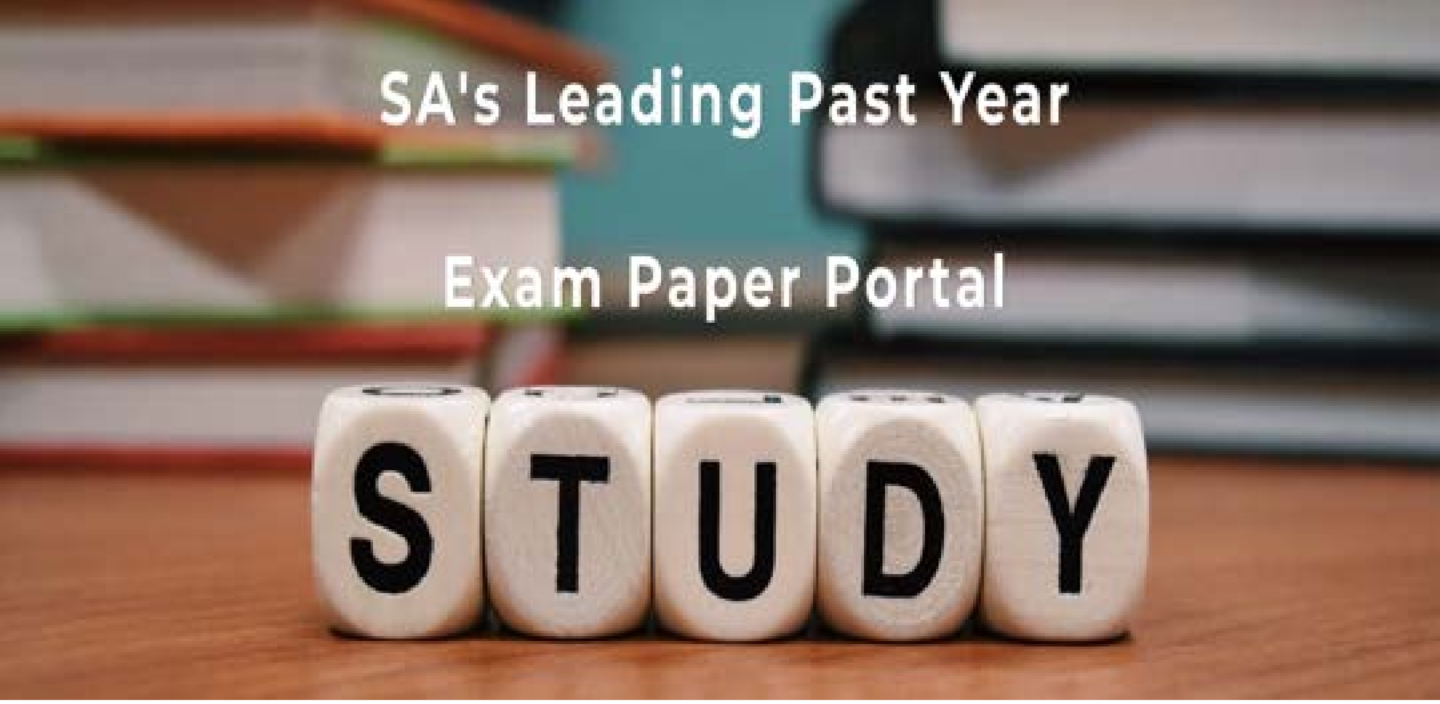

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IBANGA 12

SEPTEMBA 2021

LIFE SCIENCES P1

AMANQAKU: **150**

IXESHA: **2½ iiyure**

LSXH01

Eli phepha mibuzo linamaphepha ali 16.

IMIYALELO NENGCACISO

Funda le miyalelo ilandelayo ngocoselelo phambi kokuba uphendule imibuzo.

1. Phendula YONKE imibuzo.
2. Bhala ZONKE iimpendulo kwiNCWADI yeeMPENDULO yakho.
3. Qala impendulo yombuzo NGAMNYE ekuqaleni kwephepha ELITSHA.
4. Nombola iimpendulo ngokufanelekileyo ngokwenkqubo yokubhala amanani esetyenzisiweyo kwiphepha lemibuzo.
5. Bhala iimpendulo zakho ngokwemiyalelo yombuzo ngamnye.
6. Yenza YONKE imizobo ngepensile uze ulabhelishe nge inki eblue okanye emnyama.
7. Zoba imizobo, iitheybile okanye iiflow charts kuphela xa kuceliwe.
8. Imizobo yeli phepha AYIZOTYWANGA ngokwesikeyli.
9. UNGAYISEBENZISI igraph paper.
10. Ungayisebenzisa ikhatyhuleytha engaprogranywanga, iprotractor necompass apho kukho imfuneko.
11. Bhala ngocoselelo nangokucacileyo.

ICANDELO A

UMBUZO 1

1.1 Iindlela ezahlukeneyo zinikiwe nje ngempendulo kule mibuzo ilandelayo. Khetha impendulo wandule ukubhala unobumba kuphela waloo mbuzo (A–D) ecaleni kwenombolo yombuzo (1.1.1–1.1.10) kwiNCWADI YEEMPENDULO, umzekelo 1.1.11 D.

1.1.1 Indawo esengqondweni ezinzisa ubungakanani becarbon dioxide emzimbeni:

A hypothalamus.
B cerebrum.
C cerebellum.
D medulla oblongata.

1.1.2 Ieneji efunekayo ukuze iziperm zikwazi ukuhamba iveliswa kwi …

A mitochondria.
B nucleus.
C acrosome
D ribosome.

1.1.3 YEYIPHI kwezi hormones zilandelayo eyenza intombazana ifike kwinqanaba lobudala (puberty)?

A LH/Luteinizing hormone
B Oestrogen
C FSH/Follicle stimulating hormone
D Prolactin

1.1.4 I ovulation kukuphuma kwe …

A ovum ingene kwifalopiyen tube.
B grafiyen folikles ezimatured zingene esibelekweni.
C corpus luteum ingene kwi fallopian tubes.
D ovum ingene esibelekweni.

1.1.5 YEYIPHI kwezi structures zilandelayo ene photoreceptors?

A Retina
B Choriod
C Vitreous humor
D Pupil

1.1.6 Isynapse sisithutyana (gap) esincinci phakathi kwe …

A cell body and the axon of one neuron.
B receptor ne effector.
C axon yeneuron nedendrite yenye ineuron.
D axon yeneuron ne axon yenye ineuron.

1.1.7 Imyelin sheath …

A inqanda ukoma (dehydration) kwe-axons.
B inika ienergy ehambisa iimpulse
C inika ielectrical insulation
D igcina amaqondo obushushu ephantsi

1.1.8 Indoda iphulukene nememory emva kwengozi yemoto.

YEYIPHI kwezi ndawo zengqondo zilandelayo enokuba yonzakale kule ngozi?

A Cerebrum
B Cerebellum
C Medulla oblongata
D Corpus callosum

1.1.9 Uludwe lweevisual effects ezilindelekileyo lunikiwe ngezantsi.

(i) Ukungaboni indawo enkulu (wide field of view).
(ii) Ukungawohluli umbala obomvu koluhlaza.
(iii) Ukungakwazi ukufunda incwadi xa kukhanya kakhulu.
(iv) Ukungakwazi uku-registarisha izinto ezi-three-dimensional xa ezijongile/ukungaqondi ubunzulu (depth) bento eyi 3D.

YEYIPHI combination kwezi zilandelayo eya kwenzeka emntwini ophulukene nemehlo engozini?

A (i), (ii) no (iii) kuphela
B (i), (iii) no (iv) kuphela
C (i) no (iv) kuphela
D (ii), (iii) and (iv) kuphela

1.1.10 Iconcentration ephezulu ye-adrenalin egazini ikhokelela ekunyukeni kweswekile yegazi, kuba …

A iglycogen esesibindini nasezihlunwini itshintshwe yayi glucose.
B iproteins are broken down ukuze zikhuphe iglucose eninzi.
C imetabolic rate yehlile.
D Ukwetyiswa(digestion) kweecarbohydrate kunyukile.

(10 x 2) (20)

1.2 Nika igama elifanelekileyo **lebayoloji (biological term)** endaweni yezi nkcazelo zilandelayo. Bhala igama kuphela ecaleni kweenombolo zemibuzo (1.2.1 ukuya ku 1.2.8) ENCWADINI YEEMPENDULO.

1.2.1 Igama elinye elichaza iimembrane ezikhusela ingqondo.

1.2.2 Isebe le nervous system elineecranial kunye ne spinal nerves.

1.2.3 Ibranched outgrowth ye neuron ethumela inerve impulses kwi cell body of the same neuron.

1.2.4 Indlela isityalo esikhula ngayo in response to gravity

1.2.5 Istructure esisendlebeni esifunxa ipressure wave ezingadingekiyo ezisuka kwindlebe engaphakathi (inner ear)

1.2.6 Ihormone enyusa isantya semetabolizim kwiicells

1.2.7 Idlala (gland) elikhupha ialdosterone

1.2.8 Istructure esikwi female reproductive system apho isemen igaleleka khona.

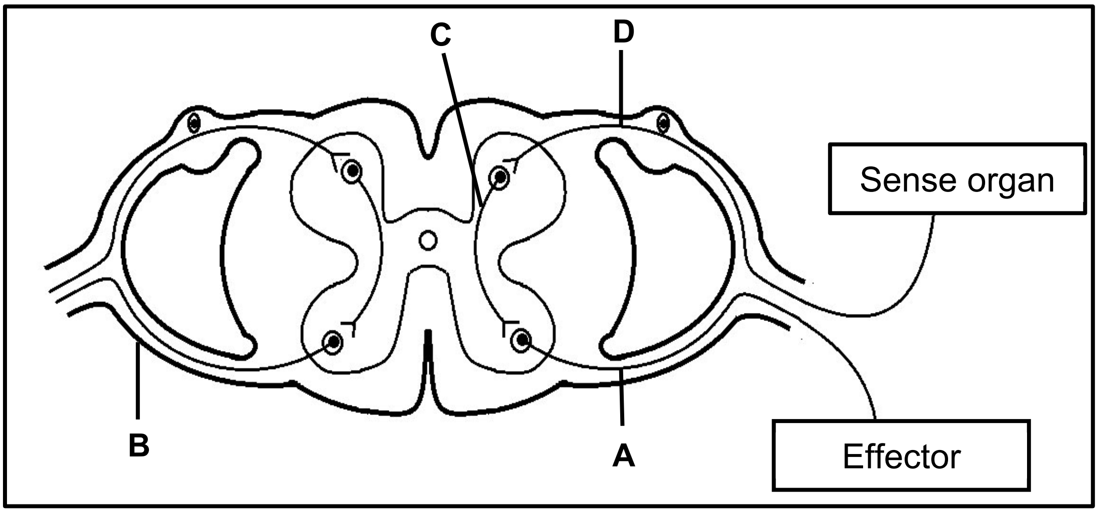
(8 x 1) (8)

1.3 Bonisa ukuba inkcazelo eku**KHOLAM I** i-aplaya ku- **A KUPHELA,** ku-**B KUPHELA**, ku-**A no B** okanye **AYISEBENZI NAKANYE (NONE)** kwii item eziku**KHOLAM II**. Bhala **A kuphela**, **B kuphela**, **A no B** okanye **ayisebenzi nakanye** ecaleni kwenombolo yemibuzo (1.3.1 ukuya ku 1.3.3) ENCWADINI YEEMPENDULO.

KHOLAM I		KHOLAM II
1.3.1	Udidi lwedlala elikhuphela kwiiduct/tube eziya kwiitarget organs	A: Endocrine gland B: Exocrine gland
1.3.2	Iimpawu zesifo iAlzheimer	A: Memory loss B: Confusion
1.3.3	Uhlobo lwe lens olusetyenziselwa ukulungisa ishort-sightedness (myopia)	A: Biconvex lens B: Biconcave lens

(3 x 2) (6)

1.4 Idayagram engezantsi ibonisa ireflex arc.



1.4.1 Bhala ngokulandelelana okufanelekileyo, ooNOBUMBA abamele iineuron ezisa iiimpulse kwieffector. (2)

1.4.2 Xela ukubaluleka kwereflex action. (1)

1.4.3 Nika umzekelo ubemNYE we effector emzimbeni womntu. (1)

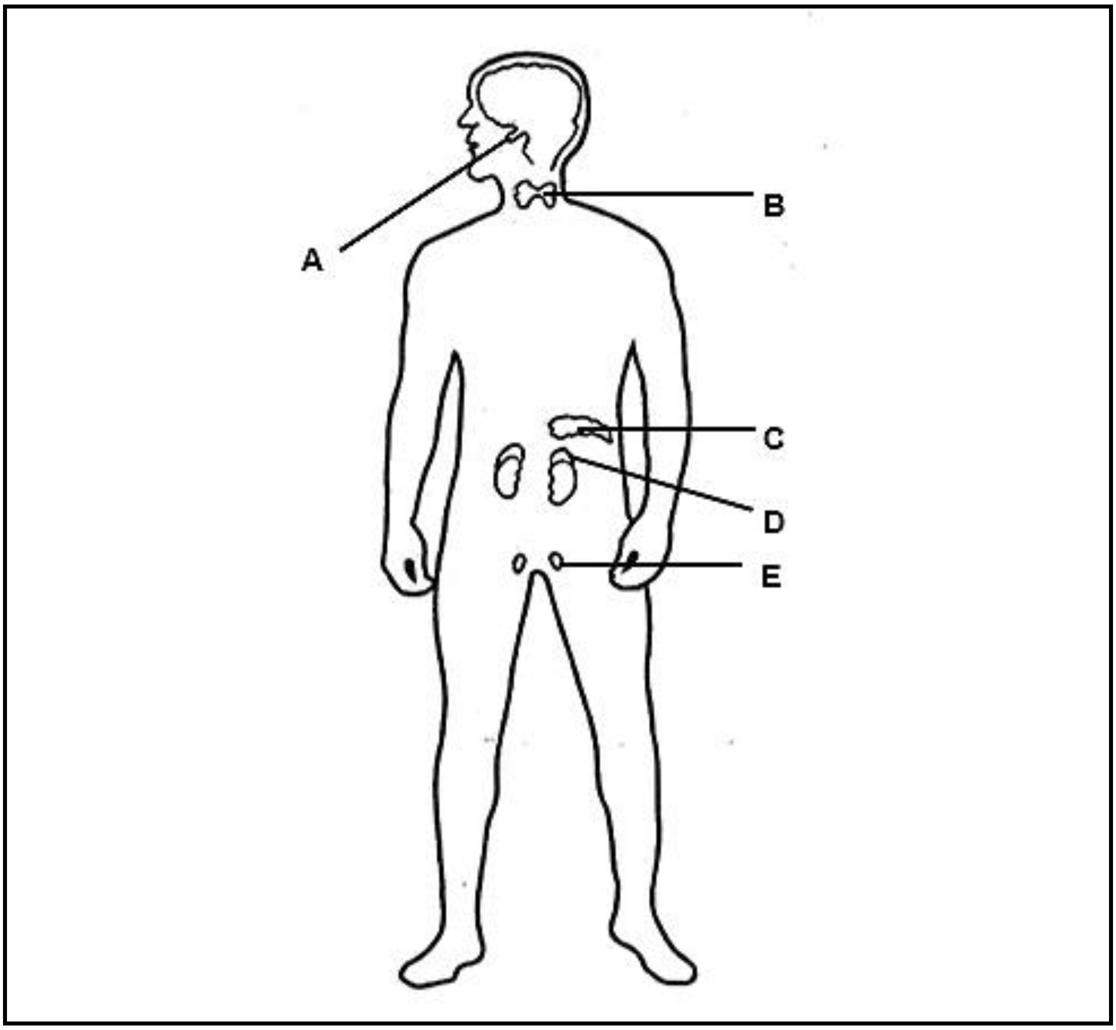
1.4.4 Bhala uNOBUMBA neGAMA le:

(a) Neuron efumaneka ngaphakathi engqondweni okanye emnqonqweni (spinal cord) kuphela (2)

(b) Indawo ebonakalisa iroot yespinal nerve (2)

(c) I-neuron eyonakeleyo xa umntu ebuva ubuhlungu kodwa engakwazi uku reacta. (2)

1.5 Idayagram engezantsi ibonakalisa iiendocrine gland ezithile zomntu obhinqileyo.



1.5.1 Xela idlala:

(a) **B** (1)

(b) **E** (1)

1.5.2 Xela:

(a) Idlala elikhupha igrowth hormone (1)

(b) Ihormone echukumisa (stimulates) idlala u**B** (1)

(c) Idlala elikhupha iadrenalin (1)

1.5.3 Nika UNOBUMBA wedlala elikhupha i-hormone eyenza iikidney tubule zikwazi ukuphinda zifunxe amanzi. (1)

AMANQAKU ECANDELO A: 50

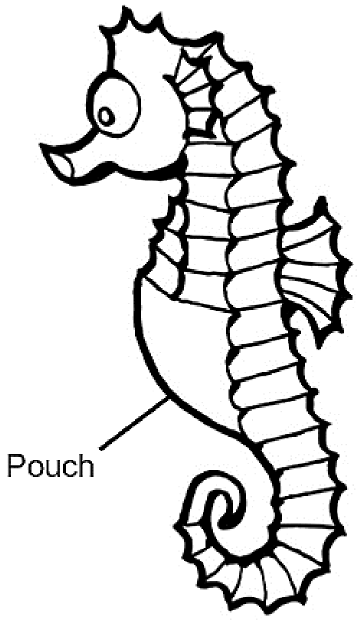
ICANDELO B

UMBUZO 2

2.1 Isicatshulwa esingezants singe-reproduction kwiiseahorse.

Iinkunzi zeeseahorse zinelungu elibupokotho elibizwa ngepouch kumazantsi omzimba wazo. Ngexesha lezimbo zokuzala (mating ritual), imazi yeseahorse izalela amaqanda amaninzi kwi-pouch isebenzisa ilingu elibizwa ngokuba yiovipositor. Inkunzi ithi ikhuphe i sperms ezininzi izikhuphele kule pouch ukulungiselela ukuba zikwazi ukufethelayza amaqanda.

Amantshontsho (embryo) akhulayo kwi-pouch yenkunzi afumana ukutya kwi yolk yamaqanda. Ifluid ephuma kwipouch isusa iiwaste product eziphumayo neoxygen eya emaqandeni afertiliyziweyo. Amantshontsho azalwa ephilile xa ephuma kwipouch.



2.1.1 Xela olu didi lwefetilzeyshin olwenzeka kwiiseahorse. (1)

2.1.2 Nika isizathu sempendulo yakho ekuMBUZO 2.1.1. (1)

2.1.3 Cacisa unike izizathu zibe ZIBINI ezisetyenziswa zii-seahorses ukuphucula amathuba okureprodyusa ngempumelelo. (2 x 2) (4)

2.1.4 Nika umahluko ubemNYE phakathi kwereproductive strategy esetyenziswa ziiseahorse naleyo ivivipary. (2)

2.2 Kwiimazi zeempuku ezimithiyo, i-progesterone iphuma kwi-corpus luteum. Impuku ithatha iintsuku ezingama 22 ukuzala emva kwefertilisation. Iqela lee-scientist liqhube uphando ukuzama ukuqonda ubungakanani beprogesterone obufunekayo ukuze umitho (gestation) lwempuku lugqibeke ngempumelelo.

Inkqubo (procedure) yayimi ngolu hlobo:

- Kwakhethwa iimazi zeempuku ezili 100 ezilinganayo ngobudala.
- Zohlulwahlulwa zangamaqela amahlanu alinganayo.
- Zonke ezi mazi zeempuku zili 100 zenziwa i artificial insemination elaboratory (iisperm zafakwa kwilungu lokuzala lemazi kusetyenziswa isyringe)
- Iiovaries zempuku nganye zazisuswa isakumitha impuku
- **Iqela 1** zange litofwe nge progesterone
- **Iqela 2** belitofwa yonke imihla nge 5 mg ye-progesterone
- **Iqela 3** belitofwa yonke imihla nge 10 mg ye-progesterone
- **Iqela 4** belitofwa yonke imihla nge15 mg ye-progesterone
- **Iqela 5** belitofwa yonke imihla nge 20 mg ye-progesterone
- Inani leempuku ezimithe ngempumelelo kwiqela ngalinye liye labalwa kwabalwa nepesenti yazo.

2.2.1 Chaza igama elingu *gestation.* (2)

2.2.2 Iimpuku zimitha ixesha elingakanani? (1)

2.2.3 Chonga i-independent variable kolu phando. (1)

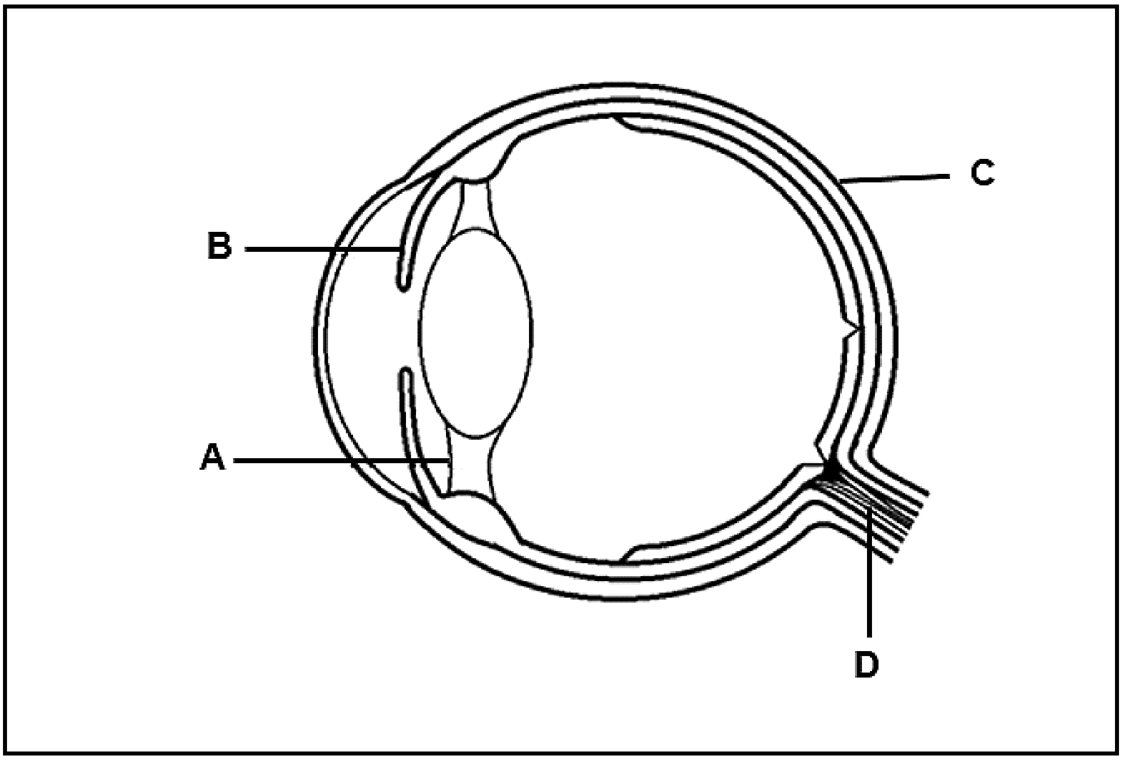
2.2.4 Xela iifactor zibe MBINI ekwakumele ukuba zigcinwe zingatshintshi (constant) kolu phando. (2)

2.2.5 Chaza ukuba kutheni iiovaries zasuswa ngoko nangoko emva kokuba imithi impuku. (3)

2.2.6 Cacisa ukuba yabalwa njani ipesenti yeempuku eziligqibileyo ixesha lokumitha. (2)

2.2.7 Chaza ukba kutheni **iqela1** laliyinxalenye (was included) kolu phando. (2)

2.3 Idayagram engezantsi ibonakalisa istructure semehlo lomntu.



2.3.1 Xela indawo engu:

(a) **A** (1)

(b) **B** (1)

2.3.2 Nika umsebenzi (function) ubeMNYE wendawo engu **C.** (1)

2.3.3 Chaza iaccommodation yemehlo xa umntu eqwalasele kwiobject ebhekelayo kuye (moving away). (4)

2.3.4 Chaza imiphumela (consequence) yokonakala kwendawo engu **D** kwi vision yomntu. (3)

2.4 2.4.1 Chaza i-*homeostasis.* (2)

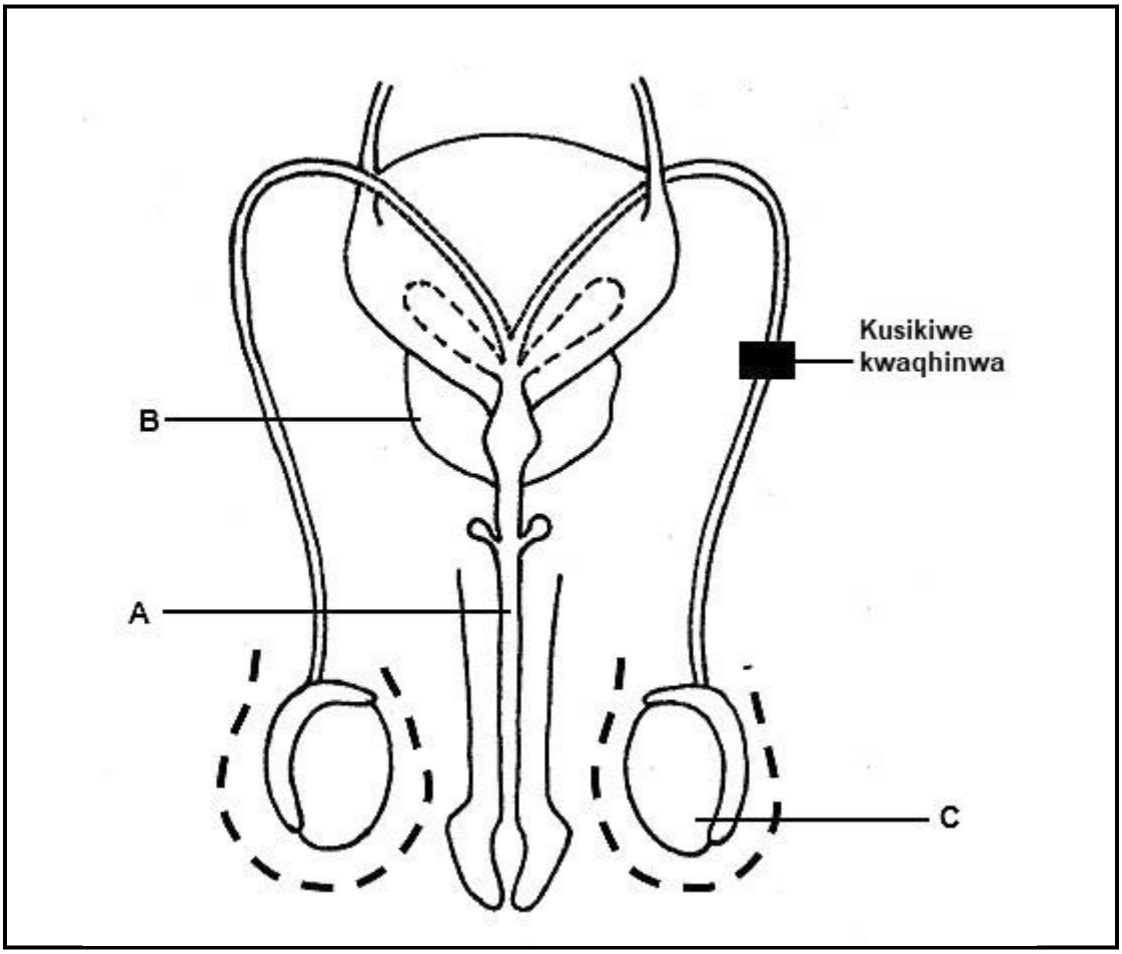
2.4.2 Indoda yatsiba yangena emanzini abanda okomkhenkce aselwandle. Ubushushu bomzimba wayo bahlala bugcinwe nge homeostasis.

Chaza indima eyadlalwa lulusu (skin) lwayo kwi-thermoregulation ngeli xesha. (7)

2.4.3 Xa umntu esemanzini abanda kakhulu, umzimba uphulukana nobushushu obungaphezu kunobo ubukhuphayo.

Cacisa ukuba kutheni ukuhlala ixesha elide kwindawo ebanda kakhulu ngaphanlde kokhuseleko kungakhokelela ekufeni. (3)

2.5 Idayagram engezantsi ibonisa amalungu esini sobudoda emva koqhaqho (surgical procedure) oluthintela ukumithisa.



2.5.1 Xela indawo engu **B**. (1)

2.5.2 Nika umsebenzi (function) ubeMNYE wendawo engu **A**. (1)

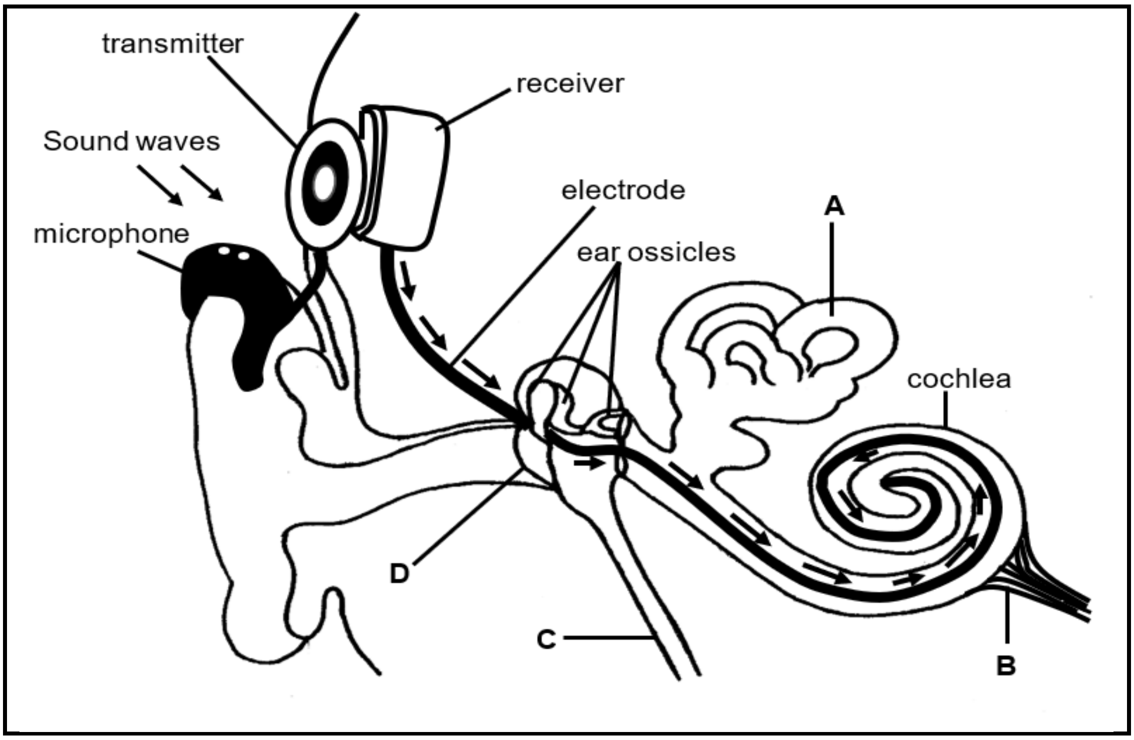
2.5.3 Cacisa ukuba kutheni indawo engu **C** ibhekela emzimbeni ngemini eshushu kakhulu. (3)

2.5.4 Cacisa ukuba kutheni olu qhaqho lusenokungakuthinteli ukumitha. (2)
[50]

UMBUZO 3

3.1 Umntu oneyona ngxaki yokungeva yayenziwe kukonzakala kwee-ossicles nendlebe engaphakathi. Wenza i-cochlear implant. I-cochlear implant ibuyisela ukuva kancinci. Kumntu owenze icochlear transplant, ii-sound waves ziqokolelwa yi-microphone ze ziguqulwe yireceiver ne transmitter zibesi-stimulus. Emva koko i-impulse isiwa ngqo kwi-cochlea yendlebe nge-electrode.

Idayagram engezantsi ibonisa istructure sendlebe enecochlear implant.



3.1.1 Xela indawo engu **B**. (1)

3.1.2 Nika umsebenzi (function) ubeMNYE wendawo engu **C**. (1)

3.1.3 Yeyiphi indawo endlebeni esebenza njenge:

(a) Microphone (1)

(b) Receiver ne transmitter (1)

3.1.4 Chaza kutheni umntu engaphulukana nokuva (may lose hearing ability) ukuba kukho:

(a) Umonakalo kwi ossicles (3)

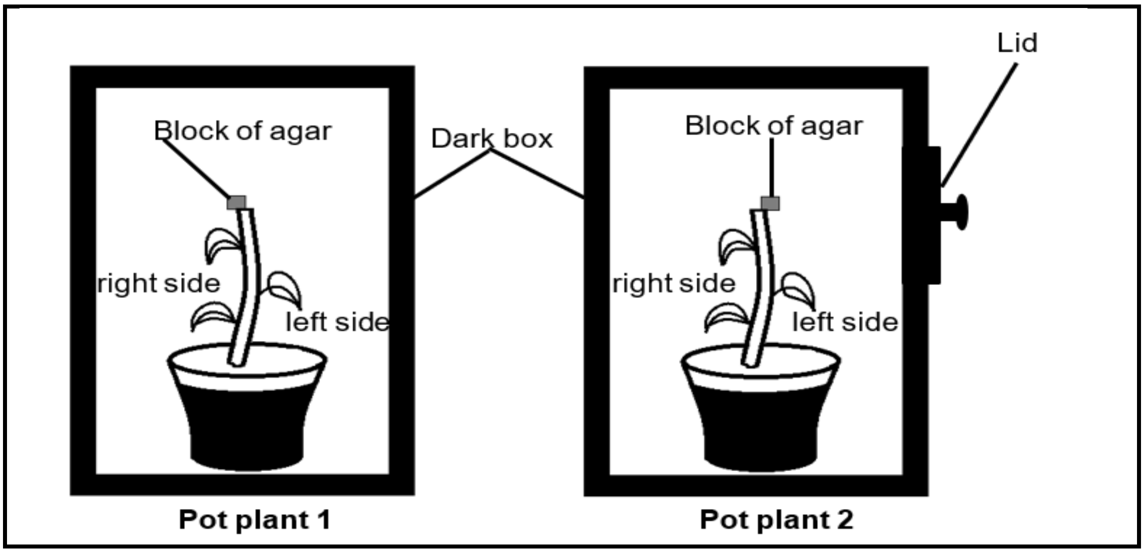
(b) Umngxuma (hole) kwindawo engu **D** (3)

3.1.5 Cacisa ukuba indawo engu A kunye nengqondo ziyigcina njani ibalance. (4)

3.2 Uphando lwaqhutywa ukuzama ukuqonda igalelo le auxins kwindlela yokukhula kwesiqu (stem) sesityalo.

Inkqubo yenziwa ngolu hlobo:

- Ii-potted plants ezimbini (**1** no **2**) ze-species esinye nobudala. obulinganayo zasetyenziswa
- Iiapical bud zazo zombini izityalo zasuswa ngokusika kwindawo ebude bulinganayo kwistem.
- Ii-apical buds ezisuswe kwezi zityalo zimbini zabekwa kwiiblokho zeagar jelly ezohlukeneyo ithuba elingangeeyure ezi 2.
- Enye iblock yeagar jelly yabekwa kwi edge engasekunene yesurface esikiweyo ye**pot plant 1** yaza eyesibini i-block ye agar jelly yabekwa kwi edge engasekhohlo ye**pot plant 2**, nje ngoko kubonisiwe kwidayagram engezantsi.
- Zombini ezi pot plants zagcinwa kwibhokisi emnyama iiveki ezimbini
- Kwaaqwalaselwa ukukhula kweziqu zazo zombini izityalo emva kwexesha lophando.



3.2.1 Nika isizathu sokuba i apical buds:

(a) Zisuswe (1)

(b) Zibekwe phezu kweebloko ze agar jelly kangangee yure ezi2 (1)

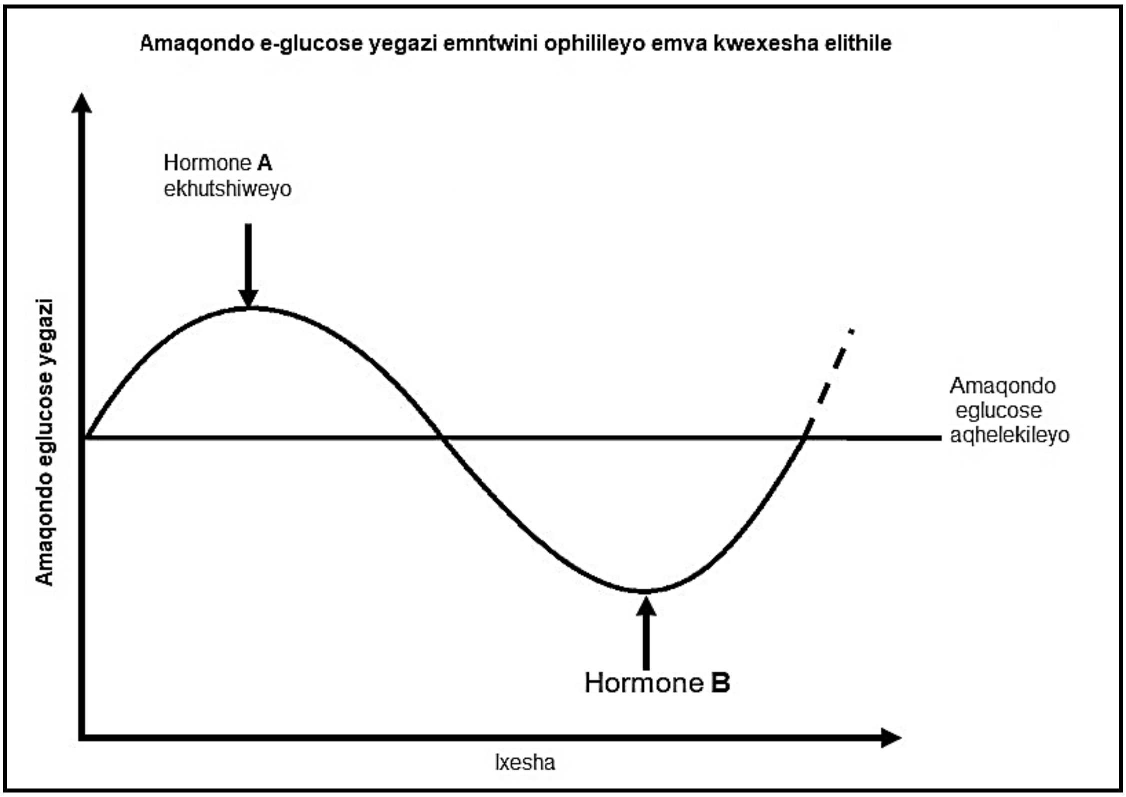
3.2.2 Chaza iziphumo ezifunyenwe for **pot plant 1**. (4)

3.2.3 U **pot plant 2** wavezwa (exposed) kwi unilateral light kwicala lasekhohlo ngokususa isiciko (lid) sebhokisi ngeli xesha lophando.

Chaza iziphumo ezafumanekayo. (4)

3.2.4 Chaza ukuba kutheni amafama eziqhamo ngamaxesha athile ezisusa nje i apical buds kwimithi yeziqhamo. (2)

3.3 Igraf engezantsi ibonisa ihomeostatic control yeglucose yegazi emntwini ophilileyo.



3.3.1 Xela:

(a) Ihormone **A** (1)

(b) Idlala (gland) elikhupha ihormone **B** (1)

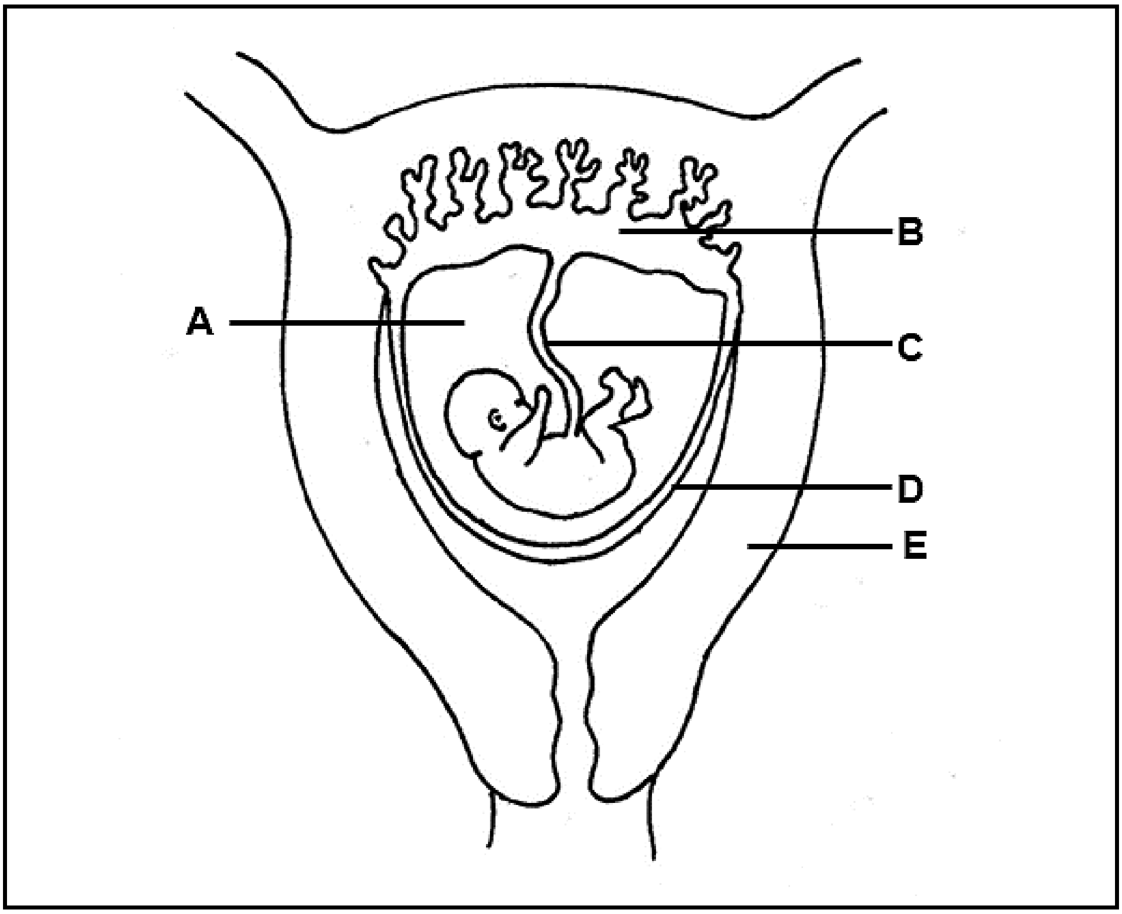
3.3.2 Xela udidi lwemechanism ekhontrola amaqondo eehormone **A** no **B**. (1)

3.3.3 Xa umntu ezila ukudla nokuba wenzela inkolo okanye impilo, uye angatyi okwexesha elithile.

Chaza amaqondo ka hormone **A** emntwini ngethuba ezila ukudla. (2)

3.3.4 Cacisa ukuba ihormone **B** isebenza kanjani ukugcina amaqondo afanelekileyo eglucose yegazi. (4)

3.4 Idayagram engezantsi ibonisa amalungu okuzala omntu ongumama omithiyo.



3.4.1 Xela:

(a) Ulwelo (fluid) **A** (1)

(b) Extra embryonic membrane **D** (1)

3.4.2 Chaza iblood vessel ku part **C** ehambisa i oxygenated blood ukusuka kunina ukuya emntwaneni. (1)

3.4.3 Nika imisebenzi (functions) ibe MIBINI ka part **B**. (2)

3.4.4 Chaza idevelopment yezygote de uyokufika kukwenzeka kukapart **B**. (8)

3.4.5 Cacisa istructural suitability sika part **E** sibe siNYE esenza akwazi ukwenza umsebenzi wakhe. (2)

[50]

AMANQAKU ECANDELO B: 100
AMANQAKU EWONKE: 150