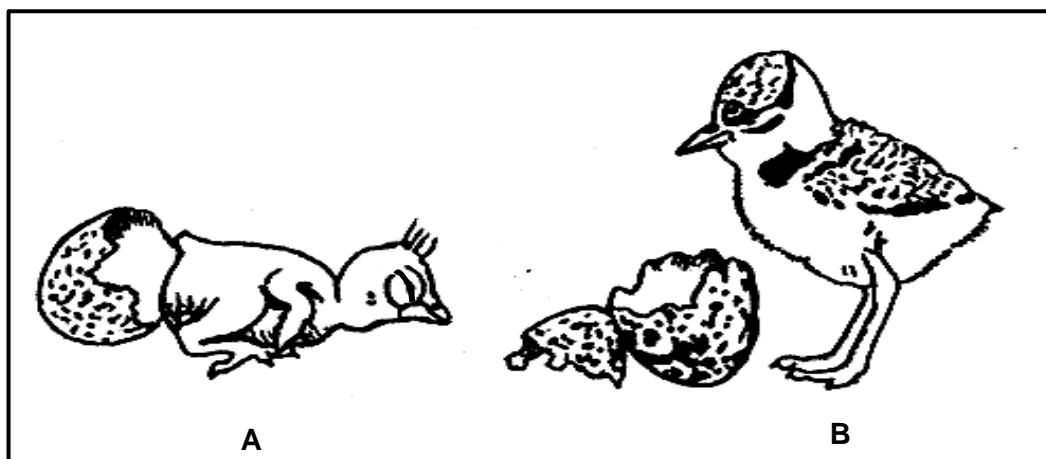
3.2.1 Xela umsebenzi wendawo uA. (1)

3.2.2 Chaza indlela yesound stimulus NEndima edlalwe zindawo ezifanekileyo ukusuka kwitympanic membrane ukuya kwicerebrum. (7)

3.2.3 Umoya ongena kwimiddle ear usuka kweliphi ilungu lomzimba? (1)

3.2.4 Cacisa ngokuzathuza ukuba kutheni umoya otyhalelwa kwimiddle ear usiza ngetube B ungena xa iair pressure ngaphandle komzimba inyuka. (4)

3.3 Idayagram engezantsi imele amantshontsho amabini agqiba kuqanduselwa.

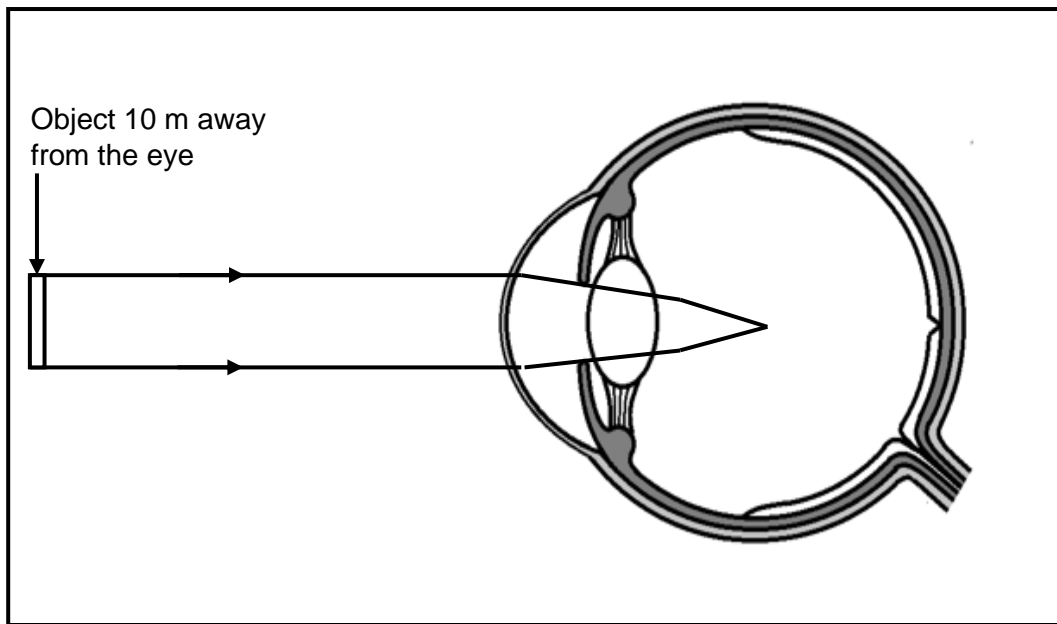


3.3.1 Xela udidi lwedevelopment olukuA. (1)

3.3.2 Nika sibesinye isizathu esibonakalayo ngempendulo yakho ekuMBUZO 3.3.1. (1)

3.3.3 Cacisa zibeNTATHU iimpawu zeprecocial bird ezizivumelayo ukuba zikwazi ukuphila kwindawo yazo. (6)

3.4 Idayagram engezantsi imele imehlo lomntu oneshort-sightedness.



- 3.4.1 Xela eyona indawo yemehlo egoba imitha yelanga. (1)
- 3.4.2 Nika zibeMBINI iindlela zokukhubazeka kwemehleze ezikhokelela kwishort-sightedness njengoko kubonakala kwidayagram. (2)
- 3.4.3 Chaza indlela abona ngayo umntu oneshort-sightedness. (2)
- 3.4.4 Xela udidi lwelens esetyenziswa xa unesi siphako sokubona. (1)
- 3.4.5 Itheybhuli engezantsi ibonisa ioccurrence yeshort-sightedness ebantwaneni abaminyaka iyi12 ubudala emazweni amahlanu.

| IGAMA LELIZWE            | ABANTWANA ABAMINYAKA IYI12 UBUDALA(%) |
|--------------------------|---------------------------------------|
| Singapore                | 62                                    |
| Hong Kong                | 53                                    |
| China                    | 50                                    |
| United States of America | 20                                    |
| India                    | 10                                    |

Zoba bar grafu emele idata ekwithebhuli. (6)

3.5 Umntu wayeswele entlango engenawo namanzi. Kwakufuneka ahambe umgama omde ukuyozama uncedo. Wayenxanwe kakhulu omile ngenxa yokubila okugqithisileyo.

Chaza ihomeostatic mechanism egcina amaqondo amkelekileyo amanzi egazini lakhe. (7) [50]

**EWONKE AMANQAKU ECANDELO B: 100**  
**EWONKE AMANQAKU: 150**