



PHYSICAL SCIENCES
SCOPE FOR EXAMINATIONS 2021: GRADE 12

MARCH CONTROLLED TEST (100 marks)			
PAPER	TOPICS	MARK	DURATION
ONE PAPER ONLY	<p>Mechanics</p> <p>Momentum & Impulse:</p> <ul style="list-style-type: none">✓ Momentum, Newton's second law expressed in terms of Momentum,✓ Conservation of momentum and Elastic and Inelastic collisions. <p>Vertical projectile motion in one dimension (1D):</p> <ul style="list-style-type: none">✓ represented in words, diagrams, equations and graphs <p>Grade 11 Work</p> <ul style="list-style-type: none">✓ Newton's Laws (Newton 1, 2, 3)✓ Newton's Law of Universal Gravitation)✓ Applications of Newton's Laws	50	2 hours
	<p>Matter and Materials</p> <p>Organic molecules:</p> <ul style="list-style-type: none">✓ Organic molecular structures - functional groups, saturated and unsaturated structures, isomers✓ IUPAC naming and formulae✓ Structure physical property relationships✓ Applications of organic chemistry - Substitution, addition and elimination. (ONLY alkanes, alkenes, alkynes, alcohols, haloalkanes, carboxylic acids, and esters) <p>Grade 11 Work</p> <ul style="list-style-type: none">✓ Inter-molecular forces <p>NB: Quantitative aspects of chemical change may be asked across chemistry.</p>	50	

JUNE CONTROLLED TEST (100 marks)			
	NB: Only second terms work will be assessed.		
PAPER	TOPICS	MARKS	DURATION
ONE PAPER ONLY	<p><u>Mechanics</u> Work, Energy & Power: ✓ Definition of Work, ✓ Work –Energy Theorem ✓ Conservation of energy with non-conservative forces ✓ Power</p> <p><u>Waves, Sound and Light</u> ✓ Doppler Effect (relative motion between source observer) Application Of Doppler effect. ✓ With sound and ultrasound, ✓ With light - red shifts in the universe (Evidence for the expanding universe).</p>	50	2 hours
	<p><u>Chemical Change</u> Rate and Extent of Reaction: ✓ Rates of reaction ✓ factors affecting rate (nature of reacting substances, concentration [pressure for gases], temperature and presence of a catalyst) ✓ Measuring rates of reaction; Mechanism of reaction and of catalysis</p> <p>Chemical Equilibrium: ✓ Chemical equilibrium ✓ Factors affecting equilibrium ✓ Equilibrium constant ✓ Application of equilibrium principles.</p> <p>Acids and Bases: ✓ Definitions, strong and weak, concentrated and dilute, conjugate acid-base pairs, neutralization, titrations ✓ pH calculations ✓ Dilution and neutralization ✓ Acid-base reactions ✓ Calculations.</p> <p>Grade 10 Work ✓ Representing chemical change</p> <p>Grade 11 Work ✓ Quantitative aspects of chemical change & Energy and Change</p>	50	

PREPERATORY EXAMINATION: *To be set by the Province*

FORMAT OF QUESTION PAPERS

Paper 1: Physics 3 hours	Paper 2: Chemistry 3 hours
SECTION A: Multiple-choice questions	SECTION A: Multiple-choice questions
SECTION B: Conceptual questions assessing all themes	SECTION B: Conceptual questions assessing all themes
Total: 150 marks	Total: 150 marks

Note: Full Papers will be written, including selected examinable Grades 10 & 11 Topics (p149 CAPS Document)

MARK ALLOCATION PER KNOWLEDGE AREA: **PREPERATORY EXAMINATIONS GR 12**

	Knowledge Area	Theme	Marks
	PAPER 1	Mechanics (±43,3%)	Newton's Laws (1,2,3) and Law of Gravitation
Momentum (1D), Impulse and change in momentum			
Vertical projectile motion (1D)			
Work, power and energy			
Waves, sound and light (±10%)		Doppler effect	15
Electricity and Magnetism (±36,7%)		Electrostatics (Grade 11)	55
		Electric circuits (Grades 11 & 12)	
	Electrodynamics Grade 12		
	Electromagnetic radiation Grade 12		
Matter and materials (10%)	Optical phenomena and properties of materials	15	
		TOTAL	150
	Knowledge Area	Theme	Marks
	PAPER 2	Matter and materials (±38,7%)	Organic molecules
Chemical change (±61,3%)		Rate and extent of reaction, Chemical Equilibrium	92
		Electrochemical reactions	
		Acids and Bases	
		TOTAL	150

COGNITIVE LEVELS

Cognitive level description	Paper 1 Weighting % Paper 2	
Remembering	15	15
Understanding	35	40
Applying and Analysing	40	35
Evaluating	10	10