kzn education

Department:
Education
KWAZULU-NATAL

PHYSICAL SCIENCS
SCOPE FOR EXAMINATIONS 2025: GRADE 12

MARCH CONTROLLED TEST (100 marks)			
PAPER	**TOPICS**	**MARK**	**DURATION**
ONE PAPER ONLY	**Mechanics** **Momentum & Impulse:** ✓ Momentum, Newton's second law expressed in terms of Momentum, ✓ Conservation of momentum and Elastic and Inelastic collisions. ✓ Vertical projectile motion in one dimension (1D): ✓ represented in words, diagrams, equations and graphs **Grade 11 Work** ✓ Newton's Laws (Newton 1, 2, 3) ✓ Newton's Law of Universal Gravitation) ✓ Applications of Newton's Laws **NB: PLEASE NOTE GRAPHS AND IT'S INTERPRETATION CAN BE ASSESSED ACROSS ALL TOPICS.**	50	2 hours
	Matter and Materials **Organic molecules:** ✓ 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. (Functional Groups: alkanes, alkenes, alkynes, alcohols, haloalkanes, ketones, aldehydes, carboxylic acids, and esters) **Grade 11 Work** ✓ Inter-molecular forces ✓ **NB:** Quantitative aspects of chemical change may be assessed across chemistry. **NB: PLEASE NOTE GRAPHS AND IT'S INTERPRETATION CAN BE ASSESSED ACROSS ALL TOPICS.**	50	

JUNE EXAMS (2 PAPERS)			
PAPER	**TOPICS**	**MARKS**	**DURATION**
PAPER 1	**Mechanics** **Momentum & Impulse**: ✓ Momentum, Newton's second law expressed in terms of Momentum, ✓ Conservation of momentum and Elastic and Inelastic collisions. **Vertical projectile motion in one dimension (1D):** ✓ represented in words, diagrams, equations and graphs **Grade 11 Work** ✓ Newton's Laws (Newton 1, 2, 3 and Universal Gravitational Law) ✓ Applications of Newton's Laws ✓ Electrostatics ✓ Electric Circuits **Work, Energy & Power:** ✓ Definition of Work, ✓ Work –Energy Theorem ✓ Conservation of energy with non-conservative forces ✓ Power **Waves, Sound and Light: Doppler Effect** ✓ Doppler Effect Calculations ✓ Application with sound and ultrasound, ✓ Application with light – blue shifts and red shifts in the universe (Evidence for the expanding universe).	150	3 Hours
PAPER 2	**Organic molecules:** ✓ 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. (Functional Groups: alkanes, alkenes, alkynes, alcohols, haloalkanes, ketones, aldehydes, carboxylic acids, and esters) **Chemical Change** **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 **Chemical Equilibrium:** ✓ Chemical equilibrium ✓ Factors affecting equilibrium ✓ Equilibrium constant ✓ Application of equilibrium principles.	150	3 Hours

	Acids and Bases ✓ Definitions, strong and weak, concentrated and dilute, conjugate acid-base pairs, neutralization, titrations ✓ Comparison of K_a and K_b values of strong and weak acids and bases ✓ pH calculations ✓ Dilution and neutralization ✓ Acid-base reactions ✓ Calculations (Quantitative aspects of chemical changes) ✓ Practical work: Standards solutions and titrations		

PREPARATORY EXAMINATIONS

FORMAT OF QUESTION PAPERS

Paper 1: Physics 3 hours	Paper 2: Chemistry 3 hours
SECTION A:	**SECTION A:**
Multiple-choice questions	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: PREPARATORY EXAMINATIONS GR 12

	Knowledge Area	Theme	Marks
PAPER 1	Mechanics (±43,3%)	Newton's Laws (1,2,3) and Law of Gravitation	65
		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**
PAPER 2	**Knowledge Area**	**Theme**	**Marks**
	Matter and materials (±38,7%)	Organic molecules	58
	Chemical change (±61,3%)	Rate and extent of reaction, Chemical Equilibrium	92
		Electrochemical reactions	
		Acids and Bases	
		TOTAL	**150**

COGNITIVE LEVELS

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