

## KERNKONSEPTE / KEY CONCEPTS/ KAKANYOKGOLO

FAKULTEIT / FACULTY/LEGORO: Opvoedingswetenskappe / Education Sciences/Disaense tsa Thuto

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Kernbegrip in Afrikaans	Definisie/verklaring in Afrikaans	Key concept in English	Definition/explanation in English	Kakanyokgolo mo Setswaneng	Thanolo/Tlhaloso mo Setswaneng
<b>1. Anorganiese verbinding</b>	'n Eenvoudige stof wat nie 'n koolstofruggraat bevat nie.	<b>1. Inorganic compound</b>	A simple substance that does not contain a carbon backbone.	<b>1.Tswako-go-sa-boleng</b>	Sere se se bonolo se se senang khabono nang le motheo wa khabone.
<b>2. Atoom</b>	Die kleinste hoeveelheid van 'n element wat die chemiese eienskappe van daardie element kan behou.	<b>2. Atom</b>	The smallest quantity of an element that can retain the chemical properties of that element.	<b>2. Atomo</b>	Mothamo o monnye go feta wa elemente o o ka tsholang dipharologantsho tsa sekhemikhale tsa elemente eo.
<b>3. Data</b>	Feitelike inligting wat gedurende 'n ondersoek of	<b>3. Data</b>	Factual information gathered during an investigation or	<b>3. Tshedimosetso</b>	Tshedimosetso ya matota e e kgobokantsweng ka nako ya patlisiso

	eksperiment versamel is.		experiment.		kgotsa tekeletso.
<b>4. Eksperimentele metode</b>	'n Metode wat gebruik word om resultate te verkry wat die hipotese óf ondersteun óf weerlê.	<b>4. Experimental method</b>	A method used to produce results that either support or refute the hypothesis.	<b>4. Mokgwa wa tekelelo</b>	Mokgwa o o dirisiwang go ungwa dipholo tse gongwe di tshegetsang kgotsa di ganang kakanyo.
<b>5. Eukarioties</b>	Organismes met 'n goed-gedefinieerde kern en organelle.	<b>5. Eucaryotic</b>	Organisms having a well-defined nucleus and organelles.	<b>5. Yukariotiki</b>	Ditshedinyana tse di nang le kerene e e tlhalositsweng sentle le dirwetshedi.
<b>6. Hidrolise</b>	'n Reaksie waarin 'n kovalente band tussen twee subeenhede verbreek word deur die byvoeging van 'n watermolekuul.	<b>6. Hydrolysis</b>	A reaction in which a covalent bond between two subunits is broken through the addition of a water molecule.	<b>6. Haeterolise</b>	Tsibogo e tshwaragano ya khobalente gareng ga diyuniti-tlase tse pedi e senngwang ka go tlhakangwa le molekule wa metsi.
<b>7. Katalisator</b>	'n Chemiese stof wat 'n reaksie kan versnel of vertraag, maar self onveranderd bly.	<b>7. Catalyst</b>	A chemical substance which can accelerate or retard a reaction and remains unchanged.	<b>7 Katalise</b>	Sere sa khemikhale se se akofisang kgotsa se diegisang tsibogo mme se sala se sa fetoge.
<b>8. Materie</b>	Enigiets wat oor massa beskik en ruimte beslaan.	<b>8. Matter</b>	Anything that has a mass and take up space.	<b>8. Sere/metara</b>	Sengwe le sengwe se se nang le mmase mme se nna mo sebakeng.
<b>9. Monomeer</b>	Die kleinste subeenheid waaruit 'n chemiese verbinding kan bestaan.	<b>9. Monomer</b>	The smallest subunit of a chemical compound.	<b>9. monomere</b>	Yuniti-tlase e nnye go feta ya tswako ya khemikhale.
<b>10. Nutriënt</b>	Die chemiese stowwe in voedsel wat as komponente vir die sintetisering van benodigde materiale en/of energiebronne gebruik word.	<b>10. Nutrient</b>	The chemical substances in food that are used as components for synthesizing needed materials and/or energy sources.	<b>10. Kotli</b>	Dire tsa sekhemikhale mo dijong tse di dirisiwang jaaka dikarolo tsa go tlhama maula a a tlhokegang le/kgotsa motswedi wa maatla.

<b>11. Organel</b>	Een van die gespesialiseerde strukture binne-in die sel.	<b>11. Organelle</b>	One of the specialized structures within the cell.	<b>11. Serwe-tshedi</b>	Nngwe ya dipopego tse di kgethegileng mo gare ga sele.
<b>12. Organiese verbinding</b>	'n Verbinding wat saamgestel is uit 'n ruggraat van koolstofatome.	<b>12. Organic compound</b>	A compound that is composed of a backbone, made up of carbon atoms.	<b>12. Tswako ya dibodi</b>	Tswako e e dirilweng ka motheo, o o dirilweng ka diatomo tsa khabono.
<b>13. Polimeer (makromolekuul)</b>	'n Verbinding wat opbou is van herhalende subeenhede van dieselfde algemene tipe.	<b>13. Polymer (macromolecule)</b>	A molecule build up of repeating subunits of the same general type.	<b>13. Polimere (molekule-mogolo)</b>	Molekule o o bopilweng ka go boeletsa diyuniti-tlase tse ka kakaretso di tshwanang.
<b>14. Prokarioties</b>	Organismes met 'n gebrek aan 'n membraangebode kern en meeste organelle.	<b>14. Procaryotic</b>	Organisms lacking a membrane-bound nucleus and most organelles.	<b>14. Porokariotiki</b>	Ditshedinyana tse di tlhokang kerene e e potokilweng ke lethla le bontsi ba dire-tshedi.
<b>15. Selmembraan of plasma-membraan</b>	Die selektief deurlaatbare membraan wat die selinhoud omhul en waardeur alle materiale wat die sel binnegaan of verlaat, moet beweeg.	<b>15. Cell membrane or plasma membrane</b>	The selectively permeable membrane that encloses the cell contents and through which all materials entering or leaving the cell must pass.	<b>15. Lethla la sele kgotsa lethla la polasema</b>	Lethla le le sutlhelegang ka tlhotlho le le tswalelang diteng tsa sele le gape maula a a tsenang kgotsa a a tswang mo seleng a fetang ka lona.
<b>16. Selwand</b>	Die struktuur buite-om die plasmamembraan van sekere selle.	<b>16. Cell wall</b>	The structure on the outside of the plasma membrane of certain cells.	<b>16. Lebota la sele</b>	Popego e e mo bokwantleng jwa lethla la polasema la disele tse di riling.
<b>17. Sintese</b>	'n Reaksie waarin twee of meer monomere kovalent verbind deur die verwydering van 'n watermolekuul.	<b>17. Condensation</b>	A reaction in which two or more monomers are combined covalently through the removal of a water molecule.	<b>17. Phokafalo</b>	Tsibogo e dimonomere tse pedi kgotsa go feta di kopanngwang ka moggwa wa khobalente ka go tlosa molekule wa metsi.
<b>18. Sitoplasma</b>	Die plasmamembraan en selinhoud, met uitsluiting van	<b>18. Cytoplasm</b>	The plasma membrane and cell contents with the	<b>18. Saetopolasema</b>	Lethla la polasema le diteng tsa sele kwa ntle ga kerene.

	die kern.		exception of the nucleus.		
<b>19. Sitosol</b>	Die vloeibare bestanddeel van die sitoplasma waarin die organelle dryf.	<b>19. Cytosol</b>	The fluid component of the cytoplasm in which the organelles are suspended.	<b>19. Saetosolo</b>	Karolo ya seedi sa saetopolasema e dire-tshedi di lekeletseng mo go yona.
<b>20. Wetenskaplike metode</b>	Die metode wat wetenskaplikes gebruik om inligting in te samel; dit sluit 'n reeks geordende stappe in (waarneming; hipotese; eksperiment; gevolgtrekking).	<b>20. Scientific method</b>	The method, which includes a series of ordered steps (observation; hypothesis; experiment; conclusion), that scientists use to gather information.	<b>20. Mokgwa wa saense</b>	Mokgwa o o akaretsang tlhatlhamano ya dikgato ka go latelana ( ditemogo; maitlhomo; tekelelo; tshwetso) tse borasaense ba o dirisang go kgobokanya tshedimosetso.
<b>21. Aërobiese respirasie</b>	'n Tipe van respirasie waarin suurstof benodig word.	<b>1. Aerobic respiration</b>	A type of respiration where oxygen is needed.	<b>21. Khemo ya aerobiki</b>	Mofuta wa khemo o okosijene e tlhokegang.
<b>22. Anaërobiese respirasie</b>	'n Tipe van respirasie waarin suurstof nie benodig word nie.	<b>2. Anaerobic respiration</b>	A type of respiration where oxygen is not needed.	<b>22. Khemo e e seng ya aerobiki</b>	Mofuta wa khemo e okosijene e sa tlhokegang.
<b>23. Chromosome</b>	'n Relatief lang, stringagtige struktuur wat in die kern van dier- en plantselle aangetref word. Dit bevat die genetiese materiaal van die organisme.	<b>3. Chromosomes</b>	A relatively long, threadlike structure found in the nucleus of animal and plant cells. It contains the genetic material of the organism.	<b>23. Dikoromosoumo</b>	Popego ya seka-tlhale e telelenyana e e fitlhelwang mo kereneng ya diphologolo le disele tsa dimela. E na le maula a setshedinyana.
<b>24. Energie</b>	Die vermoë van 'n sisteem om arbeid te verrig.	<b>4. Energy</b>	The capacity of a system to do work.	<b>24. Maatla</b>	Kgono ya thulaganyo ya go dira tiro.
<b>25. Fermentasie</b>	'n Vorm van anaërobiese respirasie van organiese stowwe (bv. koolhidrate) waartydens klein hoeveelhede chemiese energie (ATF) vrygestel word.	<b>5. Fermentation</b>	A form of anaerobic respiration of organic substances (e.g. carbohydrates) whereby small amounts of chemical energy (ATP) are released.	<b>25. Pelô</b>	Mofuta wa khemo e e seng ya aerobiki ya dire tse di bolang (sk dikhabohaetereiti) mo maatla a mannye a khemikhale (ATP) a gololwang.

<b>26. Fosforilasie</b>	'n Ensiemproses waarin 'n organiese stof met 'n fosfaatgroep verbind.	<b>6. Phosphorylation</b>	An enzymatic process in which an organic substance combines with a phosphate group.	<b>26. Foseforileišene</b>	Tirego ya ensime mo sereng se se bolang se se kopanngwang le setlhopha sa difosefate
<b>27. Fotosintese</b>	'n Fotochemiese proses waarin groen plante organiese verbindings vervaardig deur gebruik te maak van lig, chlorofil, koolsuurgas en water.	<b>7. Photosynthesis</b>	A photochemical process in which green plants manufacture organic compounds using light, chlorophyll, carbon dioxide and water.	<b>27. Fotosintese</b>	Thulaganyo ya marang-khemikhale e dimela tse tala di tthamang dire tse di bolang e dirisa lesedi, tlolorofili, khabontaokosaete le metsi.
<b>28. Gametogenese</b>	Die proses van gameetvorming.	<b>8. Gametogenesis</b>	The process of gamete formation.	<b>28. Gemetojenese</b>	Thulaganyo ya popo ya gamete.
<b>29. Geen</b>	'n Chromosoomsegment, bestaande uit DNA, wat as 'n eenheid van oorerflikheids-inligting dien.	<b>9. Gene</b>	A segment of a chromosome, consisting of DNA, that serves as a unit of hereditary information.	<b>29. Jine</b>	Karolwana ya korosome e e nang le DNA, e e dirang jaaka yuniti ya tshedimotsetso ya bojaboswa.
<b>30. Glikolise</b>	Die eerste fase van sellulêre respirasie, waarin 'n glukose-molekuul in pirodruiwesuur gesplits word. ATP word terselfdertyd vervaardig.	<b>10. Glycolysis</b>	The first stage of cellular respiration, in which a glucose molecule is split into pyruvate, accompanied by the production of ATP.	<b>30. Tlelaekolose</b>	Kgato ya ntlha ya khemo ya sele, fa molekule wa tlelekouse o kgaoganang go nna pirobeiti, e patilwe ke go ntsha ATP.
<b>31. Katalisator</b>	'n Chemiese stof wat 'n chemiese reaksie kan versnel of vertraag, maar self onveranderd bly.	<b>11. Catalyst</b>	A chemical substance which can accelerate or retard a chemical reaction, and remains unchanged.	<b>31. Katalise</b>	Sere sa khemikhale se se akofisang kgotsa se diegisa tsibogo mme se nna se sa fetoge.
<b>32. Meiose</b>	'n Tipe kern- en selverdeling waarin die chromosoomgetal van diploïed na haploïed verminder word.	<b>12. Meiosis</b>	A type of nuclear and cell division in which the chromosome number is reduced from diploid to	<b>32. Meiose</b>	Mofuta wa kgaoganyo ya kerene le sele e aplo ya korosome e fokoletswang go tswa go dipoloete go ya go hapoloete.

			haploid.		
<b>33. Mitose</b>	'n Tipe kernverdeling met chromosoomvorming, wat daartoe lei dat elke dogterkern dieselfde aantal chromosome as die moederkern bevat.	<b>13. Mitosis</b>	A type of nuclear division with chromosome formation, which results in each daughter nucleus containing the same number of chromosomes as the parent nucleus.	<b>33. Mitose</b>	Mofuta wa kgaoganyo ya kerene o go tlangwang korosome, mo letlhogela la kerene le nang le palo e e tshwanang ya dikromosome jaaka motsadi wa kerene.
<b>34. Nukleïensuur</b>	'n Organiese molekule wat uit nukleotiedsubeenhede saamgestel is.	<b>14. Nucleic acid</b>	An organic molecule composed of nucleotide sub-units.	<b>34. Asiti ya kerene</b>	Molekule wa sebodi o o dirilweng ke diyuniti-tlase tsa nyutletite.
<b>35. Nukleotied</b>	'n Individuele subeenheid (monomeer) waait nukleïensuur saamgestel word.	<b>15. Nucleotide</b>	An individual sub-unit (monomer) of which nucleic acids are composed.	<b>25. Nyutlitite</b>	Yuniti-tlase e e nosi ( monomere) e diasiti tsa kerene di tlamilweng ka yona.
<b>36. Organiese verbindings</b>	'n Verbinding wat uit 'n ruggraat van koolstofatome saamgestel is.	<b>16. Organic substance</b>	A compound that is composed of a backbone made up of carbon atoms.	<b>36. Sere sa sebodi</b>	Tswako e e dirilweng ka diatomo tsa khabono e le motheo.
<b>37. Oksidasie</b>	Enige proses wat die byvoeging van suurstof behels.	<b>17. Oxidation</b>	Any process involving the addition of oxygen.	<b>37. Okosetasi</b>	Thulaganyo ya go akaretsa go tlaleletswa ga okosijene.
<b>38. Proteïen-sintese</b>	'n Proses waarin proteïenmolekules deur die binding van aminosure gevorm word.	<b>18. Protein synthesis</b>	A process in which protein molecules are formed through the linkage of amino acids.	<b>38. Tlhamo-poroteine</b>	Thulaganyo e dimolekule tsa poroteine di tlangwang ka kopanyo ya diaminoasiti ka teng.
<b>39. Respirasie (sellulêre respirasie)</b>	'n Proses in lewende organismes waardeur die sel chemiese energie (ATP) deur 'n reeks chemiese reaksies genereer.	<b>19. Respiration (cellular respiration)</b>	A process in living organisms by which the cell generates chemical energy (ATP) through a series of chemical reactions.	<b>39. Khemo (khemo ya sele)</b>	Thulaganyo mo ditsheding tse sele e fetlang maatla a khemikhale (ATP) ka tlatlhamano ya ditsibogo tsa sekhemikhale.
<b>40. Sitokinese</b>	Die veranderinge wat gedurende kernverdeling in die algemene sitoplasma	<b>20. Cytokinesis</b>	The changes occurring in the general cytoplasm during nuclear division.	<b>40. Sitokinese</b>	Phapang e e diregang mo saetopolaseme ka kakaretso motlang

	plaasvind.				wa karogo ya kerene.
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