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SBA GUIDELINES
Practical work:

- **Learners should do TWO experiments (ONE Chemistry, ONE Physics) for SBA.**
- **Term 1: Choose ONE experiment.**
- **Term 2 OR Term 3: Choose ONE experiment. Record the mark in term 3.**
- **The suggested formal experiments NOT chosen for SBA, should become informal experiments.**

2021 National Recovery ATP: Grade 12 Term 1: PHYSICAL SCIENCES

TERM 1 (45 days)	**Week 1** 27 - 29 Jan (3 days)	**Week 2** 1 - 5 Feb (5 days)	**Week 3** 8 – 12 Feb (5 days)	**Week 4** 15 - 19 Feb (5 days)	**Week 5** 22 - 26 Feb (5 days)	**Week 6** 1 - 5 March (5 days)	**Week 7** 8 - 12 March (5 days)	**Week 8** 15 - 19 March (5 days)	**Week 9** 22 - 26 March (4 days)	**Week 10** 29 - 31 March (3 days)
CAPS Topics	**MECHANICS: Momentum &** Impulse **(2 hrs)**	**MECHANICS: Momentum & Impulse (4 hrs)**	**MECHANICS: Momentum & Impulse (4 hrs)**	**MECHANICS: Vertical projectile motion (4 hrs)**	**MECHANICS: Vertical projectile motion (4 hrs)**	**MATTER & MATERIALS: Organic molecules (4 hrs)**	**MATTER & MATERIALS: Organic molecules (4 hrs)**	**MATTER & MATERIALS: Organic molecules (4 hrs)**	**MATTER & MATERIALS: Organic molecules (3 hrs)**	**CONTROL TEST (2 hrs)**
Topics /Concepts, Skills and Values	• Define & calculate the momentum of a moving object: p = mv • Describe the vector nature of momentum & draw vector diagrams. • State Newton's second law in terms of momentum: $F_{net}= \frac{\Delta p}{\Delta t}$ • Calculate the change in momentum when a resultant force acts on an object.	• Define impulse • Use the impulse-momentum theorem ($F_{net}\Delta t = m\Delta v$) in calculations for a variety of situations (one dimension). • Impulse and safety considerations. • State the principle of conservation of linear momentum. • Explain what is meant by an isolated system, internal and external forces.	• Apply conservation of momentum to collisions of two objects (one dimension). • Distinguish between elastic and inelastic collisions by calculation.	• Explain what is meant by a projectile. • Use equations of motion to determine the position, velocity and displacement of a projectile at any given time. • Sketch x vs t, v vs t and a vs t graphs for a free falling object, an object thrown vertically upwards, an object thrown vertically downwards & bouncing objects.	• For given x vs t, v vs t or a vs t graphs, determine position, displacement and velocity or acceleration at any time t. • For given x vs t, v vs t or a vs t graphs, describe the motion of an object bouncing, thrown vertically upwards & thrown vertically downward.	• Define organic molecules, functional group, hydrocarbon, homologous series, saturated, unsaturated and structural isomer. • Write condensed, structural & molecular formulae (max 8 C atoms, 1 functional group per molecule) for alkanes (no rings), alkenes (no rings), alkynes, alcohols, haloalkanes (no rings), carboxylic acids, aldehydes, ketones, esters • Write IUPAC names for structural/ condensed structural formulae for compounds from above series.	• Write IUPAC names from structural or condensed structural formulae for compounds listed (one functional group per molecule, max. two functional groups for haloalkanes). • Identify alkyl substituents (methyl- and ethyl-); max. THREE alkyl substituents. • Identify compounds that are saturated, unsaturated, structural isomers (chain, positional, functional). • Physical properties: boiling point, melting point, vapour pressure	• Relationship between physical properties and strength of IMF, type of functional group, chain length and branching • Combustion of alkanes in excess oxygen and use as fuels. • Equation & reaction conditions for the formation of an ester and IUPAC names for reactant and products. • Classify reactions as elimination, addition or substitution. • Equations and reaction conditions for addition reactions of alkenes.	• Equations and reaction conditions for elimination reactions: dehydrohalo-genation of haloalkanes, cracking of alkanes, dehydration of alcohols • Equations and reaction conditions for substitution reactions: hydrolysis of haloalkanes, halogenation of alkanes • Plastics & polymers:	**ONE PAPER (100 marks)** • Newton's laws of motion • Momentum and impulse • Vertical projectile motion • Organic molecules
Requisite pre-knowledge	Newton's laws of motion	Newton's laws of motion Equations of motion	Momentum Equations of motion	Equations of motion	Equations of motion	Chemical bonding Valency	Intermolecular forces	IUPAC naming, writing different formulae.	IUPAC naming, writing different formulae.	N/A
Resources (other than textbook) **to enhance learning**	• Mind the Gap • Study guides • YouTube & Mindset videos • PhET simulations • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • PhET simulations • Previous question papers	• Apparatus: Conservation of momentum • Mind the Gap • Study guides • YouTube & Mindset videos • PhET simulations • Previous qpapers	• Apparatus for experiment below. • Mind the Gap • Study guides • YouTube & Mindset videos • PhET simulations • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • PhET simulations • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • Previous question papers	• Apparatus: Chemicals and apparatus for experiment below. • Mind the Gap • Study guides • YouTube & Mindset videos • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • Previous question papers	N/A
Assessment **Informal Assessment:** Remediation	• Homework	• Homework	• Homework • Informal test	• Homework	• Homework • Informal test	• Homework	• Homework • Informal test	• Homework	Homework Informal test	N/A
Assessment **SBA (Formal) Choose ONE experiment**	None	None	Formal practical (Physics): Conservation of linear momentum	Formal practical (Physics): Determine the acceleration due to gravity	None	None	None	Formal practical: (Chemistry) Preparation of three esters. **OR** Reactions of alkanes and alkenes with Br_2	None	Control test

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2021 National Recovery ATP: Grade 12 – Term 2: PHYSICAL SCIENCES

TERM 2 (51 days)	Week 1 13 – 16 April (4 days)	Week 2 19 – 23 April (5 days)	Week 3 28 – 30 April (3 days)	Week 4 3 – 7 May (5 days)	Week 5 10 -14 May (5 days)	Week 6 17 - 21 May (5 days)	Week 7 24 - 28 May (5 days)	Week 8 31 May – 4 June (5 days)	Week 9 7 – 11 June (5 days)	Week 10 14 – 18 June (4 days)	Week 11 21 – 25 June (5 days)
CAPS Topics	**CONTROL TEST: Discussion (2 hrs) MECHANICS: Work, energy and power (1 hr)**	**MECHANICS: Work, energy and power (4 hrs)**	**MECHANICS: Work, energy and power (2 hrs)**	**WAVES, SOUND & LIGHT: Doppler Effect (4 hrs)**	**WAVES, SOUND & LIGHT: Doppler Effect (2 hrs) CHEMICAL CHANGE: Rate and extent of reaction (2 hrs)**	**CHEMICAL CHANGE: Rate and extent of reaction (4 hrs)**	**FORMAL TEST & DISCUSSION (2 hrs) CHEMICAL CHANGE: Chemical equilibrium (2 hrs)**	**CHEMICAL CHANGE: Chemical equilibrium (4 hrs)**	**CHEMICAL CHANGE: - Chemical equilibrium (2 hrs) - Acids and bases (2 hrs)**	**CHEMICAL CHANGE: Acids and bases (3 hrs)**	**CHEMICAL CHANGE: Acids and bases (4 hrs)**
Topics /Concepts, Skills and Values	**Control test** • Discussion and corrections of March control test. **Work** • Define the work done on an object. • Draw force diagram & free-body diagrams. • Calculate the net work done on an object. • Distinguish between positive work and negative net work done on the system.	• State the work-energy theorem. • Apply the work-energy theorem on horizontal, vertical and inclined planes. • Define conservative and non-conservative forces and give examples. • State the principle of conservation of mechanical energy. • Solve problems using the equation $W_{nc} = \Delta E_k + \Delta E_p$ • Show that E_{mech} is conserved in absence of non-conservative forces.	• Define power and calculate the power involved when work is done • Perform calculations using $P_{ave} = Fv_{ave}$ when an object moves at a constant speed along a rough horizontal surface or a rough inclined plane. • Calculate the minimum power required of an electric motor to pump water from a borehole of a particular depth at a particular rate using $W_{nc} = \Delta E_k + \Delta E_p$	• State the Doppler effect and explain (using illustrations) the change in pitch observed when a source moves toward or away from a listener (sound and ultra sound). State applications of the Doppler effect. • Solve problems using $f_L = \frac{v \pm v_L}{v \pm v_S} f_s$ when EITHER source or listener moves.	**Doppler effect** • With light, explain 'red shifts' & use the Doppler Effect to explain why we conclude that the universe is expanding. **Rate of reaction** • Define *reaction rate*. • Calculate reaction rate from given data. • List the factors that affect the rate of chemical reactions.	• Explain in terms of the collision theory how the various factors affect the rate of chemical reactions. • Answer questions and interpret data (tables or graphs) on different experimental techniques for measuring the rate of a given reaction. • Define the term *positive catalyst.* • Interpret graphs of distribution of molecular energies to explain how a catalyst, temperature and concentration affect rate.	**Formal Test (50 marks; 1 hour)** • Work, energy and power • Doppler effect • Energy in chemical change (Gr 11) • Rate and extent of reaction **Chemical equilibrium** • Explain: open & closed systems; reversible reactions; dynamic equilibrium • List the factors which influence the position of an equilibrium.	• State Le Chatelier's principle and use it to explain changes in equilibria. • Interpret simple graphs of equilibrium. • List the factors which influence the value of the equilibrium constant K_c. • Write an expression for the equilibrium constant from a given equation. • Perform calculations based on K_c values.	• Perform calculations based on K_c values cont. • Explain the significance of high and low values of the equilibrium constant. **Acids and bases** • Define acids and bases according to Arrhenius and Lowry-Brønsted. • Distinguish between strong and weak acids/bases with examples. • Distinguish between concentrated and dilute acids/bases. • Identify conjugate acid-base pairs for given compounds.	• Write neutralisation reactions of common laboratory acids and bases. • Perform calculations based on titration reactions & motivate the choice of an indicator.	• Titration calculations *cont.* • Determine the approximate pH of salts in salt hydrolysis. • Explain the pH scale and calculate pH values of strong acids and strong bases. • Define the concept of K_w and explain the auto-ionisation of water. • Compare the K_a and K_b values of strong and weak acids and bases. • Compare strong and weak acids by looking at pH, conductivity & reaction rate.
Requisite pre-knowledge	• Gravitational potential and kinetic energy • Equations of motion • Force and free-body diagrams	• Gravitational potential and kinetic energy • Equations of motion • Newton's 2nd law of motion	• Gravitational potential and kinetic energy • Equations of motion • Newton's 2nd law of motion	• Wave properties: frequency, wavelength, amplitude • Graphical representation of waves	• Wave properties: frequency, wavelength, amplitude • Writing of formulae and balanced equations • Energy in chemical reactions – gr 11	• Writing of formulae and balanced equations • Energy in chemical reactions – gr 11	• Writing of formulae and balanced equations • Energy in chemical reactions – gr 11	• Writing of formulae and balanced equations • Stoichiometry	• Writing of formulae and balanced equations • Stoichiometry	• Writing of formulae and balanced equations • Stoichiometry	• Writing of formulae and balanced equations • Stoichiometry
Resources (other than textbook) **to enhance learning**	• March Question paper • Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations • Previous question papers	• Apparatus for experiment below. • Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations • Previous question papers	• Apparatus: Chemicals and apparatus for experiment below. • Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations	• Apparatus: Chemicals and apparatus for experiment below. • Mind the Gap • Study guides • YouTube & Mindset videos	• Mind the Gap • Study guides • YouTube & Mindset videos • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • Previous question papers	• Apparatus: Chemicals and apparatus for experiment below. • Mind the Gap • Study guides • YouTube & Mindset videos	• Mind the Gap • Study guides • YouTube & Mindset videos • Previous question papers

TERM 2 (51 days)		**Week 1 13 – 16 April** (4 days)	**Week 2 19 – 23 April** (5 days)	**Week 3 28 – 30 April** (3 days)	**Week 4 3 – 7 May** (5 days)	**Week 5 10 -14 May** (5 days)	**Week 6 17 - 21 May** (5 days)	**Week 7 24 - 28 May** (5 days)	**Week 8 31 May – 4 June** (5 days)	**Week 9 7 – 11 June** (5 days)	**Week 10 14 – 18 June** (4 days)	**Week 11 21 – 25 June** (5 days)
CAPS Topics		**CONTROL TEST: Discussion (2 hrs) MECHANICS: Work, energy and power (1 hr)**	**MECHANICS: Work, energy and power (4 hrs)**	**MECHANICS: Work, energy and power (2 hrs)**	**WAVES, SOUND & LIGHT: Doppler Effect (4 hrs)**	**WAVES, SOUND & LIGHT: Doppler Effect (2 hrs) CHEMICAL CHANGE: Rate and extent of reaction (2 hrs)**	**CHEMICAL CHANGE: Rate and extent of reaction (4 hrs)**	**FORMAL TEST & DISCUSSION (2 hrs) CHEMICAL CHANGE: Chemical equilibrium (2 hrs)**	**CHEMICAL CHANGE: Chemical equilibrium (4 hrs)**	**CHEMICAL CHANGE: - Chemical equilibrium (2 hrs) - Acids and bases (2 hrs)**	**CHEMICAL CHANGE: Acids and bases (3 hrs)**	**CHEMICAL CHANGE: Acids and bases (4 hrs)**
							• Previous question papers	• Previous question papers			• Previous question papers	
Assessment	**Informal Assessment:** Remediation	• Corrections of March control test • Homework	Homework	• Homework • Informal test	• Homework	• Homework • Informal test	• Homework • Practical: Effect of temperature and concentration on the rate of reaction between $Na_2S_2O_3$ and HCℓ • Informal test	• Homework • Practical: Demonstrate factors that influence the equilibrium of $CoCℓ_2$ & H_2O. (demo)	• Homework	• Homework • Informal test	• Homework • Practical: Titration of oxalic acid against NaOH to determine the concentration of NaOH. • Informal test	• Homework • Informal test
	SBA (Formal)	None	None	Formal practical (Physics): Perform simple experiments to determine the work done and power expended in walking up (or running up) a flight of stairs	None	None	Formal Practical (Chemistry): Determine factors affecting the rate of a reaction	Formal test	None	None	Formal practical: (Chemistry) Determine the unknown concentration of an acid or base by titration against a standard solution.	None

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2021 National Recovery ATP: Grade 12 – Term 3: PHYSICAL SCIENCES

TERM 3 (52 days)	**Week 1 13 – 16 July** (4 days)	**Week 2 19 – 23 July** (5 days)	**Week 3 26 – 30 July** (5 days)	**Week 4 2 – 6 Aug** (5 days)	**Week 5 10 – 13 Aug** (4 days)	**Week 6 16 – 20 Aug** (5 days)	**Week 7 23 – 27 Aug** (5 days)	**Week 8, 9, 10, 11 30 Aug - 23 Sept** (19 days)
CAPS Topics	**ELECTRICITY & MAGNETISM: Electric circuits (3 hrs)**	**ELECTRICITY & MAGNETISM: Electric circuits (4 hrs)**	**ELECTRICITY & MAGNETISM: Electrodynamics (4 hrs)**	**ELECTRICITY & MAGNETISM: Electrodynamics (2 hrs)** **M & M: Optical phenomena and properties of materials (2 hrs)**	**MATTER & MATERIALS: Optical phenomena and properties of materials (4 hrs)**	**CHEMICAL CHANGE: Electrochemical reactions (4 hrs)**	**CHEMICAL CHANGE: Electrochemical reactions (4 hrs)**	**TRIAL EXAMINATION** **P1: 3 hrs** **P2: 3 hrs**
Topics / Concepts, Skills and Values	• Discussion and corrections of June control test. **Electric circuits** • Solve problems involving current, voltage and resistance for circuits containing arrangements of resistors in series and in parallel (maximum four resistors excluding internal resistance).	• Explain the term internal resistance. • Solve circuit problems using $\varepsilon = IR_{ext} + Ir$ or $\varepsilon = V_{load} + V_{int\ resistance}$. • Solve problems, with internal resistance, for circuits containing arrangements of resistors in series and in parallel (maximum four resistors).	• State the energy conversion in generators & use principle of electro-magnetic induction to explain how generators work. • Give examples of uses of AC & DC generators & functions of components. • State the energy conversion in motors & use motor effect to explain how motors work. • Explain the functions of components of motors and give examples of uses of motors. • State the advantages of alternating current over direct current. • Draw and interpret sketch graphs of voltage vs time and current vs time for an AC circuit.	• Define the term *rms* for an alternating voltage or an alternating current. • Solve problems using $I_{rms} = \frac{I_{max}}{\sqrt{2}}$, $V_{rms} = \frac{V_{max}}{\sqrt{2}}$, $P_{ave} = I^2_{rms}R$, $P_{ave} = \frac{V^2_{rms}}{R}$, $P_{ave} = I_{rms}V_{rms}$ $= ½\ I_{max}V_{max}$ (for purely resistive circuit). **Optical phenomena and properties of materials** • Describe the photoelectric effect and state its significance. • Define threshold frequency, f_o. • Define work function, W_o.	• Perform calculations using the photoelectric equation: $E = W_o + K_{max}$, where $E = hf$ and $W_o = hf_o$ and $K_{max} = ½\ m(v_{max})^2$ • Explain the effect of intensity and frequency on the photoelectric effect. • Explain the formation of atomic spectra by referring to energy transition. • Explain the difference between atomic absorption spectra and atomic emission spectra.	• Define oxidation & reduction in terms of electron transfer & oxidation numbers. • Define oxidising & reducing agents in terms of oxidation and reduction. • Define an anode and cathode in terms of oxidation and reduction. • Define an *electrolyte* **Galvanic cells** • Define a galvanic cell. • State the function of salt bridge. • Predict the movement of ions and the direction of electron flow in external circuit. • Write half-reactions at each electrode & the overall cell reaction. • Predict in which half-cell oxidation / reduction takes place. • Use cell notation or diagrams to represent a galvanic cell. • Calculate emf for a galvanic cell. • Explain that V_{cell} decreases as [product ions] increases and [reactant ions] decreases and $V_{cell} = 0$ when equilibrium is reached, (the cell is 'flat'). • State the standard conditions under which standard electrode potentials are determined.	• Describe the standard hydrogen electrode and explain its role as the reference electrode. • Explain how standard electrode potentials can be determined using the reference electrode; state the convention regarding positive and negative values. **Electrolytic cells** • Define an electrolytic cell. • Describe the movement of ions in the solution. • State the direction of electron flow in the external circuit. • Write equations for the half-reactions at the anode and cathode. • Write down the overall cell reaction. • Describe, using half-reactions and the equation for the overall cell reaction as well as the layout of the particular cell using a schematic diagram, the following electrolytic processes: ○ The decomposition of copper(II) chloride ○ Electroplating, e.g. the electroplating of an iron spoon with silver/nickel ○ Refining of copper ○ The electrolysis of a concentrated solution of sodium chloride. Use of electrolysis of a concentrated solution of sodium chloride in the chlor-alkali industry; Extraction of aluminium from bauxite	**PAPER 1: 150 marks** • Mechanics (65) • Waves, Sound and light (15) • Electricity and magnetism (55) • Matter & Materials (15) **PAPER 2: 150 marks** • Chemical Change (92) • Matter & Materials (58) The following **gr 10 and 11 topics** will form part the two papers: **Paper 1:** • Newton's laws (Gr 11) • Electrostatics (Gr 11) • Electric circuits (Gr 11) **Paper 2** • Representing chemical change (Gr 10) • Intermolecular forces • Energy and chemical change **(Gr 11)** • Stoichiometry (application only) (Gr 11)
Requisite pre-knowledge	Electric circuits from grade 11	• Electric circuits from grade 11	• Electromagnetic induction • Hand rules for direction of induced current.	• Electrical power	• Wave properties: frequency, wavelength, amplitude	• Redox reactions	• Redox reactions	

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TERM 3 (52 days)		**Week 1 13 – 16 July** (4 days)	**Week 2 19 – 23 July** (5 days)	**Week 3 26 – 30 July** (5 days)	**Week 4 2 – 6 Aug** (5 days)	**Week 5 10 – 13 Aug** (4 days)	**Week 6 16 – 20 Aug** (5 days)	**Week 7 23 – 27 Aug** (5 days)	**Week 8, 9, 10, 11 30 Aug - 23 Sept** (19 days)
CAPS Topics		**ELECTRICITY & MAGNETISM: Electric circuits (3 hrs)**	**ELECTRICITY & MAGNETISM: Electric circuits (4 hrs)**	**ELECTRICITY & MAGNETISM: Electrodynamics (4 hrs)**	**ELECTRICITY & MAGNETISM: Electrodynamics (2 hrs)** **M & M: Optical phenomena and properties of materials (2 hrs)**	**MATTER & MATERIALS: Optical phenomena and properties of materials (4 hrs)**	**CHEMICAL CHANGE: Electrochemical reactions (4 hrs)**	**CHEMICAL CHANGE: Electrochemical reactions (4 hrs)**	**TRIAL EXAMINATION** **P1: 3 hrs** **P2: 3 hrs**
						• Graphical representation of waves			
Resources (other than textbook) **to enhance learning**		• Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations • Previous question papers	• Apparatus for experiment below. • Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations • Previous question papers	• Apparatus: Chemicals and apparatus for experiment below. • Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations • Previous question papers	• Mind the Gap • Study guides • YouTube & Mindset videos • pHET simulations • Previous question papers
Assessment	**Informal Assessment:** Remediation	• Corrections • Homework	• Homework • Informal test	• Homework • Practical: Functioning of a simple electric motor (demonstration)	• Homework • Informal test	• Homework • Informal test		• Homework • Informal test	N/A
	SBA (Formal)	None	Formal practical (Physics): Internal resistance of a battery and equivalent resistance of resistors in series & parallel	None	None	None	None	Formal practical (Chemistry): Verify the reactions that take place in a galvanic cell and an electrolytic cell	Trial examination

2021 National Recovery ATP: Grade 12 – Term 3: PHYSICAL SCIENCES

TERM 4 (47 days)		Week 1 5 – 8 Oct (4 days)	Week 2 11 – 15 Oct (5 days)	Week 3 18 – 22 Oct (5 days)	Week 4 25 – 29 Oct (5 days)	Week 5 -10 22 Nov – 8 Dec (28 days)
CAPS Topics		**TRIAL EXAM: Discussion (3 hrs)**	**TRIAL EXAM: Discussion (4 hrs)**	**CONSOLIDATION AND REVISION (4 hrs)**	**CONSOLIDATION AND REVISION (4 hrs)**	**FINAL EXAMINATION** **P1: 3 hrs** **P2: 3 hrs**
Topics /Concepts, Skills and Values		• Discussion and corrections of trial examination	• Discussion and corrections of trial examination	All topics	• All topics	**PAPER 1: 150 marks** • **Mechanics (65)** Momentum and impulse; Vertical projectile motion, Work, energy and power, Newton's laws (Gr 11) • **Waves, Sound and light (15)** Doppler effect • **Electricity and magnetism (55)** Electric circuits, Electrodynamics, Electrostatics (Gr 11), Electric circuits (Gr 11) • **Matter & Materials (15**) Optical phenomena and properties of materials **PAPER 2: 150 marks** • **Chemical Change (92)** Rate and extent of reaction, Chemical equilibrium, Acids and bases, Representing chemical change (Gr 10), Energy and chemical change (Gr 11), Stoichiometry (application only) (Gr 11) • **Matter & Materials (58)** Organic molecules, Intermolecular forces (Gr 11)
Requisite pre-knowledge		N/A	N/A	N/A	N/A	N/A
Resources (other than textbook) **to enhance learning**		• Trial exam question papers	• N/A	• Study guides • Previous question papers; • Mindset & YouTube videos • Simulations	• Study guides • Previous question papers; • Mindset & YouTube videos • Simulations	N/A
Assessment	**Informal Assessment:** Remediation	• Trial exam question papers	• Trial exam question papers	• Homework • Informal test	• Homework • Informal test	N/A
	SBA (Formal)	None	None	None	None	Final Examination