



ATOMS AND ATOMIC STRUCTURE IATHOM NEATHOMIKHI STRAKTSHA (UBUME BEATHOM)

Iathom lisuntswana elona lakhe lalincinci le-elementi elinokwalathwa, liqondwe yaye libonwe liyiloo elementi. Ngamanye amazwi, sinokuba neathom enye yeoksijini, okanye eyekhabhoni, okanye eyayo nayiphi na enye ielementi, kodwa asinakuba neamawunti encinane ye-elementi ngaphezu kweathom enye yayo. Zonke iathom zazo naziphi na iielementi ezikhoyo ziyafana. Iathom zisenako ukuqhekeka zibe ngamacetyana amancinane kakhulu, afana nee-elektroni, iiprotoni neenyuthroni, kodwa 'la macetyana aziisabhuathomikhi' akanxulamananga nayo nayiphi na ielementi. La masuntswana aphulukana neayidentithi yawo. Iielektroni okanye iiprotoni bezingaphuma nakweyiphi na ielementi: zonke iielektroni ziyafana; njengoko neeprotoni zifana.

Enye indlela yokuchaza, nokucacisa iathom kukuthi yinxalenye efumaneka kwielementi enokuzimela yodwa geqe. Kubalulekile ukuqonda ukuba singathetha ngeathom yayo nayiphi na ielementi, kodwa ingeyiyo yeathom yekhompawundi, kuba ikhompawundi yenziwe ziindidi ezimbini zee-elementi. Akukho ntsingiselo, umzekelo ukuthetha ngeathom yeswekile, okanye iathom yamanzi. Enye indawo ebalulekileyo ngeathom yeyokuba zonke iathom zielektrikhali nyutrali: azinayo iielektrikhali tshaji. Zonke iathom zenziwe ngeepatikili ezielektrikhali tshaji, kodwa inani leetshaji eziphozithivu ngaphakathi kwiathom zisoloko zilinanani elifanayo neyeenegethivu tshaji, ukuze zikwazi ukuzinza, yaye ikwazi enye 'ukukhansilisha' enye.

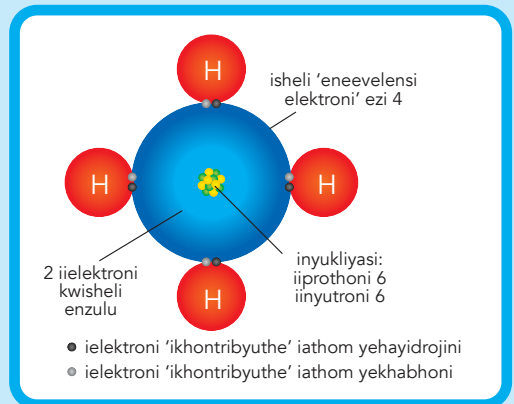
Istraktsha seathom sixhasa iipatikili neeprosesi ezingaphakathi kwiathom, yaye sizama nokuchaza iipropathi ezikhemikhali nezifizikhali zeeathom. Iathom zinenyukliyasi kwanerijini ejikeleze inyukliyasi apho kukho iielektroni enye ubuncinane. Ihiliyam inee-elektroni ezimbini ezijikeleze inyukliyasi. Zonke ezinye iathom zinee-elektroni ezingaphezulu kwezimbini, ize iyuraniyam ibe yeyona elementi inobunzima obuzenzekela ngokwendalo. Kubaluleke

kakhulu ukuziqonda iiaspekthi zekhemestri, ukwazi inani leeprotoni ezingaphakathi kwinyukliyasi yeathom ukuba ifana ngqo nenani lee-elektroni ezijikeleze inyukliyasi. Yiloo nto zonke iathom zielektrikhali nyutrali. Kukwabalulekile nokuba iielektroni zeathom 'zingacukani' nje ndawonye njengeenyosi zicukene kwintyatyambo. Iielektroni zihlelwe ngokwee'sheli' ezininzi. Isheli nganye iba nenani elithile lee-elektroni. Ukuba iisheli zeathom zigcwele zonke, iathom izinze kakhulu. Ayizi kuriektha kwezinye iathom.

Iathom engenazo iisheli ze-elektroni ezigcweleyo' isenokufumana okanye iphulukane nee-elektroni, kodwa ayisekho nyutrali, kwaye ayisabizwa ngokuba yiathom. Inee-elektrikhali tshaji, kwaye ibizwa ngokuba yi-ayoni (ion).

Iivalensi elektroni zimisela iikhemikhali propathi zeathom. Kwiindidi ezininzi zeathom, iivalensi elektroni zingaphandle kwisheli. Ikhoboni (eboniswe kwidayagram) inee-elektroni ezintandathu, kodwa zine kuphela ezizivalensi elektroni. Zona ziyi zibonakaliswe ngokwepari eziyenza nee-elektroni ezisingili zeeathom ezine zehayidrojini. Le khompawundi iyimithayni (CH_4).

Jonga **ielektroni; ielementi, iayoni, inowubhuli-gesi**



A iabhakhasi

abacus

iabhakhasi Iabhakhasi yayisetyenziswa ngaphezulu kwe5 000 yeminyaka eyadlulayo eBhabhiloni, yaye isesona sixhobo sokubala sidala. Iabhakhasi zisasetyenziswa nanamhlanje kwezinye iindawo zaseAsia naseAfrika, kwaye incutshe ekuyisebenziseni ingabala ngokukhawuleza phantse ngokomntu osebenzisa ezi khalithyuhleyitha zale mihla.

Iabhakhasi imele 'umnombo wembali'. Yibhlorho phakathi kwendlela yokubala yamandulo neyeematshini zeli xesha nezixhobo zombane ezisetyenziswa kule mihla. Ezinye zobuhlalu bamaso eabhakhasi zimele imivo/iiyunithi ezintlanu. Oku kunxulunyaniswa neminwe esinayo emihlanu. Umnwe, okanye uzwane, *yidijithi* ngesiLatini. Lithetha ukutsho eli gama lithi dijithi. Kwakhona ngenene udijithi uthetha inani elipheleleyo – enye yeeintheja. Idijithali yale mihla neteknoloji ziqulethe impinda yeedivayisi zokubala zokuqala – iminwe.

abdomen

iabdomeni Ilungu eliyikhevithi lesilwanyana eliquathe iigani ezibalulekileyo. Kwiivethebhreyithi liqulethe iigani zokwetyisa (ukudayijesta) nezokuekskritha (ukukhupha). Kwiimamali iabdomeni yahluelwe kwiothoraksi yimastyhula shiti eyidayafram. Oku kwenza ukuphefumla kuhambe kakuhle.

Jonga *iianalojisistraktsha; idayafram; iihomologasi-straktsha*

aberration

iabhreyshini Kukusuka kwindlela ethathwa ngokuba yechanekileyo okanye yeyesiqhelo. Eli gama lisetyenziswa kwisayensi yeeoptikhi neastronomi.

Jonga *ikhromathiki abriviyeshini; isfyerikhali-abhereyshini*

abiogenesis

iabhiyojenesisi (yaziwa nangokuba yijeneriyeshini ezenzekelayo) Ayisamkeleki ithiyori, okanye inkolelo ethi izinto eziphilayo zisenokuba zisuka kwiisabstensi ezingaphiliyo. Inkolelo esetyenziswe ngokukodwa kwinto ethi ubomi bavele bazenzekela kweli lizwe langoku, ngamanye amazwi olu didi lukhoyo lweoksijini lufikelela kwiathmosfiye nakwezinye iindlela zobomi ezisele zikhona. Inokuba yinyaniso kakade into yokuba ubomi baqalela kwisabstensi ezingaphiliyo kudala phaya. Kodwa ngelo xesha kwakusadalwa umhlaba, yaye ikhemikhali envayromenti yayahluke kakhulu kunale ikhoyo ngoku.

Jonga *ubomi*

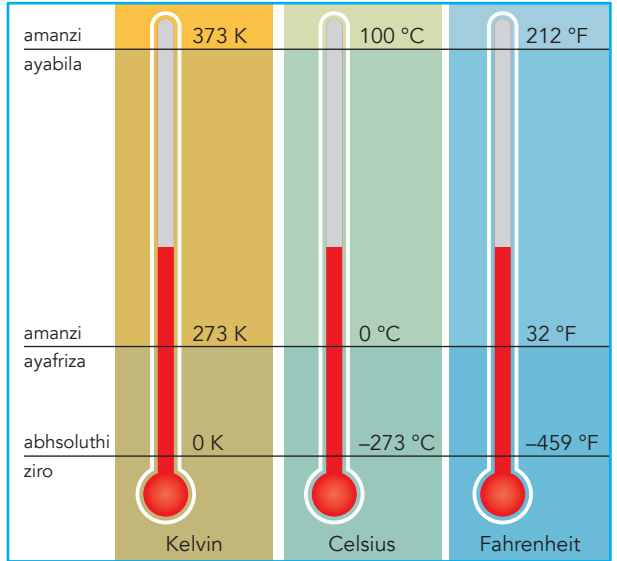
absolute magnitude

iabsoluthi magnityhudi (kwiiastronomi) Ubukhulu obugqibeleleyo kwiiastronomi. Eli gama lisetyenziswakwezenzululwazingeenkwenkwezi, libhekiseleekuqaqambenikwentoesesibhakabhakeni, enokubonwa kumgama olinganiselweyo. Eli gama linako ukubhidisa kuba 'ubukhulu' bubhekisele kubungakanani bento ethile. Apha, ubukhulu bubhekisele ekuqaqambeni.

Jonga *iapharentimagnityhudi; iinkwenkwezi zemeyini-sikhwensi*

absolute temperature

iabzoluthi thempritsha Ithempritsha ilinganiselwa ngesikali seabsoluthi thempritsa, esikwabizwa ngokuba siskeyile sikaKelvin, ukunika iwonga kuLord Kelvin (William Thomson, 1821–1907). Esi sikali siqala 'kuabsoluthi ziro' imeko apho kungekho eneji ithemali khona. Le thempritsa ilingana nesikali seCelsius, efika ku273.16 °C. Isikali seabsoluthi, ngaphezu kwesikali seCelsius, idla ngokusetyenziselwa iikhaltihuleyishini kwikhemestri ngenxa yokuba ihambelana nethempritsa ephathelelene neendlela ezisebenza ngayo iigesi. I-inthavali yesikali seabsoluthi iyafana neinthavali yesikali seCelsius, ngoko ke ukukhonvetha ukusuka kwesinye uye kwesinye isikali kulula kakhulu: ukukhonvetha ukusuka kwiCelsius ukuya kwiKelvin, wongeza (malunga) needigri eziyi273; ukukhonvetha ukusuka kwiKelvini ukuya kwiCelsius, uthabatha (malunga) needigri eziyi273. Ikhonvezhini phakathi kwesikali sikaFahrenheit nesikaCelsius kunzima kakhulu kuba i-inthavali kwizikali ayifani, kwaye aziqali kwizinga elinye 'uziro'.



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 lithemomitha ezibonisa amaqondo obushushu alinganayo kwizikali zeKelvin, Celsius kunye neFahrenheit.

absorption

iabzopshini (kwikhemestri) Yiprosesi apho iimoletyhuli okanye iathom zesabstensi ziye zisasazeke kwivolyum yenye isabstensi. Ayifani neadzopshini. Jonga **iadzopshini**
 (kwibhayoloji) Yiprosesi apho iisabastensi zihamba kwiimembreyini. Le ntshekumo isenokuba phasivu (apho iisabstensi zihamba ngokwedifyuzhini), okanye zisenokuba ekthivu – oko kukuthi, zibandakanya ukusetyenziswa kwe-eneji zize zithwale iimoletyhuli. Ngexesha leabzopshini e-ekthivu iisabastensi zingasuka kwieriya yekhonsentreyishini esezantsi ziye kwikhonsentreyishini ephezulu. Ukuba iprosesi iphasivu, intshukumo yenzeka kuphela isuka kwikhonsentreyishini ephezulu iye kwesezantsi.

Jonga **idifyuzhini**

A iakselereyishini

ACCELERATION IAKSELEREYISHINI

Ikhonsepti engundoqo: FIZIKHSI

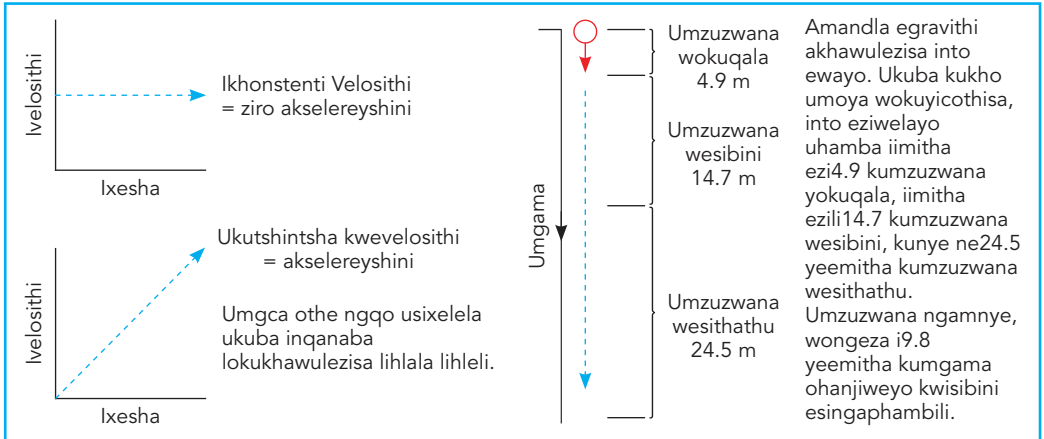
Uhlobo lwentshukumo apho ivelosithi itshintshayo khona. Ukuba uwisa iobjekthi, iwa isiya phantsi. Ukuba uyiwisa usuka kwindawo ephezul kakhulu, uya kubanako ukuyibona ukuba iya ikhawuleza ngokukhawuleza xa iza kufika phantsi. Lo ngumzekelo weakselereyishini ngenxa yefosi yegravithi. Ukuba into iyenyuka (ukusuka phantsi), ifosi yegravithi iya kuyenza loo nto idiselereyithe de ime, ize iqalise ukuakselereyitha ukuya kuwa phantsi. Idiselereyishini ibizwa ngokuba 'yinegethivu akxelereyishini' kuba ivelosithi incipha kunye nexesha.

Igravithi ayiyokokuphela kwayo ifosi eakselereyithisa izinto. Yiba nomfanekisongqondweni wemoto iqalisa ukuhamba endleleni ethe ngqo. loyile ivuze phantsi kwenjini, iqabaza limana ukuchaphazela endleleni qho emva kwemizuzwana emibini. Yiba nomfanekisongqondweni wakho ulandela emva kwale moto umezharishe umgama phakathi kwamaqabaza eoyile kuloo ndlela. Ukuba ufumanise ukuba umgama phakathi kwamaqabaza uyafana, ungathi ibihamba ngesantya esingakanani loo moto? Kubalulekile ukuqonda ukuba xa amaqabaza enomgama ofanayo phakathi kwawo, imoto ibihamba ngesantya esikhonstenti. Qho kwimizuzwana emibini ihambe

umgama ofanayo ngqo. Khumbula ukuba isantya sichazwa njengomgama ohanjwe kwixesha elithile elibekiweyo. Ukuba imoto ihamba ngesantya esiphezulu, kuza kubakho umgama omkhulu phakathi kwamachaphaza eoli kuba imoto iza kube ihambe umgama omde ngemizuzwana emibini. Ukuba ufumanisa ukuba umgama phakathi kwamachaphaza awulingani, ungathetha uthini malunga nokuhamba kwemoto?

Mathathu amanqaku aphambili amakangalityalwa:

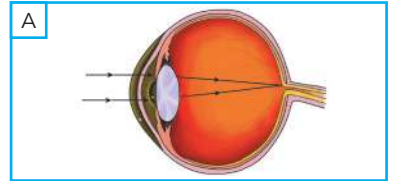
- Ukuba into itshintsha isantya sayo sentshukumo okanye idayrekshini yentshukumo (okanye zombini) loo nto yiakselereyishini. Ukuba into iakselereyitha kwilayini ethe ngqo, oko kubizwa ngokuba *yiliniya aksalereyishini*. Ukuba ihamba ngendlela enegophe, oko kubizwa ngokuba *yiendyula aksalereyishini*.
- Ukuba into iya-akselereyitha, apho kusebenza ifosi. Into ehamba kwindawo ebusekile, efana neplanethi okanye isathelayithi, iriektha kutsalolwegravithi yento kuloo ndawo irivolva kuyo.
- lamawunti yeakselereyishini ibhekiselela kwindlela elula kwiamawunti yefosi esebenza kuloo nto.



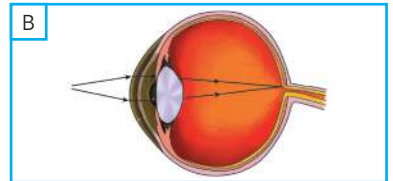
accommodation

iakhomodeyishini (kwibhayoloji) indlela apho iliso liye lenze i-imeyiji ebukhali kwirethina. Emehlweni abantu nakwezinye iivethebhreyithi ezininzi, 'iakhomodeyishini' ibandakanya ukuba ilensi zitshintshe ishnkawu yazo, oko kukuthi ubude befokhali (bokujonga) yalo. Xa sijonga izinto ezikufutshane, ilensi 'iyatyeba', oko kukuthi iba khonveksi kakhulu. Kule meko ilensi ngokwayo iyayekelela – iye iphantse ibe sfiyerikhali (mbhoxo). Le shnkawu inika ubude befokhali abufutshane, kwaye ibangela ukuba yenze i-imeyiji ebukhali yeobhjekthi ezikufutshane, oku kuyabutshintsha ubude befokhali, ngokutshintsha ishnkawu yelensi, kuthethe ukuba umgama phakathi kwelensi nerethina ungatshintshi xa iibhjekthi zikufutshane.

Kwikhamera, eyilensi yeglasi, okanye eyeplatsiki eqinileyo, ukujonga kuguqula umgama phakathi kwelensi nesensa. Ukuba iobhjekthi ikufutshane, ilensi iyasuka kwisensa. Ishnkawu, ke ngoko yobude befokhali yelensi ayitshintshi. Xa iobhjekthi ikude, ilensi iba flethi (iyehla ekubeni ibe 'buvuvumala'), ize ke ngoko ingabisabi bubude befokhali. Kwakhona umgama irethina-lensi awutshintshi. Kubalulekile ukuba, xa iliso lijonge kwiiobhjekthi ezikude, izihlunu zibandakanya iakhomodeyishini ziyekelele (zirileksile), ze ilensi icinezeleke (ibe nethenshini). Oko kukuthi ngokwezihlunu, iliso lijonge kwizinto ezikude.



Iliso ligxile kwinto ekude. Imitha yokukhanya engenayo iyahambelana.



Iliso ligxile kwinto ekufutshane. Imitha yokukhanya engenayo iyaphambuka. Qaphela ukuba ilensi inekhonneksi ngakumbi (iyatyeba).

accurate

iakthyureyithi Ukusondela kwireferensi yevulyu okanye yethagethi. Ukuba umntu ochanayo udubula kaninzi kwithagethi, aze ayichane 'inkunzi', uya kuba udubule akthyureyithi. Eli gama livela kwisiLatini lingu-*accuratus*, othetha 'okwenziwe ngenkathalo'. Ukuba iimbumbulu ziyiphosile inkunzi, kodwa zonke ziye zasondelelana kakhulu, singathi injongo, okanye ukudubula, bekuprisayisi (bekuthe ngqo), kodwa kungekho akthyureyithi. Eli gama 'uprisaysi' 'noakthyureyithi' awathethi nto enye ncam, nangona ngamanye amaxesha aye asetyenziswe ngokutshintshanayo, I-instrumenti ingakwenza ukwazi ukumeta ikhwantithi ethile ngokuthe ngqo (presayisi), kodwa umlinganiselo ungangabikho akthyureyithi xa i-instrumenti ingalungelelaniswanga (ingakhalibhreyithwanga) ngokuchanekileyo.

Jonga *ikhalibhreyithi*; *iprisayisi*

acetylcholine

iasithilkholini (ACh) Inyurotransmitha ikhutshwa kwiincam zeemothoniyuroni ezizikhuthazi kwiifayibha zezihlunu zeskelethoni, zibangela ukuba iifayibha zifinyezeke/zishwabane. Ngenxa yokuba zibangela ukufinyezeka kweefayibha zezihlunu, isebenza njengetransmitha esisivuseleli kwiinevumasili jankshini. Kwezinye iindawo, nangani kunjalo, iasethikholini isisithinteli. Apho iveyigasinevu isenza ikhontakthi eyisinaiphthiki kunye nesihlunu sentliziyo, umzekelo, iasethilkholini isebenza njengesithinteli. Inciphisa ireyithi yentliziyo, iinyuroni ezivelisa iasethilkholini kuthiwa ziikholinejikhinevu. Iasithilkholini yinyurotransmitha ebaluleke kakhulu kwisisitim yeenevu epharasimpathethiki.

Jonga *ipharasimpathetiki nevasi-sistim*; *isinapsi*

A iasethilini

acetylene

iasethilini Ihayidrokhabhoni engasatshoreyithwanga ngefomyula C_2H_2 . Iiathom zekhabhoni nezehayidrojini zidityaniswa ziibhondi ezintathu. Oku, kunye nenyano yokuba iyihayidrokhabhoni, ikuxelela ukuba iasethilini ibalelwa njengealkhuni. Igama elivunyiweyo ngokwekhemikhali leasethilini nguethayini. Iasethilini iyatsha neoksijini kwenzeke enye yeyona gesi yakha yatshisa kakhulu kwiigesi ezinamadangatye. Iamawunti ye-eneji ekhutshwa ngokutshisa liasethilini ibhekiselele ekomeleleni kweebhondi ezintathu ezibambe iimoletyuli ncawonye. Xa ezi bhondi zintathu zaphukile, kuphuma ieneji njengobushushu. Iasethilini ngokucinwa, inyibilikiswe kwiasethoni, kwiisilinda ezihlaliswa ngephozishini ebheke phezu. Oku kongeza ukuzinza kananjalo nokukhuseleka kwegesi. Njengokuba ilidangatye, iasethilini isetyenziselwa ukusika nokuwelda istili nezinye iimethali. Iasethilini iveliswa ngokwezibane zekhabhayidi (carbide) ngentshukumo yamanzi kwikhalsiyamkhabhayidi. Ezi zibane zikhanyisa ngokuqaqambileyo ngenxa yethempritsha ephuzulu yeasethilini. Zidla ngokusetyenziswa ngabazingeli nabahambi miqolomba. Jonga **ialkheyini**; **ialkene**; **ialkheyine**

achromatic

iakhromathiki Ngaphandle kombala. Igama lisetyenziswa ngokuphathelelene neelensi. Enye yee-abharyeyishini eziveliswa yile 'simpuli lensi' *yikhromathiki abriviyeshini*. I-imeyiji eyenziwe ziilensi ezinjalo irhangqwe zii-'halo' zombala. Iabharyeyishini iye isuswe kakhulu, okanye ilungiswe ngekompawundi lensi, ize ke ngoko ibe 'yiakhromathiki' – engenawo (a-) umbala (*khroma*).

Jonga **ikhromathiki abriviyeshini**; **ikhompawundi lensi**; **ilensi elula**

acid

iasidi (kwikhemestri) Imoletyuli enikela ngeprotoni okanye ithathe iperi yee-elektroni kwiriekshinil. Jonga **ibheyisi**

acid–base balance

iasidibheyisi bhalansi Igama elisetyenziswa kwifizioloji ukuchaza iiproshoshini zeasidi nebheyisi ezigqibela ngokwenza i-pH yesolushini efana negazi. Ukuba le proshoshini inyusa ibheyisi, isolushini iya kuhla kancinci kwiasidi kunangaphambili, i-pH inyuke kancinci. Izilwanyana – ngakumbi abantu – baneesistim ezibanzi kakhulu zokulawula iiproshoshini zeeasidi egazini labo nakwezinye iithishu, loo nto ithi ilawula i-pH yeethishu nokuqulathwe ziiseli. Iisistim zefizioloji zisensithivu kakhulu ekutshintsheni i-pH, yiloo nto ziredyuleyithwa ngenkathalo. Iimekhanizim ezininzi ezahlukeneyo ziyadityaniswa ukuredyuleyitha ibhalansi yeasidi nebheyisi.

Jonga **ibhafa solushini**; **isikali se-pH**

acid precipitation

ipresipitheyishini yeasidi (ikwaziwa ngokuba yimvula eneasidi) Izingcolisi (iipholuthenti) ezivela kwii-indastri, uqhushumbodubulo lwevolkhayino intingela kwiathmosfiye ngeeamawunti ezinkulu zeekhemikhali khompawundi ziwenza amanzi abe yiasidi. Ukuza kuthi ga ngoku eyona nto inegalelo elikhulu ekwenzeni imvula eyiasidi yipholushini evela kwii-prosesi zemizimveliso, ngakumbi amalahle atshayo aneyona khonsentreyishini iphezulu yesalifa. Iiasidi ezingundoqo kwipresipitheyishini yeasidi yisalfuriki asidi nenitriki asidi. Initriki asidi (HNO_3) edaleke ngenxa yeamoniya (NH_3) ingena kwiatmosfiye iwanyibilikisele emathontsini amanzi, kwenzeke initriki asidi. Iamoniya nayo ngokwayo iyinxenye yesayikile yenayithrojini, kodwa yimisebenzi eyenziwa ngabantu ibangele ukuba kwande iamoniya kwiatmosfiye ngokuphindaphindeke kathathu. Oku kunye nezinye iziphumo zemisebenzi eyenziwa ngabantu, kube negalelo ekubeni zingabhalansi iisistim ezahlukeneyo zeglowubhu. Imvula eyiasidi ine-pH engaphantsi ku5.7. (Imvula yesiqhelo 'ecocekileyo' inokuba ne-pH emalunga nesixesha. Oku kubangelwa yikhabhoni dayoksayidi esemanzini emvula, evelisa iasidi yekhabhoni.) Kwimeko ezingcoliseke kakhulu, i-pH yemvula ikholisa ukuba ngaphantsi kwesi2. Imvula eyiasidi yaziwa ukususela kwiIndastriyali Rivolushini (1760–1840), ingxaki yanda kakhulu kwisentyhuri yamashumi amabini. Ipresipitheyishini yeasidi yonakalisa okanye ibulala iiozanizim ezahlukeneyo, ikwanefuthe empilweni yabantu, kananjalo ikhuthaza ukhukuliseko lwezitrakhtsha ezenziwe ngemethali, imizobo epeyintiweyo nelayimstowuni. Ukususela ngo1985 kwabakho izivumelwano ezibophelelayo ekwafikelelwa kuzo zeendlela zokulawula iipholuthenti zeatmosfiye ezibangela ipresipitheyishini asidi. Jonga **inayitrojini-sayikili**

acidosis

iasidosisi Igama elisetyenziswa kwimedisini nakwifiziyolji, elibhekiselela ekuphazamisekeni kwebhalansi yeasidibheyisi yegazi. I-pH yegazi esemithanjani (iiatharizi) imalunga ne7.4. Ukuba i-pH ingaphantsi koku (ok kkt. igazi lineasidi eninzi) umntu okanye isilwanyana kuthiwa 'uasidothiki', okanye ukwimeko yokuba asidothiki. Jonga *ialkhalosis*; *isikali se-pH*

acrodont

iakhrodonti Igama elibhekiselela emazinyweni nendlela akhelwe ngayo emihlathini yesilwanyana. *Akhro*; uthetha 'incam', 'umntla' okanye 'ekupheleni'; isimamva *u-donti*, ubhekiselela 'emazinyweni'. Uakhrodonti uthetha amazinyo akhelwe ngasentla kwiriji (umqolo) yamathambo. Intlanzi neeamfibhiyeni zinolu hlobo lwamazinyo. Umfanekiso osecaleni ubonisa imihlathi kakrebe oyi-mako, abonakalisa amazinyo aziakhrodonti. Jonga *identishini*; *ithekhodonti*

**acromegaly**

iakhromegali Kukungemi kakuhle kwe-endrokhini apho umntu omdala eqala ukuelisa ihomoni eninzi yokukhula, okanye isomathotrofini. Ihomoni iveliswa kwidlala lephityhuwithari (egama kuthiwa yi-adenohayiphofisisi). Ubuso, iinyawo nezandla (iincam) zikhula ngakumbi kunesiqhelo.

action and reaction

iekshini neriekshini Ikhonsepti eyaveliswa kuMthetho weSithathu kaNewton weMowushini, osixelela ukuba 'iekshini neriekshini ziyalingana yaye zichasene'. Mininzi imizekelo yalo mthetho. Yiba nomfanekisongqondweni wesikhephe esincinci – phenyane uze wena udayivele ekupheleni kwalo. Uya kuhamba umgama omncinci ukuya phambili, kodwa isikhephe sona siya kubuyela umva ngeli xesha wena usiya elunxwemeni. I-'phushi' ekwenze ukuba ubheke phambili (ekunokuthiwa 'yiekshini') ineamawunti efanayo yefosi kuyo njengokuba iphushi isiya emva eyenza ukuba isikhephe sibheke emva. Oku kuthiwa 'yiriekshini'. Omnye umzekelo, cinga ngokukhaba, okanye ukuhlehla okuvayo xa udubula ngompu okanye ngerayifuli. Ifosi etyhala imbumbulu iye phambili iphume kwibhareli (yi-'ekshini') iyafana nefosi etyhala umpu ubuye umva (yi-'riekshini'). Jonga *umyanzelo*

action at a distance

iekshini emgama Amandla ento echaphazela enye ngaphandle kokungquzulana – oko kukuthi, kwindawo engenanto. Ifosi zegravithi ne-elekthromagnethizim zichaphazela izinto ezinokwahlulwa enye ibe kude kwenye espeyisini. Jonga *ietha*; *ifildi*

activated charcoal

itshakhowuli e-ekhthiveyithedi/itshakhowuli esebenzayo (ikwabizwa ngokuba yikhabhoni esebenzayo) Uhlobo lwekhabhoni (itshakhowuli) elungisiweyo ukuyenza ivuze kakhulu. Ukuvuza kwayo kwandisa kakhulu imathiriyeli yesafeyisi eriya yemathiriyeli. Igremu enye yetshakhowuli esebenzayo inganesafeyisi eriya engaphezulu kwe1 000 skwemitha. Oku kuthetha ukuthi kukho isafeyisi enkulu kakhulu yeadzopshini yezinye iisabstensi ezifana neegesi okanye izinto ezingacocekanga kwiilikhwidi. Ngexesha lemfazwe, ngamanye amaxesha kusetyenziswa iigesi ezinetyhefu. Iimaskhi zegesi ezinetshakhowuli esebenzayo yindlela efanelekileyo yokufunxa iimoletyhuli ezinegesi enetyhefu zingabikho emoyeni. Jonga *iadzopshini*

A iekthiveyishini eneji

activation energy

iekthiveyishini eneji Iamawunti encinci ye-eneji ekufuneka kongezwe kuyo iathom okanye iimoletyhuli ukuzenza zikwazi ukunxibelelana – ngamanay'amazwi, ukuqalisa ikhemikhali riekshini. Ngamazwi avakalayo, ukwenza ieneji isebenze kungabonwa njengeamawunti encinci ye-eneji esiya kuyisebenzisa ukutyhiliza ibhola, ukuyenza ixhathise ngasekupheleni kwestephu, ukuyenza iqengqeleke ekupheleni kwestephu ize iwele phantsi.

active immunity

iekthivu imyunithi Iprosesi enye apho izilwanyana – ngakumbi iimamali – ziba namandla okukwazi 'ukulwa'; nezinto ezinobungozi ezikwindawo ezingamelanga ukuba zikuyo (foreyini), okanye iimayikhro-oganizim. Iisabstensi ezikwindawo ezingamele kuba kuyo, ngakumbi iiprotheni eziforeyini, ezingena kwi-imyunisistim yesilwanyana ziye zenze udidi lweeprotheni ekuthiwa ziiantibhodi. Ezi antihbodi 'zenzelwe' ukuba zitshabalalise ngokukodwa iiforeyini sabstensi 'ezihlasela' umzimba. Le prosesi kuthiwa 'yiekthivu imyunithi' kuba isilwanyana (kuthiwa lixhoba) siye senze iiantibhodi ezizesaso ukulwa ezi sabstensi zihlaselayo. Kukwakho imeko eyaziwa ngokuba 'yiphasisvu imyunithi', apho ixhoba lifumana khona iiantibhodi ezenzekayo kwezinye izilwanyana.

Jonga **iantibhodi**; **iphasisvu-imyunithi**

active transport

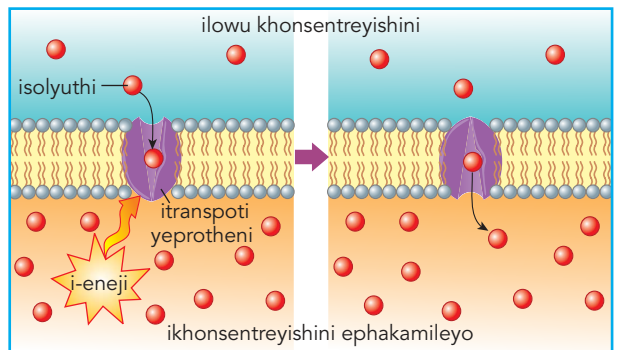
iekthivu transpoti (kwibhayoloji)

Ukusetyenziswa kwe-eneji ukuhambisa iimoletyhuli kwimembreyini nangokuchasene negradiyenti yekhonsentreyishini – ngamanye amazwi, 'uphill'.

Oku kuchasene nedayireskhini apho isabstensi idla ngokuhamba ngokuphasivu – njengakwidifyuzhini. Umzekelo we-ekthivu transpoti ukwiinefroni zezintso. Isodiyam klorayidi ihamba 'ngokuekthivu' iphuma kwiinefron, isenza ikhonsentreyishini ephhezulu yeeayoni kwimedula.

Kubaluleke kakhulu oku kwezinye iiaspekthi zefankshini yentso. Kusengenzeka ukuba zonke iiseli eziphilayo zisebenzisa iimekhanizim ze-ekthivu transpoti ukuhambisa iimoletyhuli ezahlukeneyo kwiimembreyini. Umzekelo obalulekileyo we-ekthivu transpoti ngowokuba, xa imekhanizim ye-ekthivu transpoti kwiiseli ezibomvu zegazi yenziwe ayasebenza, iiseli ziyadumba zize zigqabhuke ngokukhawuleza. Iiseli zenevu (umthamboluvo) zigcina iielektrikhali phothenshiyali difarensi kwimembreyini yeseli ngoku'mpompa' iayoni kwimembreyini. Le prosesi ibalulekile kwikhondakshini yenevu ekshini phothenshiyali.

Jonga **idifyuzhini**; **imedala**; **inifroni**



adaptation

iadapttheyishini Iprosesi ebaluleke kakhuku, kodwa ekhe ngamaxesha athile ingaqondwa kakuhle kwaye ixoxise ngexa yokuba igama elinye lingasebenziseka ngeendlela ezahlukeneyo. Kwievolushini, iadapttheyishini ichazwa njengeprosesi apho ioganizim ithi ikwazi ukuhlala kwihabhithethi yayo. (Igama elithi oganizim libhekiselela kwijenereyishini ezininzi ngakumbi udidi oluthile lweoganizim, alibhekisi kwioganizim enye, ethile.) I-prosesi zeadaptheyishini zenzeka ngokucutha okukhulu, oko kusenzeka kwijenereyishini zeoganizim ngokwaloo ndlela ihlala ngayo, kananjalo nangendlela enxibelelana ngayo ne-envayiromenti yayo. Ngoko ke iadapttheyishini isekeke kwiprosesi yeivolushini. Ioganizim ziadaptha kwiimeko ezahlukeneyo zee-envayiromenti ezahlukeneyo kwijenereyishini ngejenereyishini, iiphophuleyishini zizala ezinye ngokuzimele zodwa kwezinye. Ngenxa yesi sizathu, iindidi ezitsha ziyavela kamva. Le prosesi kuthiwa yisipesiyeyishini.

Ezi nguqu ziyazinceda ioganizim ukuba zikwazi ukuphila, kodwa azigqithiselwa ezo meko kwijenereyishini elandelayo ngokwejenethikhi. Kwixesha elidlulileyo kwakhe kwakho inkolelo yokuba oku kuzilungelelanisa kweeoganizim, kufundwe ekuhambeni kwexesha lokuphila ngexesha elithile, zize zigqithiselwe ijenethikhi zemfuza kwioganizim ezilandelayo. Xa sithetha ngeadapttheyishini sithetha ezi mpawu zisekwe ngokwejenethikhi, ezinceda ioganizim ukuba iphile njengesiphisi nangokugqithiselwa kweejini zemfuza. Iadapttheyishini ezininzi zenzeka ngokwemikhwa (ibhiheviya), ezinye zenzeka kwistraktsha/ulwakhiwo ngeli xesha ezinye zisenzeka ngokwefiziyoloji.

Igama 'uadapttheyishini' likwasetyenziswa ngokumayela nokutshintsha (ukuadapttha) kwerethina ngenxa yokuba sensithivu kwiamawunti yokukhanya okungena emehlweni. Ebumnyameni iliso liba sensithivu kakhulu ekukhanyeni kunaxa kukwiindawo ezikhanyayo. Sithetha 'ngeliso eliadapthe ebumnyameni' okanye 'iliso eliadapthe ekukhanyeni'.

Jonga **iifintshi zikaDarwini; irethina; isipesiyeshini**



I-Gemsbok ikulungele ukuhlala kwindawo enamanzi anqabileyo. Ziyakwazi ukufumana amanzi eziwafunayo kwizinto zokutya ezinjengezityalo ezinamanzi ngaphandle kokusela amanzi.

adenoids

iiadenoyidi Amasuntswana amancinane elimfoyidithishu angasemva empumleni. Ezi thishu ziyinxalenye yeimyunisistim, kwaye zenzelwe ukukhawulelana neemathiriyeli ezingene empumleni nokuphefumla. Iithishu zeadenoyidi ziye zibe nkulu zize ziphazamisane nokuhamba komoya empumleni. Ezi thishu ziye zisuswe ngeopareyishini elula.

Jonga **iithonsile**

adenosine diphosphate

iadenosin difosfeti Jonga **i-ADP**

adenosine triphosphate

iadenosin trayifosteti Jonga **i-ATP**

adhesion

iadheshini Xa ixabiso okanye imoletyhuli incamathela kwenye into okanye uhlobo lwemoletyhuli. Umzekelo, imoletyhuli zamanzi zithanda ukuncamathela kumphezulu weeglassi. Oku kufanelekile, umzekelo, kwinkqubo yekhaphilan atrakshini (khaphilarithi).

Jonga **ikhaphilarithi; ikhohere**

A iadiyabhathiki

adiabatic

iadiyabhathiki Ukungadlulisi; ivalekile. Eli gama lisetyenziswa kwiisistim apho bungangeniyo ubushushu okanye bungemkiyo kwisistim ngexesha leprosesi ethile.

Jonga *iyisothermali*; *ubushushu neqondo lobushushu*; *irifrijireyshini*

adipocyte

iadiphosayithi Luhlobo lweseli yesilwanyana elenza liphinde ligcine amafutha.

adipose

iadiphowuzi Amafutha okanye okunxulumene namafutha.

adjuvant

iajuventi Into ethi ibe luncedo kwiprosesi. Ligama elisetyenziswe ngokukodwa kwimeko yonyango. Ezinye izinto azinakongezwa eyezeni, okanye kwisicwangciso sonyango, ukuxhasa nokuqinisa inkqubo. Ezi zinto zongezelelweyo ziphinde zisetyenziswe njengeajuventi.

ADP

ADP Isifinyezo seadenosini dayifosfethi. I-ADP yenziwa xa iATP iphulukana nelinye lamaqela ayo efosfeyithi, kwaye ikhuphe amandla. Amandla athi emva koko asetyenziselwe iintlobo ezahlukeneyo zamandla ezifuna ukusabela (phendula komzimba). I-ADP iphinde idityaniswe neqela lefosfethi ukubuyisela iATP. Amandla afunekayo ukufezekisa oku anikezelwa kumandla akhutshwe xa iswekile okanye ezinye iimoletyhuli zepetroli ziqhekeziwe.

Jonga *iATP*; *ikhriyethini*

adrenal gland

iadrenal glendi Enye yamadlala ee-endokhtrini zeevethebhreyithi. Kwakhona kuthiwa yi-suprarenal glendi, kuba ifumaneka phezu kwezintso. (*ISupra* ithetha ukuthi 'ngentla'.) Iadrenal glendi iqulethe ikhotheksi ngaphandle nemedula ngaphakathi. Iihomoni ezahlukahlukeneyo zifihlwe kwikhotheksi nakwimedula. Iadrenalini, umzekelo, ikhutshwa kwimedula.

Jonga *iadrenalini*

adrenaline

iadrenalini Enye yeehomoni ezifihliweyo ukusuka kwiadrenal medula ukuya egazini. Ikhutshwa ziincam zenevu zesitim yesimpathethikinevu, nenyurotransmitha. Iadrenalini ineempembelelo ezininzi kumalungu omzimba. Yandisa ireyithi yentliziyo, ikhuthaza ukuqhekezwa kweglayikhoni ukuya kwiglukhowusi ezihlunwini, kwaye yandisa iphupili yeliso. Ngokuqhelekileyo ilungiselela umzimba kwiimeko 'zokoyika', 'ukulwa' 'nokubhabha'. Ngamanye amazwi, ilungiselela umzimba ukuba uhlangabezane neemeko zikaxakeka. Iadrenalini ihlelwa njengekhathekholumini. EAmerica, iadrenalini yaziwa njenge-epinefrini.

Jonga *ikhathekholamayini*; *isimpathetiki nevasi-sistim*

adsorption

iadzopshini Yiprosesi apho iiathom okanye iimoletyhuli zitsalwa yisafeyisi yenye isabstensi. Itshakhowuli esebenzayo nejeli yesilika yimekelo yeesabstensi eziabasopha/ezitsala iintlobo ezahlukeneyo zeemoletyhuli zizitsalela kwiisafeyisi zazo.

Jonga *iabzopshini*; *itshakhowuli e-ekthiveyithedi*

adventitious

iadventishiyasi Iimeko eziyingozi, ezinokuvelisa inzuzo. Iingcambu eziluhlobo oluyiadventishiyasi, umzekelo, zingakhula kwindawo engaqhelekanga esityalweni, kwaye zingabonakala ziluncedo.