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SBA GUIDELINES
Practical work:

- **Learners should do TWO experiments (ONE Chemistry, ONE Physics) for SBA.**
- **Term 1: Heating/cooling curve of water.**
- **Term 2: Do the "Measurement of velocity & position/time, velocity/time and acceleration/time graphs for a moving trolley" in term 2 but record it in term 3.**

2021 National Recovery ATP: Grade 10 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	**MATTER AND MATERIAL:** **Revise matter and classification (2 hrs)**	**MATTER AND MATERIAL:** **Revise matter and classification (4 hrs)**	**MATTER AND MATERIAL:** **States of matter and the kinetic molecular theory (4 hrs)**	**MATTER AND MATERIAL:** **The atom** **(4 hrs)**	**MATTER AND MATERIAL:** **Periodic Table** **(4 hrs)**	**MATTER AND MATERIAL:** **Chemical bonding** **(4 hrs)**	**MATTER AND MATERIAL:** **Chemical bonding** **(2 hrs)** **ELECTRICITY AND MAGNETISM:** **Electrostatics** **(2 hrs)**	**ELECTRICITY AND MAGNETISM:** **Electrostatics** **(4 hrs)**	**ELECTRICITY AND MAGNETISM:** **Electric circuits** **(3 hrs)**	**CONTROL TEST** **(2 hrs)**
Topics /Concepts, Skills and Values	• Describe matter as being made up of particles. • State and define the properties of material: ○ Strength ○ Brittle, malleable or ductile ○ Density (lead / aluminium) ○ Melting points and boiling points • Define a mixture, a pure substance, an element and a compound and give examples.	• Write names and formulae of elements and compounds using the cation and anion table. • Classify substances as metals, non-metals and metalloids and their positions on the periodic table. • Identify metalloids as showing increase in conductivity with increasing temperature. • Classify substances, with examples, as electrical conductors, semiconductors and insulators. • Classify substances, with examples, as thermal conductors and insulators. • Classify substances, with examples, as magnetic and nonmagnetic.	• Describe the particle nature of matter by referring to diffusion and Brownian motion • List and characterize the three states of matter. • Define freezing point, melting point and boiling point. • Interpret/Draw heating and cooling curves and interpret data given on such curves. • Identify the physical state of a substance at a specific temperature, given its melting point and the boiling point. • Define melting, evaporation, freezing, sublimation and condensation as changes in state. Describe a solid, a liquid and a gas according to the Kinetic Molecular Theory in terms of particles of matter.	• Describe the structure of an atom (nucleus in centre and electrons in the space around). • Define atomic number. • Determine for an atom/ion the: o Atomic number o Number of protons o Number of electrons o Number of neutrons o Mass number • Determine the charge on an ion after removing/ adding electrons to an atom. • Define: isotopes, relative atomic mass. • Calculate the relative atomic mass of naturally occurring elements from the percentage of each isotope in a sample. • Represent atoms using the notation E_Z^A where E = symbol of element, Z = atomic number, A = mass number. • Use Aufbau diagrams and sp notation (electron configuration) to give electronic arrangements of atoms up to Z = 20. • Describe an atomic orbital. Know that	• Describe the PT as displaying elements in order of increasing atomic number and showing how periodicity of physical and chemical properties of elements relates to atomic structure. • Define the group number and the period number. • Relate the position of an element in the PT to its electronic structure and vice versa. • Describe periodicity from Li to Ar in terms of atomic radius, ionisation energy, electron-affinity and electronegativity. • Define atomic radius, ionisation energy, electron-affinity and electronegativity. • Relate the electronic arrangements to chemical properties of group 1, 2, 17 and 18 elements. • Describe the trend in reactivity of elements in groups 1, 2 and 17. • Indicate the positions of metals, non-metals and transition metals in the PT.	• Define a chemical bond. • Draw Lewis dot diagrams of elements. • Define: covalent bond, molecule • Draw Lewis dot diagrams of simple covalent molecules: H_2; F_2, $C\ell_2$, O_2, N_2, HF, $HC\ell$, CH_4, NH_3, H_2O • Write names and formulae of covalent compounds. • Define: ionic bonding, formula-unit, ion, anion, cation. • Draw Lewis dot diagrams of cations and anions. • Draw Lewis dot diagrams to show the formation of simple ionic compounds such as $NaC\ell$, $KC\ell$, KBr, $CaC\ell_2$ and $MgBr_2$. • Use the PT to predict the ions formed by atoms of metals and non-metals. • Name ionic compounds.	**Chemical bonding** • Define metallic bonding. • Calculate the relative atomic mass for covalent molecules e.g. $Mr(H_2O) = 18$ • Calculate relative formula masses for ionic compounds. **Electrostatics** • State that all materials contain positive charges (protons) and negative charges (electrons). • Describe an object as neutral when it has an equal number of protons and electrons. • Describe positively charged objects as electron deficient and negatively charged objects as having excess of electrons. • Describe how objects (insulators) can be charged by contact (or rubbing) - tribo-electric charging.	• State the SI unit for electric charge. • State the principle of conservation of charge. • Apply the principle of conservation of charge using $Q = \frac{Q_1+Q_2}{2}$ for charges of identical size. • State the principle of charge quantization and apply the principle: $Q = nq$ • State that like charges repel and opposite charges attract. • Explain how charged objects can attract uncharged insulators due to polarization of molecules inside insulators.	• Define potential difference across the ends of a conductor. In symbols: $V=\frac{W}{Q}$ • State the unit of potential difference. • Define emf. • Define terminal potential difference. • Do calculations using $V=\frac{W}{Q}$. • Define current strength, I. • Calculate current strength in a conductor using the equation $I = \frac{Q}{\Delta t}$. • Define one coulomb. • Indicate the direction of conventional current in circuit diagrams using arrows. • Draw a diagram to show how to correctly connect an ammeter and a voltmeter.	**ONE PAPER (100 marks)** • Matter and classification • States of matter and the kinetic molecular theory. • The atom • The periodic table • Chemical bonding • Electrostatics

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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	**MATTER AND MATERIAL: Revise matter and classification (2 hrs)**	**MATTER AND MATERIAL: Revise matter and classification (4 hrs)**	**MATTER AND MATERIAL: States of matter and the kinetic molecular theory (4 hrs)**	**MATTER AND MATERIAL: The atom (4 hrs)**	**MATTER AND MATERIAL: Periodic Table (4 hrs)**	**MATTER AND MATERIAL: Chemical bonding (4 hrs)**	**MATTER AND MATERIAL: Chemical bonding (2 hrs) ELECTRICITY AND MAGNETISM: Electrostatics (2 hrs)**	**ELECTRICITY AND MAGNETISM: Electrostatics (4 hrs)**	**ELECTRICITY AND MAGNETISM: Electric circuits (3 hrs)**	**CONTROL TEST (2 hrs)**
				each orbital corresponds to a specific energy of electrons in it.						
Requisite pre-knowledge	• Classification of matter	• Classification of matter	• Phases of matter	• Protons and electrons	• Atoms and elements	• The atom • Electron configuration • Periodic Table	• The atom • Electron configuration • Periodic Table • Protons and electrons	• Protons and electrons	• Components of electric circuits and symbols.	N/A
Resources (other than textbook) **to enhance learning**	• Study guides • Previous question papers • Mindset & You tube videos	• Study guides • Previous question papers • Mindset & You tube videos	• Apparatus to determine heating/cooling curve • Study guides • Previous question papers • Mindset & YouTube videos • Simulations	• Study guides • Previous question papers • Mindset & YouTube tube videos	• Periodic Table • Study guides • Previous question papers • Mindset & YouTube videos	• Periodic Table • Study guides • Previous question papers • Mindset & YouTube videos • Simulations	• Apparatus: Electroscope, Glass and perspex rods, cloths • Van de Graaf generator • Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Apparatus: Electroscope, Glass and perspex rods, cloths • Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	N/A
Assessment **Informal Assessment:** Remediation	• Homework	• Homework • Informal test	• Homework • Informal test	• Homework • Practical: Flame tests of metals	• Homework • Informal test	• Homework	• Homework • Practical (demo): Positive & negative charges (electroscope & rods)	• Homework • Practical (demo): Positive & negative charges (electroscope & rods) • Informal test	• Homework • Practical: Circuit with bulbs, ammeter, voltmeter	N/A
SBA (Formal)	None	None	Formal practical: Heating/cooling curve of water	None	None	None	None	None	None	Control test

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2021 National Recovery ATP: Grade 10 – 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	**MARCH CONTROL TEST: Discussion (2 hrs)** **ELECTRICITY & MAGNETISM: Electric circuits (1 hr)**	**ELECTRICITY & MAGNETISM: Electric circuits (4 hrs)**	**MECHANICS: Vectors and scalars (4 hrs)**	**MECHANICS: Motion in one dimension (4 hrs)**	**MECHANICS: Motion in one dimension (4 hrs)**	**MECHANICS: Instantaneous speed and velocity and the equations of motion (4 hrs)**	**MECHANICS: Instantaneous speed and velocity and the equations of motion (4 hrs)**	**MECHANICS: Instantaneous speed and velocity and the equations of motion (4 hrs)**	**MECHANICS: Energy (4 hrs)**	**MECHANICS: Energy (4 hrs)**	**CONTROL TEST (2 hrs)**
Topics / Concepts, Skills and Values	• Discussion of control test and corrections **Electric circuits** • Define resistance. • Explain that resistance is the opposition to the flow of electric charges. • Define the unit of resistance. • Give a microscopic description of resistance. • State and explain factors that affect the resistance of a given material, i.e. temperature, length and thickness.	• Explain why a battery in a circuit goes flat by referring to the energy transformations in the battery and the resistors in a circuit. • Know that current is the same through each resistor in a series circuit. • Describe series circuits as potential difference dividers. • Calculate the total resistance of resistors connected in series: $R_t = R_1 + R_2 +$ • Know that potential difference is the same across resistors connected in parallel. • Describe parallel circuits as current dividers because the total current in the circuit is equal to the sum of the branch currents. • Calculate the total resistance of resistors connected in parallel: $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} +$	• List physical quantities, for example time, mass, weight, force, charge, etc. • Define a vector and a scalar quantity. • Represent vectors graphically with an arrow. • Use the force vector as an example to show equality of vectors, negative vectors and addition of vectors in one dimension only. • Define a resultant. • Determine a resultant graphically using the tail-to-head method as well as by calculation for a maximum of four force vectors in one dimension.	• Describe the concept of a frame of reference (has an origin and a set of directions, e.g. east and west or up and down). • Define one-dimensional motion. • Define position relative to a reference point and understand that position can be positive or negative. • Define: distance, displacement • Describe and illustrate the difference between displacement and distance. • Calculate distance and displacement for one-dimensional motion. • Define: average speed, average velocity	• Calculate average speed and average velocity for one-dimensional motion. • Define acceleration. ($a = \frac{\Delta v}{\Delta t}$). • Differentiate between positive acceleration, negative acceleration and deceleration. • Calculate acceleration one-dimensional motion.	• Define instantaneous velocity and instantaneous speed. • Describe in words and distinguish between motion with uniform velocity and uniformly accelerated motion. • Describe the motion of an object given its position versus time, velocity versus time and acceleration versus time graph. • Determine the velocity of an object from the gradient of the position versus time graph.	• Determine the instantaneous velocity at a particular time using the gradient of a tangent to a position versus time graph. • Determine the acceleration of an object from the gradient of the velocity vs. time graph. • Determine the displacement of an object by finding the area between the time axis and the graph of a velocity vs. time graph.	• Use the equations of motion, listed below, to solve problems involving motion in one dimension in the horizontal plane only. $v_f = v_i + a\Delta t$ $\Delta x = v_i\Delta t + \frac{1}{2}a\Delta t^2$ $v_f^2 = v_i^2 + 2a\Delta x$ $\Delta x = (\frac{v_i + v_f}{2})\Delta t$ • Solve problems for the motion of a vehicle including safety issues such as the relationship between speed and stopping distance.	• Define gravitational potential energy of an object. • Calculate the gravitational potential energy of an object using $E_p = mgh$ OR $U = mgh$. • Define kinetic energy of an object. • Calculate the kinetic energy of an object using $E_k = ½mv^2$ OR $K = ½mv^2$.	• Define mechanical energy. • Calculate mechanical energy using $E_M = E_k + E_p$. OR $E_M = K + U$ • State the law of conservation of energy. • State the principle of conservation of mechanical energy. • Apply the principle of conservation of mechanical energy to various contexts, viz. objects dropped or thrown vertically upwards, the motion of a pendulum bob, roller coasters and inclined plane problems.	**ONE PAPER (100 marks)** • Electric circuits • Vectors and scalars • Motion in one dimension • Instantaneous speed and velocity
Requisite pre-knowledge	• Protons and electrons • Electric charge	• Connecting bulbs in series and parallel	• Different physical quantities	• Differentiate between vectors and scalars	• Vectors, scalars, average speed, average velocity	• Differentiate between vectors and scalars	• Vectors and scalars; speed, velocity, acceleration,	• Vectors and scalars; speed, velocity, acceleration,	• Kinetic energy • Potential energy	• Kinetic energy • Potential energy • Conservation of energy	N/A

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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		**MARCH CONTROL TEST: Discussion (2 hrs) ELECTRICITY & MAGNETISM: Electric circuits (1 hr)**	**ELECTRICITY & MAGNETISM: Electric circuits (4 hrs)**	**MECHANICS: Vectors and scalars (4 hrs)**	**MECHANICS: Motion in one dimension (4 hrs)**	**MECHANICS: Motion in one dimension (4 hrs)**	**MECHANICS: Instantaneous speed and velocity and the equations of motion (4 hrs)**	**MECHANICS: Instantaneous speed and velocity and the equations of motion (4 hrs)**	**MECHANICS: Instantaneous speed and velocity and the equations of motion (4 hrs)**	**MECHANICS: Energy (4 hrs)**	**MECHANICS: Energy (4 hrs)**	**CONTROL TEST (2 hrs)**
			• Reading of ammeter, voltmeter, multimeter				• Distance and displacement	displacement, distance	displacement, distance			
Resources (other than textbook) **to enhance learning**		• Control test question paper • Mindset & YouTube videos • PhET simulations	• Apparatus: Circuit kit (cells, bulbs, resistors, ammeter & voltmeter/ multimeter, wires, etc.) • Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Apparatus for practical below. • Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Apparatus: Mechanics trolley and track etc • Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	N/A
Assessment	**Informal Assessment:** Remediation	• Corrections of control test • Homework	• Homework • Informal test	• Homework	• Homework	• Homework • Informal test	• Homework • Practical: Measurement of velocity	• Homework	• Homework • Informal test	• Homework	• Homework • Informal test	N/A
	SBA (Formal) Record practical in Term 3	None	None	None	None	None	None	Formal practical: Measurement of velocity & position/time, velocity/time and acceleration/time graphs for a moving trolley	None	None	None	Control test

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2021 National Recovery ATP: Grade 10 – 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 30 Aug – 3 Sept** (5 days)	**Week 9 6 - 10 Sept** (5 days)	**Week 10 13 - 17 Sept** (5 days)	**Week 11 20 - 23 Sept** (4 days)
CAPS Topics	**JUNE CONTROL TEST: Discussion (3 hrs)**	**CHEMICAL CHANGE:** **- Physical and chemical change** **- Representing chemical change (4 hrs)**	**CHEMICAL CHANGE: Physical and chemical change (4 hrs)**	**CHEMICAL CHANGE: Quantitative aspects of chemical change (3 hrs)**	**CHEMICAL CHANGE: Quantitative aspects of chemical change (4 hrs)**	**CHEMICAL CHANGE: Quantitative aspects of chemical change (4 hrs)**	**WAVES, SOUND AND LIGHT:** **- Transverse pulses on a string/spring** **-Transverse waves (4 hrs)**	**WAVES, SOUND AND LIGHT:** **- Transverse waves** **- Longitudinal waves (4 hrs)**	**WAVES, SOUND AND LIGHT: Longitudinal waves (2 hrs) Sound (2 hr)**	**WAVES, SOUND AND LIGHT: Sound (4 hrs)**	**CONTROL TEST (2 hrs)**
Topics /Concepts, Skills and Values	• Discussion June Control Test	• Define a physical change and give examples. • Define a chemical change and give examples. • Write word equations from chemical equations and vice versa • Use (s), (aq), (l) and (g) to indicate phases. • Write balanced chemical equations.	• Conservation of atoms and mass • Law of constant composition. • Interpret balanced equations in terms of conservation of atoms and mass.	• Define one mole. • Define relative atomic mass. • Describe Avogadro's number. • Define molar mass. • Describe the relationship between molar mass and relative molecular mass and relative formula mass. • Calculate the molar mass of a substance given its formula. • Calculate mass, molar mass and number of moles using $n = \frac{m}{M}$. • State Avogadro's law. • For gases, calculate volume and moles using molar gas volume at STP. • Interpret balanced equations in terms of volume relationships for gases.	• Define concentration. • Calculate concentration in $mol \cdot dm^{-3}$ using $c = \frac{n}{V}$. • Determine percentage composition of an element in a compound. • Determine the empirical formula for a substance from percentage composition. • Define an empirical formula as the simplest. • Determine the number of moles of water of crystallization in salts like $CuSO_4 \cdot 5H_2O$. • Define water of crystallization.	• Perform stoichiometric calculations based on balanced equations (concentration, mass, moles, molar mass, number of particles and volume). • Determine the theoretical yield of a product in a chemical reaction when you start with a known mass of reactant. • Determine the percentage yield of a chemical reaction:	• Define a pulse, a transverse pulse and amplitude. • Define the principle of superposition. • Define constructive interference and destructive interference. • Apply the principle of superposition to pulses to explain, using diagrams, how two pulses that reach the same point in the same medium superpose constructively and destructively and then continue in the original direction of motion. • Define a transverse wave. • Define wavelength, frequency, period, amplitude, crest and trough of a wave. • Explain the wave concepts in phase and out of phase. • Identify the wavelength, amplitude, crests, troughs, points in phase and points out of phase on a drawing of a transverse wave.	**Transverse waves** • Use the relationship between frequency and period ($f = \frac{1}{T}$) to solve problems. • Define wave speed as the distance travelled by a point on a wave per unit time. • Use the wave equation ($v = f\lambda$) to solve problems involving waves. **Longitudinal waves** • Define a longitudinal wave. • Draw a diagram to represent a longitudinal wave in a spring, showing the direction of motion of the wave relative to the direction in which the particles move. • Define the wavelength and amplitude of a longitudinal wave. • Define a compression and a rarefaction. • Differentiate between longitudinal and transverse waves.	• Define the period and frequency of a longitudinal wave. • Use the relationship between frequency and period ($f = \frac{1}{T}$) to solve problems. • Use the wave equation ($v = f\lambda$) to solve problems involving longitudinal waves. **Sound** • Describe a sound wave as a longitudinal wave. • Explain the relationship between wave speed and the properties of the medium in which the wave travels (gas, liquid or solid). • Describe echoes as reflections of sound waves. • Use the wave equation ($v = f\lambda$) to solve problems involving sound waves including echoes, e.g. sonar, bats and dolphins.	• Relate the pitch of a sound to the frequency of a sound wave. • Relate the loudness of a sound to both the amplitude of a sound wave and the sensitivity of the human ear. • Relate quality of sound to the waveform as it appears to the listener. • Distinguish between the shape of a pure note and the shape of a noise. • Describe sound with frequencies higher than 20 kHz up to about 100 kHz as ultrasound. • Explain how an image can be created using ultrasound. • Describe some of the medical benefits and uses of ultrasound.	**ONE PAPER (100 marks)** • Energy • Physical and chemical change • Representing chemical change • Quantitative aspects of chemical change • Transverse pulses on a string/spring • Transverse waves • Longitudinal waves
Requisite pre-knowledge	N/A	• Writing of formulae • Writing equations	• Writing of formulae • Writing equations	• Writing of formulae • Writing equations	• Periodic Table • Writing of formulae and balanced equations	• Periodic Table • Writing of formulae and balanced equations • Molar mass	• Writing of formulae and balanced equations • Molar mass; molar volume	• Observation of water waves	• Pulses and pulse properties Wave equation • Frequency, period,	Frequency, period, wavelength, amplitude	N/A

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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 30 Aug – 3 Sept (5 days)	Week 9 6 - 10 Sept (5 days)	Week 10 13 - 17 Sept (5 days)	Week 11 20 - 23 Sept (4 days)
CAPS Topics		**JUNE CONTROL TEST: Discussion (3 hrs)**	**CHEMICAL CHANGE:** **- Physical and chemical change** **- Representing chemical change (4 hrs)**	**CHEMICAL CHANGE: Physical and chemical change (4 hrs)**	**CHEMICAL CHANGE: Quantitative aspects of chemical change (3 hrs)**	**CHEMICAL CHANGE: Quantitative aspects of chemical change (4 hrs)**	**CHEMICAL CHANGE: Quantitative aspects of chemical change (4 hrs)**	**WAVES, SOUND AND LIGHT:** **- Transverse pulses on a string/spring** **-Transverse waves (4 hrs)**	**WAVES, SOUND AND LIGHT:** **- Transverse waves** **- Longitudinal waves (4 hrs)**	**WAVES, SOUND AND LIGHT: Longitudinal waves (2 hrs) Sound (2 hr)**	**WAVES, SOUND AND LIGHT: Sound (4 hrs)**	**CONTROL TEST (2 hrs)**
							• Conversion of units			wavelength, amplitude		
Resources (other than textbook) **to enhance learning**		• June control test question paper • Study guides • Previous question papers • Mindset & YouTube videos	• Apparatus: Chemicals and apparatus for experiment listed below • Study guides • Previous question papers • Mindset & YouTube videos	• Apparatus: Chemicals and apparatus for experiment listed below • Study guides • Previous question papers • Mindset & YouTube videos	• Study guides • Previous question papers • Mindset & YouTube videos	• Study guides • Question papers • Mindset & YouTube videos	• Apparatus: Chemicals and apparatus for experiment listed below. • Study guides • Previous question papers; • Mindset & YouTube videos	• Study guides • Previous question papers • Mindset & YouTube videos	• Apparatus: Slinky, ripple tank • PhET simulations • Mindset & You tube videos • Apparatus: Ripple tank, Slinky	• Apparatus: Slinky, ripple tank • Study guides • Previous question papers • Mindset & You tube videos • PhET simulations	• Apparatus: Oscilloscope, tuning forks • Study guides • Previous question papers • Mindset & YouTube videos • PhET simulations	N/A
Assessment	**Informal Assessment:** Remediation	• Corrections • Homework	• Practical (demo): Reaction of Fe and S to form FeS • Homework	• Practical: Reaction of sodium hydroxide with hydrochloric acid • Homework • Informal test	• Homework	• Homework	• Practical: Water of crystallisation of $CuSO_4$ • Homework	• Homework • Informal test	• Informal test • Homework • Practical: • Constructive & destructive interference (ripple tank); Transverse pulse and wave in slinky	• Homework • Practical: Longitudinal pulse/wave in slinky	• Practical: Observe sound waves of different frequency and wavelength on an oscilloscope/ simulation • Homework • Informal test	N/A
	SBA (Formal)	None	None	None	None	None	None	None	None	None	None	Control test

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2021 National Recovery ATP: Grade 10 – Term 4: 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)	Week4 25 – 29 Oct (5 days)	Week 5 1 – 5 Nov (5 days)	Week 6 8 – 12 Nov (5 days)	Week 7 15 – 19 Nov (5 days)	Week 8 -10 22 Nov – 8 Dec (13 days)
CAPS Topics	**SEPT CONTROL TEST: Discussion (2 hrs)** **WAVES, SOUND AND LIGHT: Electromagnetic radiation (1 hr)**	**WAVES, SOUND AND LIGHT: Electromagnetic radiation (4 hrs)**	**WAVES, SOUND AND LIGHT: Electromagnetic radiation (4 hrs)**	**CONSOLIDATION AND REVISION (4 hrs)**	**CONSOLIDATION AND REVISION (4 hrs)**	**CONSOLIDATION AND REVISION (4 hrs)**	**CONSOLIDATION AND REVISION (4 hrs)**	**FINAL EXAMINATION** **P1: 2 hrs** **P2: 2 hrs**
Topics / Concepts, Skills and Values	• Explain that some aspects of the behaviour of electromagnetic radiation can best be explained using a wave model and some aspects can best be explained using a particle model. • Describe the source of electromagnetic waves. • Describe how an electromagnetic wave propagates. • State that these mutually regenerating fields travel through space at a constant speed $c = 3 \times 10^8\ m{\cdot}s^{-1}$.	• List properties of electromagnetic waves. • Arrange different types of electromagnetic radiation, in order of frequency or wavelength. • Given the wavelength of electromagnetic waves, calculate the frequency and vice versa, using the equation $c = f\lambda$. • Give an example of the use of each type of electromagnetic radiation. • Indicate the penetrating ability of the different kinds of electromagnetic radiation and relate it to energy of the radiation. • Describe the dangers of gamma rays, X-rays and the damaging effect of ultra-violet radiation on the skin.	• Define a photon. • Relate the energy of a photon to the frequency and wavelength of the light. • Calculate the energy of a photon using $E = hf = \frac{hc}{\lambda}$.	• All topics	• All topics	All topics	All topics	**Physics Paper 1** **(100 marks)** • Transverse pulses • Transverse waves • Longitudinal waves • Sound • Electromagnetic radiation • Electrostatics • Electric circuits • Vectors and scalars • Motion in one dimension • Instantaneous speed and velocity and the equations of motion • Energy **Chemistry Paper 2** **(100 marks)** • Matter and classification • States of matter and the kinetic molecular theory. • The atom • The periodic table • Chemical bonding • Physical and chemical change • Representing chemical change • Quantitative aspects of chemical change
Requisite pre-knowledge	• Wavelength and frequency	• Wavelength and frequency; spectrum of visible light - rainbow	• Wavelength and frequency; spectrum of visible light - rainbow	N/A	N/A	N/A	N/A	N/A
Resources (other than textbook) **to enhance learning**	• Control test question paper	• Table of EM radiation • Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	• Study guides • Previous question papers; • Mindset & YouTube videos • PhET simulations	N/A

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REPUBLIC OF SOUTH AFRICA

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)	Week4 25 – 29 Oct (5 days)	Week 5 1 – 5 Nov (5 days)	Week 6 8 – 12 Nov (5 days)	Week 7 15 – 19 Nov (5 days)	Week 8 -10 22 Nov – 8 Dec (13 days)
CAPS Topics		**SEPT CONTROL TEST: Discussion (2 hrs)** **WAVES, SOUND AND LIGHT: Electromagnetic radiation (1 hr)**	**WAVES, SOUND AND LIGHT: Electromagnetic radiation (4 hrs)**	**WAVES, SOUND AND LIGHT: Electromagnetic radiation (4 hrs)**	**CONSOLIDATION AND REVISION (4 hrs)**	**CONSOLIDATION AND REVISION (4 hrs)**	**CONSOLIDATION AND REVISION (4 hrs)**	**CONSOLIDATION AND REVISION (4 hrs)**	**FINAL EXAMINATION P1: 2 hrs P2: 2 hrs**
Assessment	**Informal Assessment:** Remediation	• Corrections • Homework	• Homework	• Homework • Informal test	• Homework • Informal test	• Homework • Informal test	• Homework • Informal test	• Homework • Informal test	N/A
	SBA (Formal)	None	None	None	None	None	None	None	Final examination