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Porafensie Ya Kapa Botjhabele: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

KEREITI YA 12

LOETSE 2024

LIFE SCIENCES P1

MATSHWAO: 150

NAKO: Dihora tse 2½

Pampiri ena e na le maqephe 15.



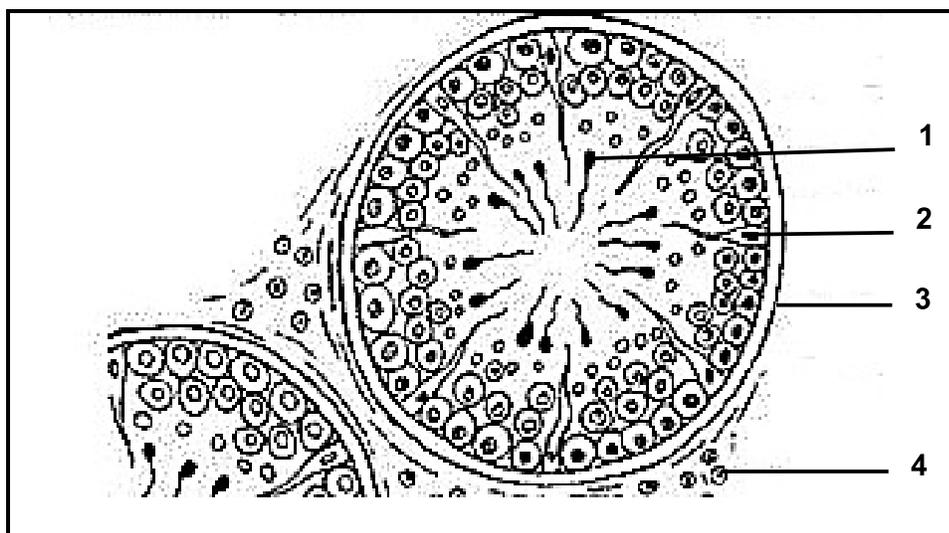
THLAISO LE DIKELETSO**Bala ditaelo tse latelang ka hloko pele o araba dipotso.**

1. Araba dipotso kaofela.
2. Ngola dikarabo TSOHLE BUKENG ya hao ya DIKARABO.
3. Qala dikarabo tsa potso KA NNGWE leqepheng LE LETJHA.
4. Nomora dikarabo jwalo ka ha di nomorilwe ho pampering ena ya dipotso.
5. Araba dipotso ho ya ka ditaelo tsa potso ka nngwe.
6. Etsa diteroweng TSOHLE ka pensele mme o di leibole ka pene e bolou kapa e ntsho.
7. Teroya didayakeramo, ditheibole kapa diflotjhate ha fela o kotjwa ho etsa jwalo.
8. Didayakeramo tse pampiring ena ya dipotso HA DI a etswa ho latela ditekanyetso.
9. O SE KE wa sebedisa pampiri ya kerafo.
10. O ka sebedisa khaletjhuleitha e sa porekeramuwang, porotektara le khamphase ha ho hlokeha.
11. Dikhaletjhuleishene kaofela di atametswe ho didesimale TSE PEDI.
12. Ngola ka mongolo o makgethe, o balehang.

KAROLO YA A**POTSO YA 1**

1.1 Ho fanwe ka dikgetho tse fapaneng e ka ba dikarabo tsa dipotso tse latelang. Kgetha karabo e nepahetseng mme o ngole feela tlhaku (A–D) pela nomoro ya potso (1.1.1 to 1.1.9) BUKENG YA DIKARABO, Mohlala 1.1.10 D.

1.1.1 Ithute ayakeramo e latelang e bontshang cross section ya ditestes.



Dileibole tse nepahetseng tsa 1–4 dayakeramong e kahodimo ke:

	1	2	3	4
A	Sperm	Sertoli cells	Seminiferous tubule	Leydig cells
B	Leydig cells	Sperm	Sertoli cells	Seminiferous tubule
C	Sperm	Leydig cells	Seminiferous tubule	Sertoli cells
D	Sertoli cells	Seminiferous tubule	Sperm	Leydig cells

1.1.2 Se bakelang hore insuline e se ke ya ntshuwa mading kamora dijo.

- A Goitre
- B Diabetes Mofuta 1
- C Diabetes Mofuta 2
- D Hypoglycaemia

1.1.3 Bala lethathamo le latelang.

- (i) Phupole e tla khonseteriktha.
- (ii) Disuspensory ligamente di tla huleya di tiye.
- (iii) Phupole e tla daeleitha.
- (iv) Kganya e ngata e tla dumellwa ho kena karolong e kahare ya leihlo.

Ke efe ya ditatemente tse ka hodimo e hlalosang diporose tse etsahalang leihlong ho ka etsa setshwantsho sa pono e ntle kahare ho ntlo e nang le kganya e sa hlakang.

- A (ii) le (iii) feela
- B (i), (ii) le (iv)
- C (iii) le (iv)
- D (iii) feela

1.1.4 Motho o lahlehelwa ke kutlo ka lebaka la organ of Corti e senyehileng. Ke efe ho diteretemente tse latelang e ka thusetsang kutlo mothong?

- A Cochlear implant
- B Grommet
- C Hearing aid
- D Ho tloswa ha cochlea

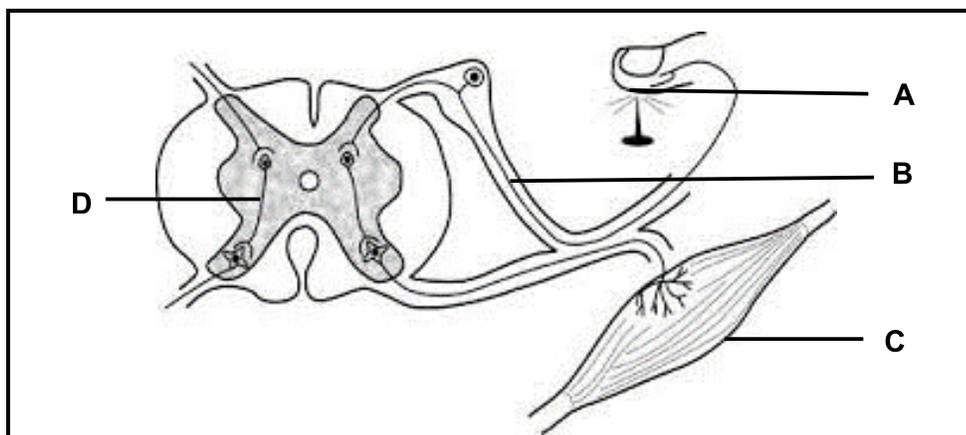
1.1.5 Ke efe e le NNGWE ho dihomoune tsa dimela tse latelang e sebetsang haholo ho bolaya lehola.

- A Gibberellins
- B Abscisic acid
- C Auxin
- D Ethylene

1.1.6 Ke efe e le NNGWE ya ditatemente tse latelang e leng bohlokwa ba reflex action?

- A E dumella sereboramo ho toloka setimulase.
- B E tlisa response e iketsahallang ka potlako.
- C E thibela hore motho a se utlwe bohloko.
- D E dumella nako ya ho toloka le ho kho-ordineitha reseponse.

1.1.7 Dayakeramo e ka tlase e bontsha reflex arc.



Ha karolo **B** e senyehile ...

- A bohloko ha bo no utlwahala, hape motho ha a no kgona ho hula monwana wa hae.
- B bohloko bo tla utlwahala, hape motho o tla kgona ho hula monwana wa hae.
- C bohloko bo tla utlwahala, hape motho ha a no kgona ho hula monwana wa hae.
- D Bohloko ha bo no utlwahala, hape motho o tla kgona ho hula monwana wa hae.

1.1.8 Bala disetatemente tse latelang.

- (i) Aldosterone e nyane etla ntshuwa.
- (ii) Disodium ion tse ngata di tla hulwa di iswe mading.
- (iii) Disodium ion tse ngata e tla ba karolo ya moroto.
- (iv) Disodium ion di tla dula ka hara renal tubule.

Ha sodium khonsentraishene mading e le hodimo, ke efe ya diteitemente tse ka hodimo e leng NNETE?

- A (i); (iii) le (iv)
- B (ii), (iii) le (iv)
- C (iii) le (iv) feela
- D (i) le (ii) feela

1.1.9 Parasympathetic nervous system e ikarabella ho ...

- A e nyolla phallo ya madi ho ya ho sekelethale masetlele.
- B reseponse ya ntwapa paleho.
- C kgutlisetso ya ho otlala ha pelo boemong bo nepahetseng.
- D cranial nerves.

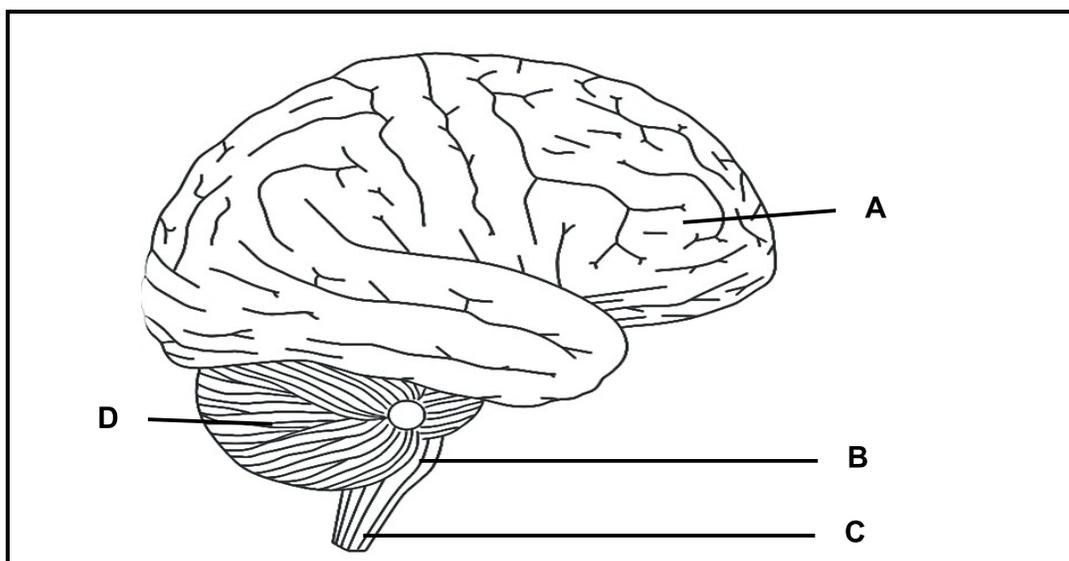
(9 x 2) (18)

- 1.2 Fana ka lentsewe **la baeloji** le nepahetseng bakeng sa thlaloso ka nngwe. Ngola feela lentsewe pela nomoro ya potso (1.2.1 to 1.2.9) BUKENG YA DIKARABO.
- 1.2.1 E sebetsa ho nka setimulase le ho etsa imphalse
- 1.2.2 Extra-embryonic memboreini e dumellang phapanyetsano ya digas ho amoniothi egg
- 1.2.3 Tshwelesa kapa mosifa o thusetsang ho reseponda ho sitimulase
- 1.2.4 Ho buleha ha methapo ya madi ho nyolla phallo ya madi
- 1.2.5 Mofuta wa lense o hlokehang ho lokisa ho bonela haufi
- 1.2.6 Tshwelesa e fumanehang feela ho dimammal ka tlasa tshusumetso ya porolakthin e ntshang lebeso
- 1.2.7 Lera la leihlo le nang le difotoresephase
- 1.2.8 Sebaka seo ho fumanehang diosmoresephase mmeleng
- 1.2.9 Sekgeo semicroscopic dipakeng tsa dinyurone tse pedi tse dumellang ho tsamaiswa ha diimphalse ho tloha ho e nngwe ho ya ho enngwe
(9 x 1) (9)
- 1.3 Bontsha hore na ditlhaloso tse ho KHOLOMO YA I di tsamaelana le tse ho **A FEELA, B FEELA, A le B ka BOBEDI**, kapa ha ho le e nngwe ho tse ho KHOLOMO II. Ngola **A FEELA, B FEELA, A le B ka BOBEDI, HA E YO**, haufi le nomoro ya potso (1.3.1 to 1.3.4) BUKENG YA DIKARABO.

KHOLOMO I	KHOLOMO II
1.3.1 Mosebetsi wa polasenta	A: Poloko ya boimana B: Tshireletsa foethase kgahlanong le temalo e mekhanikhale
1.3.2 Mosebetsi ya abosisikhi asidi ho dimela	A: Ho thusetsa boteng ba dipalesa B: Ho etsa kgolo ya metso ya dimela
1.3.3 Houmone(di) tse ikarabellang bakeng sa. semorejuleishene	A: Aledesterone B: Anthi-juretic houmone
1.3.4 Tahlehelo ya mohopolo ka lebaka la ho senyeha ha neve thishu	A: Lefu la Alizheima B: Multiple sclerosis

(4 x 2) (8)

1.4 Dayakeramo e ka tlase e bontsha dikarolo tsa Sentrale nevaso sistimo.



1.4.1 Fana ka TLHAKU le LEBITSO la karolo e tla ameha haholo ha motho a eba le mathata a latelang kamora temalo:

- (a) Ho se tsebe ho ngola hantle (2)
- (b) Puo e sa hlakang (2)
- (c) Bothata ba ho hema le ho otlala ha pelo (2)

1.4.2 Hlalosa ditsela tse PEDI tseo karolo C e tshiretsehileng ka yona kgahlanong le temalo. (4)

1.5 Teroya dayakeramo e leibetsweng ka botlalo ya sensori nyurone. (5)
[50]

MATSHWAO OHLE A KAROLO A: 50

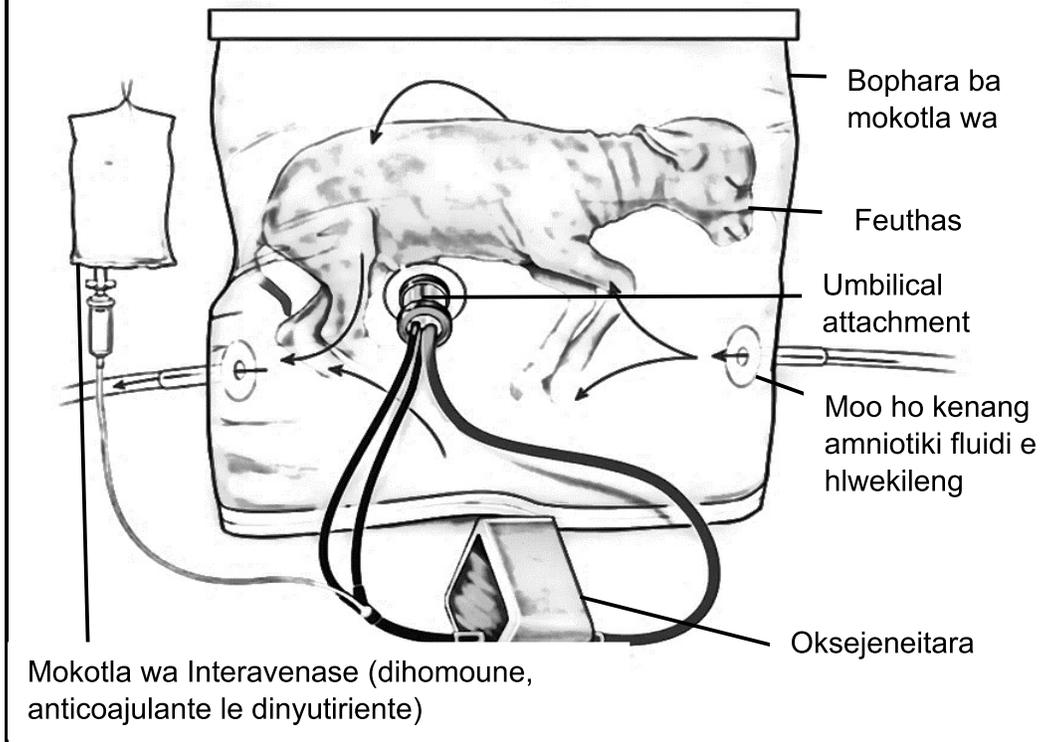
KAROLO YA B**POTSO YA 2**

2.1 Bala tema e latelang.

Mona Afrika Borwa, 84 000 ya preterm births di etsahala selemo le selemo. Preterm babies ke bana ba tswetsweng ba phela pele ho nako ya dibeke tse felletseng tse 40 tsa kemaro.

10% ya bana ba tswetsweng ka mokgwa ona ba atisa ho shwa kapa ba be le bothata bo boholo ba respiratory, ba nyuroloji, le bothata ba pono ya mahlo ho bapiswa le ba tswetsweng ka nako e felletseng ka lebaka la kgolo e sa phethahalang.

'biobag' ho dayakeramo e latelang, e sebetsa ho etsa popelo ya maiketsetso bakeng sa kgolo ya feuthase ho tswelapele ka kgolo ka hara yona. Dipatlisiso di bontshitse hore 'biobag' ena e ka sebediswa ho fa konyana maemo ohle a hlokehang bakeng sa kgolo e phethahetseng ya boimana.



2.1.1 Khaltjhuleitha nomoro ya bana ba hlahileng pele ho nako, ba tswetsweng mona Aforika Borwa ba ka nnang ba shwa kapa ba ba le bothata ba resepireishini, ba nyuroloji, le mathata a pono ya mahlo. (3)

2.1.2 Hlwaya e le NNGWE ya dikahare tsa 'biobag' le hore e ka ka sebetsa e le:

(a) Amnion (2)

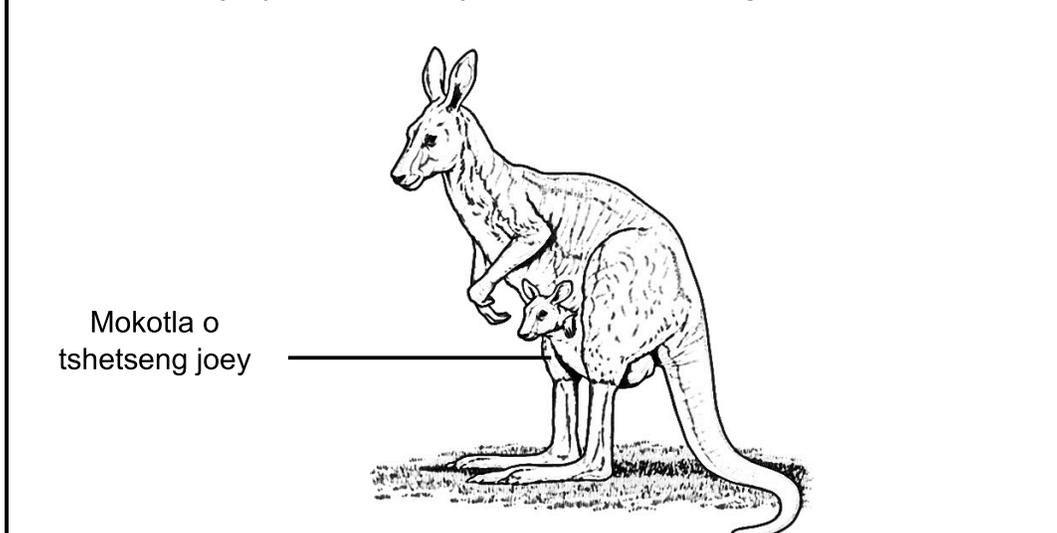
(b) Polasenta (2)

2.1.3 Hlalosa hore 'biobag' e ka fokotsa jwang mathata a kgolo e sa phethahalang ya ditho tsa mmele ho preterm babies. (3)

2.1.4 Fana ka tse PEDI tsa diethical issue tse hlokang ho elwa hloko pele ho tlhahiso ya mokgwa ona wa reporodaktive thekenoloji ya diteko ho batho. (2)

2.2 Bala tema e latelang.

Khankaru e kgubedu ke yona e kgolo ho feta tsohle dikhankaaru sepisisi hape e fumaneha Australia. Ka nako ya thobalano e tona e lokollela lero semene kahara mmelle wa e tshehadi e be kemaro e nka matsatsi a 33 ho fihlela e tswala. Ngwana wa khankaru ya fougetseng, ya hlobotseng hape a hlotsa o a kgasa ho ya itshwareletsa ho boya ba mmae a kene ka hara mokotla moo a tla itshwareletsa ho tlhoko ya letswele la mmae, ho mo fa diahammele, le ho dula moo a tshireletsehile matsatsing a 190 a latelang ho fihlela e eba joey. Ka matsatsi a 235 joey e lokela ho siya mokotla o mmeleng wa mmae.



2.2.1 Hlwaya mofuta wa fertiliseishine e etsahalang ho kankaru.e kgubedu. (1)

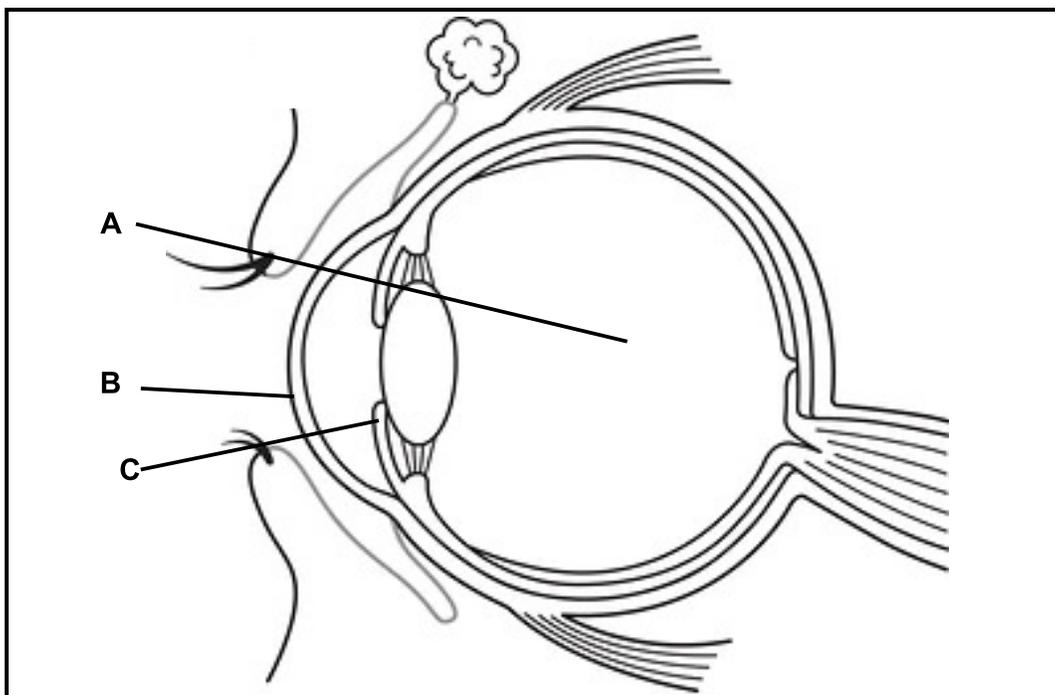
2.2.2 Fana ka lebaka le le LENG bakeng sa karabo ya hao ho POTSO 2.2.1. (1)

2.2.3 Hlwaya reporodakhivo seterateji se sebedisitsweng ke khankaru e kgubedu moo madinyane a tswalwang a phela. (1)

2.2.4 Hlalosa ka botebo seteratheji sa motswadi se le SENG seo khankaru e kgubedu e se sebedisang ho etsa bonnete ba ho nyolla maemo a ho phela baneng ba hae. (2)

2.2.5 Hobaneng o ka hlalosa khankaru e kgubedu hore e altricial? (2)

2.3 Dayakeramo e ka tlase e bontsha cross section ya leihlo.



2.3.1 Fana ka **LEBITSO** le **MOSEBETSI** o le **MONG** wa karolo ka nngwe ya tse latelang:

(a) **A** (2)

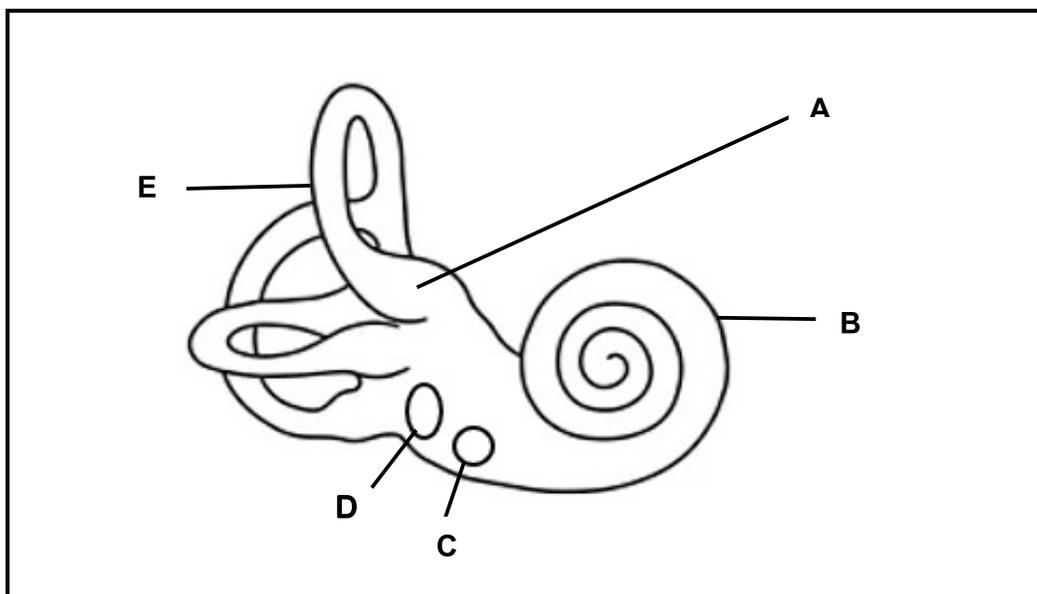
(b) **B** (2)

2.3.2 Polycoria ke lefu le amang karolo **C**. Motho ya kulang ke lefu lena o na le pupil e fetang e lenngwe. Pupil ka Nngwe e na le disekhula masetlele tsa yona.

Hlalosa ka bokgutshwane hore lefu lena le tla ama pono jwang. (3)

2.3.3 Hlalosa diphetoho tse tla etsahala ho leihlo ha motho a sheba ntho e bohole ba dimitara tse tharo. (5)

2.4 Dayakeramo e ka tlase e bontsha karolo e ka hare ya tsebe.



2.4.1 Fana ka TLHAKU le LEBITSO la karolo e:

- (a) Bokellang thothomelo ho tloha ho dioscille hape e di fetolele ho pressure waves (2)
- (b) Nang le organ of Corti (2)

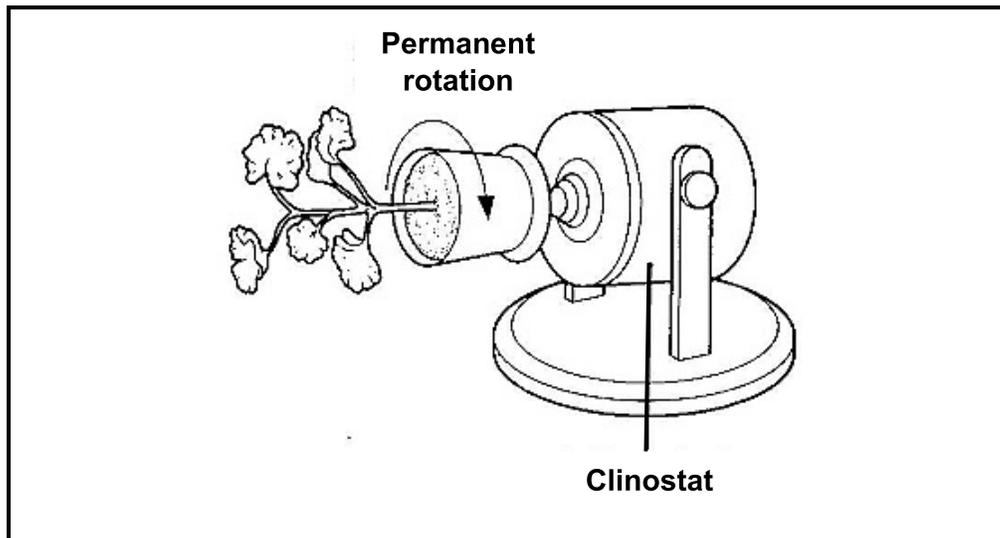
2.4.2 Top ice-figure skaters di ka potoloha ho isa ho revolushene tse tsheletseng eksising ya mmele ya bona ka motsotswana.



Hlalosa karolo e etswang ke sebopeho **A** ho boloka botsitso (balance) mmeleng ya bona ka nako eo ba potolohang. (4)

2.4.3 Hlalosa e le NNGWE ya suthebilithi ya sebopeho sa karolo **B** ho thusetsa ho etsa mosebetsi wa yona. (2)

- 2.5 Ekeseperimente e ka tlase e bontsha semela se ileng sa bewa ho clinostat e potolohang ka tlung e lefifi.



- 2.5.1 Hlwaya tropism e thesetuwang ho experimente ena. (1)
- 2.5.2 Hlalosa dayerekeshene ya kgolo e lebelletsweng ho bonahala ho root. (3)
- 2.5.3 Hlalosa hobaneng stemo se tla hola se lebisitse ho kganya e hlahang lehlakoreng le le leng. (3)
- 2.5.4 Fana ka mekgwa e MMEDI ya ho itshireletsa e sebediswang ke dimela hore di se ke tsa jewa ke diphoofolo. (2)

[50]

POTSO 3

3.1 Diresearcher di entse dipatlisiso tsa microplastic bioaccumulation ho levele ya fethilithi ho ditweba tse tona. DiMicropolasitiki ke dipolasitiki tse ileng tsa qhetsolwa ho theolelwa boemong ba maekeromitha, di ke ke tsa senngwa le ho ntshuwa ke mmele hape di tla ngatafala mading ha nako e ntse e tsamaya. Hona ho tsebisahala ka hore ke bioaccumulation.

Patlisiso e entswe ka mokgwa o latelang:

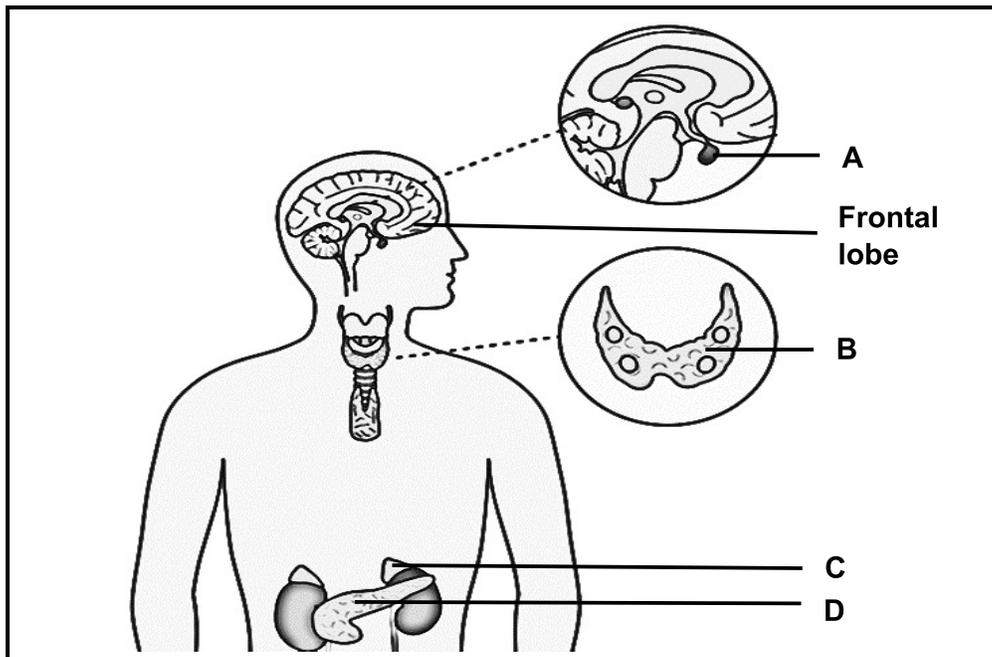
- Ditweba tse 60 tse tona, kaofela Albino Wistar sp. tse arotsweng ka tsela e lekanang ya dihlopha tse tharo.
- Ditweba kaofela tsa dihlopha e ne e le tse phetseng hantle hape difuwe dijo tse tshwanang.
- Sehlopha 1 se fepuwe metsi a ho nwa a nang le $0,0 \mu\text{m}/\ell$ ya dimicroplastiki letsatsi ka leng.
- Sehlopha 2 se fepuwe metsi a sa hlwekang a ho nwa a nang le $4 \mu\text{m}/\ell$ ya dimicroplastiki letsatsi ka leng.
- Sehlopha 3 se fepuwe metsi a sa hlwekang a ho nwa a nang le $10 \mu\text{m}/\ell$ ya dimicroplastiki letsatsi ka leng.
- Boramahlale ba entse dipatlisiso nakong ya matsatsi a 90.
- Kamora matsatsi a 30 boramahlale ba hula disempole le diteko tsa testosterone levele ($\text{ng}/\text{m}\ell$) ho ditweba tse 10 tse nkweng fela ka hare ho sehlopha ka seng hape le avareji ya sehlopha ka seng e ile ya khaletjhulaithwa.

Diphetho e bile tse latelang:

	TESTOSTERONE LEVELE ($\text{ng}/\text{m}\ell$)		
	SEHLOPHA 1 $0,0 \mu\text{m}/\ell$	SEHLOPHA 2 $4 \mu\text{m}/\ell$	SEHLOPHA 3 $10 \mu\text{m}/\ell$
LETSATSI 0	28 $\text{ng}/\text{m}\ell$	25 $\text{ng}/\text{m}\ell$	26 $\text{ng}/\text{m}\ell$
LETSATSI 30	26 $\text{ng}/\text{m}\ell$	19 $\text{ng}/\text{m}\ell$	17 $\text{ng}/\text{m}\ell$
LETSATSI 60	27 $\text{ng}/\text{m}\ell$	14 $\text{ng}/\text{m}\ell$	8 $\text{ng}/\text{m}\ell$
LETSATSI 90	26 $\text{ng}/\text{m}\ell$	10 $\text{ng}/\text{m}\ell$	3 $\text{ng}/\text{m}\ell$

- 3.1.1 Hlalosa e le NNGWE ya tsela eo diresetjhara di netefaditseng ho tshaphala ha patlisiso ya bona. (2)
- 3.1.2 Hlwaya e le NNGWE ya tsela eo diresetjhara di ka beng di nyollotse validithi ya diphetho tsa bona ho tswa ho raleng ha patlisiso e ka hodimo. (1)
- 3.1.3 Dedependente variebole e mejarishilwe jwang patlisisong ena? (1)
- 3.1.4 Hlalosa hobaneng Sehlopha 1 se le bohlokwa patlisisong ena. (3)
- 3.1.5 Fana ka sephetho sa patlisiso ena. (2)
- 3.1.6 Hlalosa porosese ya spermatogenesis. (4)
- 3.1.7 Spermatogenesis se ka ameha jwang ho Sehlopha 3 matsatsing a 90? (2)

3.2 Dayakeramo e ka tlase e bontsha ditshwelesa tsa endokerayene mmeleng wa motho.



3.2.1 Hlwaya tswelisa:

(a) **C** (1)

(b) **D** (1)

3.2.2 Ke ofe mosebetsi wa 'negative feedback mechanism' e laolang tshwelesa **B**? (2)

3.2.3 Hlalosa hobaneng tshwelesa **D** e hlaloswa e le endokerayene hape e boetse e le eksokerayene. (4)

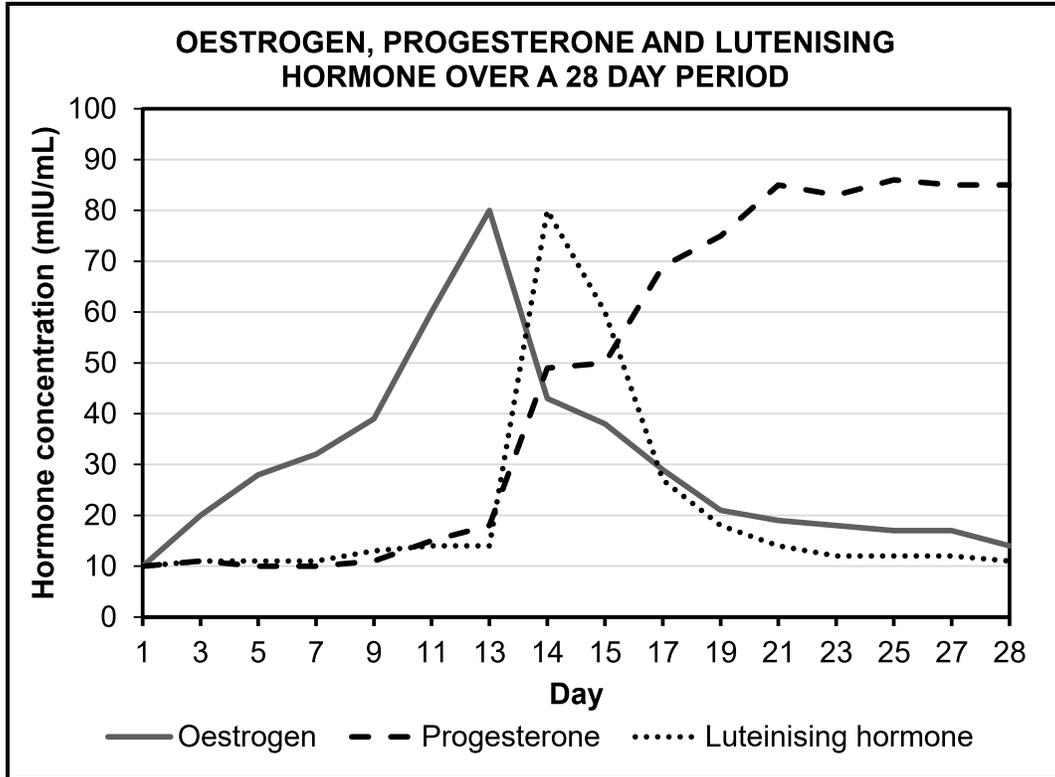
3.2.4 Hlalosa hore tshwelesa **C** e ka nyolla jwang phephelo ya tlulukhouse le oksejene ho mesifa ya sekelethone ho emergency. (5)

3.2.5 Ho ya ka tjhuma e holang ho frontal lobe ya boko, phetelletso ya boemo ba growth hormones (GH) bo ka ntshuwa (secretion).

(a) Ke efe karolo ya boko e ikarabellang ho ntshuweng ha growth hormones (GH)? (1)

(b) Bolela e le NNGWE ya boemo bo fetelletseng ba GH boo e ka bo bakang ho batho ba baholo. (1)

3.3 Kerafo e ka tlase e bontsha diphetoho tsa bosadi nakong ya menstrual saekele.



3.3.1 Hlwaya sebopeho se ntshang (secrete):

(a) Oesterogene ho tloha ka letsatsi la 1–13 (1)

(b) Porogesterone ho tloha ka letsatsi la 13–20 (1)

3.3.2 Ke letsatsi lefe moo ovuleishini e etsahetseng lona? (1)

3.3.3 Fana ka lebaka la Karabo ya hao ya POTSO 3.3.2. (1)

3.3.4 Hlalosa ke hobaneng boemo ba porogesterone bo ntse bo le hodimo kamora letsatsi la bo 21. (2)

3.3.5 Ke hobaneng ho sa kgonahale hore motho e motshehadi a be le kgolo e nngwe ya Graafian follicle nakong ya boimana? (4)

3.4 Ka dinako tsa boikwettiso bo matla, boemo ba carbon dioxide mading le motjheso wa mmele o a nyoloha.

3.4.1 Hlalosa taolo ya homeostasisi ya carbon dioxide ha e nyolohile ka ho fetisisa mading. (7)

3.4.2 Hlalosa e tla ba efe tshusumetso mmeleng wa semathi haeba a sa kgone ho theola boemo ba motjheso. (3)

[50]

MATSHWAO OHLE A KAROLO YA B: 50

MATSHWAO OHLE: 150