Grade 10 June exam 2025

Marks: 150

Duration 2hrs30min

Торіс	Breakdown of topic	Investigations	Possible
			drawings
Biosphere to ecosystem	Biosphere	Water holding	Food chain
	Concept of the biosphere. Inter-	capacity or	
56 Marks	connectedness with and components of	humus content	Food pyramid
	global ecosystems: hydrosphere,	of soil	
	lithosphere, atmosphere		Food web
	<u>Biomes</u>		
	Terrestrial and aquatic biomes of		
	Southern Africa: how climate, soils and		
	vegetation influence the organisms found		
	in each. Location of different biomes in		
	South Africa		
	<u>Environment</u>		
	Concept of environment to show human		
	activities in and interactions with the		
	natural environment.		
	Abiotic and biotic factors. Effects on the		
	community		

<u>Ecosystems</u>	
Concept of ecosystem	
Structure and ecosystem functioning	
Abiotic factors	
-physiographic factors (aspect, slope,	
altitude)	
-soil (pH, humus content, texture, water	
retention capacity, air content)	
-light (day length, seasonal changes)	
-temperature (effect of day/night,	
seasons)	
-water (water cycle, importance of	
wetlands)	
-atmospheric gases	
-wind	
Biotic factors	
-producers	
-consumers	
-decomposers	
Energy flow	
Energy flow through ecosystems and	
relationship to trophic structure (food	
pyramids)	
-Trophic levels: producers, consumers	
(herbivores and carnivores and	
omnivores, decomposers	

	Cycles	
	Flow charts of the following:	
	-nutrient	
	-water	
	-Oxygen	
	-carbon	
	-nitrogen	
Biodiversity and classification	Classification schemes: a way of	
	organizing biodiversity	
19 Marks	Brief history of classification: scientist	
	attempt to classify organisms based on	
	shared features. As information	
	increases classification changes	
	One of the currently accepted	
	classification systems is the Five-	
	<u>kingdom system;</u> Animalia, Plantae,	
	Fungi, Protista and Monera (Bacteria)	
	-naming things in science: species	
	concept and <u>binomial system</u> .	
	Linnaeus (Carl von Linne) and his role in	
	classification systems:	
	Why do we use Latin?	
	- <u>differences between p</u> rokaryotes and	
	eukaryotes	
	Main groupings of living organisms are	
	bacteria, protists, fungi, plants and	
	animals.	

History of life on earth	Life's History	
-	Different representations of the history of	
28 Marks	life on earth.	
	The relationship to changes in climate	
	(e.g. Increase in oxygen levels, ice ages)	
	and geological events (e.g. movement of	
	continents; introduction to biogeography)	
	The three eras: Paleozoic, Mesozoic and	
	Coenozoic. Each era divided into periods	
	(names of periods not to be memorized).	
	<u>Geological timescale</u>	
	Meaning and use of timescales (details	
	not to be memorized)	
	<u>Cambrian explosion</u>	
	Origins of early forms of all animal	
	groups.	
	Life-forms have gradually changed to	
	become present life-forms. In the	
	last four million years significant	
	changes have occurred in species	
	occurring in Africa (e.g., humans)	
	Maaa autinationa	
	<u>Mass extinctions</u>	
	Inere nave been five, two of which are	
	particularly important: 250mya (resulted	
	In the extinction of about 90% of all life on	
	Earth) and 65mya (resulted in the	

	extinction of many species, including the		
	dinosaurs)		
	The rate extinction on the Earth at present		
	is higher than at any time in the past. <i>The</i>		
	present time has been called the sixth		
	extinction		
	Fossil formation and methods of dating		
	e.g. radiometric dating and relative dating		
Chemistry of life	Molecules for life:	INVESTIGATION	Lipid
-	Organic molecules made up of C, H, O	Food test for	•
28 Marks	and N, P. Cells are made up of proteins,	glucose	
	carbohydrates, lipids, nucleic acids and	-	
	vitamins. (only basic structural detail	INVESTIGATION	
	required)	Food test for	
	Inorganic compounds	starch	
	Water : 2 H and		
	10	INVESTIGATION	
		Food test for	
	Minerals: e.g. Na, K, Ca, P, Fe, I, nitrates,	lipids	
	phosphates. Macro and micro elements.		
	Main functions and deficiency diseases	INVESTIGATION	
		Food test for	
	<u>Carbohydrates</u> – monosaccharide's	proteins.	
	(single sugars) e.g. glucose, fructose;		
	disaccharides (double sugars) e.g.	INVESTIGATION	
	sucrose, maltose; polysaccharides (many	Investigation to	
	sugars) e.g. starch, cellulose, glycogen	test the working	
		of a "biological"	
	Organic compounds	washing	

	powder with	
Lipids (fats and oils) – 1glycerol and 3	enzymes.	
fatty acids: unsaturated and saturated	OR	
fats. Cholesterol in foods. <mark>Heart disease</mark>	Hydrogen	
	Peroxide and	
Protein – amino-acids (C, H, O and N and	chicken liver to	
some have P, S, Fe). Proteins are	demonstrate	
sensitive to temperature and pH; loss of	effect of	
structure and function.	enzyme.	
Role of <u>enzymes</u> in breaking	OR	
down/synthesizing molecules	Fresh	
Influence of temperature and pH on	pineapple	
enzyme action	juice, egg white	
	in plastic	
Lock and	drinking straw.	
<u>key model</u> of how enzymes work		
Enzymes in everyday life, e.g. washing	Observe,	
powders.	measure and	
Mention of Nucleic acids: DNA and RNA –	record the	
Consisting of C, H, O, N and P (No details	results of the	
of structure required).	above	
<u>Vitamins</u> e.g. A, one of B vitamins, C,D	experiment	
and E	done at	
	different	
	temperatures.	
	INVESTIGATION	
	Use a	
	microscope or	
	micrographs to	

		observe and	
		draw the	
		structure of a:	
		plant cell (wet	
		mount of onion	
		epidermis), and	
		animal cell	
		(cheek cells)	
Cells as the basic unit of life	Cell structure	INVESTIGATION	Chloroplast
	Molecular make-up: Cells are mostly	Investigate	Mitochondrion
19 Marks	made of proteins, carbohydrates, lipids.	diffusion and	
	nucleic acids and water	osmosis.	
	Cell structure and function: roles of		
	organelles		
	<i>Cell wall</i> – support structure in plant cells		
	only.		
	Cell membrane – fluid mosaic model,		
	boundaries and transport: movement		
	across membranes		
	- diffusion		
	-osmosis and		
	-active transport.		
	Nucleus, chromatin material, nuclear		
	membrane, nucleopores, nucleolus: the		
	control centre, heredity.		
	<i>Cytoplasm-</i> storage, circulation of		
	materials		
	Mitochondria – release of energy during		
	cell respiration		

Ribosomes – protein synthesis	٦
Endoplasmic reticulum (rough and	
smooth) transport systems	
<i>Golgi</i> –body – assemble secretion	
<i>Plastids</i> – production and storage of food,	
pigments	
<i>Vacuole</i> , lysosomes, vesicles – storage,	
digestion, osmoregulation	
Relate structure and location of	
organelles to their functions.	
Cells differ in size, shape and structure in	
order to carry out specialized functions	
Differences between plant	
and animal cells	

Investigative skills required

Skill	Key point
Drawing a:	
Line graph	 The caption must have two variables
Bar graph	 Scale: Equal spaces between units on axes which are in
Histogram	chronological order
Pie chart	 Equal width of the bars and between bars
	 Pie graph must show calculations and a compass &
	protractor must be used
Drawing a:	• Table must be drawn with clear columns and related items must be
Table Diagram with labels	compared
	• Drawing must be in pencil with a definite heading/caption and label
	lines must point to the exact part and the labels written in pen
Answering:	 Use the aim of the investigation to determine the dependent and
Scientific investigative questions	independent variables which is not always the same as the labels on a
	graph or table
	Reliability – repeat the investigation and increase the sample size
	must be linked to the investigation
	• Validity – keep the variables constant e.g., same age, gender,
	environmental conditions etc. the word same must be included
	• Control – to compare results and ensure that the results are due to
	the factor that is tested
	• Difference between the experiment and the control. With the control
	you eliminate the factor that you test. With the experiment you provide
	the factor you test
Do	Simple calculations
calculations	Percentage
	• Average
	Percentage increase or decrease formula
	Convert calculations to a description

Tips from A Ngubane

- Use reading time to plan how you will answer each question and manage your time wisely.
- Read the instructions of the question paper and follow them.
- Do not create a cover page, start answering from the first page of your answer book.

Exam tips

- All diagrams for each topic must be studied
- All activities given in the classroom must be studied
- Practice terminologies
- practice all topic tests
- show calculations even when not asked to

Use the link for past papers