2025 TERM 1 PHYSICAL SCIENCES ATP & LESSON PLANNER THE ANSWER SERIES

GR 10

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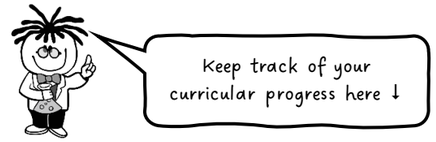
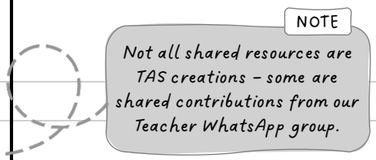
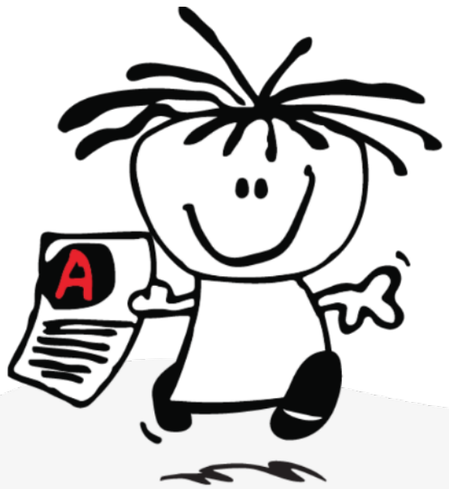


ACADEMIC WEEKS	CAPS TOPIC	CORE CONTENT & PAGE NUMBERS *Based on TAS Gr 10 PS 3-in-1 Class Text & Study Guide*		SUGGESTED EXERCISES *From TAS Gr 10 PS Class Text & Study Guide*	POSSIBLE PRACTICAL TASKS / CONSOLIDATION	DATE CONTENT WAS COMPLETED
WEEK 1 *15 – 17 Jan*	**Waves, Sound & Light** *30 school days* PAPER 1: 40 marks	**Transverse pulses in a string or spring**: A pulse; A transverse pulse; Amplitude Superposition, Interference: constructive and destructive	p. 2.1 – 2.2 p. 2.3 – 2.4	**p. Q6:** Q1.1 & Q1.4; **p. Q7:** Q7	- Slinky spring, ripple tank: Demonstration of transverse pulses & waves; superposition - Simulation on superposition of waves here	
		Transverse waves in a spring: Wave terms; representation of a wave; Wave concepts: in phase or out of phase	p. 2.4 – 2.5	**p. Q6:** Q1.2, Q1.3 & Q1.5	Watch this video on transverse waves	
WEEK 2 *20 – 24 Jan*		**Transverse waves:** Relationship between frequency (*f*) and period (T); frequency (*f*), wavelength (λ) and wave speed (*v*) Calculations with Universal Wave Equation	p. 2.5 – 2.6	**p. Q6:** Q1.6, Q2 & Q3; **p.Q7:** Q4 – Q6	Simulation on transverse waves here	
WEEK 3 *27 – 31 Jan*		**Longitudinal waves** in a spring: Compressions and rarefactions; Wave terms: amplitude (A) and wavelength (λ)	p. 2.6 – 2.7	**p. Q7:** Q8	- Slinky spring: Demonstration of longitudinal waves - Simulation on longitudinal waves here	
		Longitudinal waves: Wave terms: frequency (*f*) and period (T); Wave speed (*v*). *Apply wave equation in calculations.*	p. 2.7 – 2.8	**p. Q7:** Q9 & Q10	Watch this video on transverse and longitudinal waves	
		Sound: Sound waves: Generation and propagation; Speed of sound	p. 2.8	**p. Q6:** Q1.8	Practical: bell jar with electric bell Echoes: reflection	
		Reflection of sound waves: *echoes; solve problems*	p. 2.9	**p. Q8:** Q11 & Q12	Practical: measuring speed of sound in air	
WEEK 4 *3 – 7 Feb*		Pitch, Loudness, Sound quality (tone)	p. 2.9 – 2.10	**p. Q6**: Q1.7 & Q1.8; **p. Q8**: Q11	Different tuning forks/ musical instruments, oscilloscope	
		Ultrasound: General applications; Medical applications (create images)	p. 2.10 – 2.11	**p. Q8:** Q13	Watch videos on the uses and working of ultrasound: here and here	
WEEK 5 *10 – 14 Feb*		**Electromagnetic radiation**: Dual nature: Wave nature; Particle nature	p. 2.11 – 2.12			
		Generation and propagation of electromagnetic (EM) waves *Mutually regenerating electric and magnetic fields, traveling at c = 3 x 10^8 m.s^{-1}*	p. 2.12	**p. Q9:** Q17.1 & Q17.2	Simulation on generation and propagation of EM waves here	
WEEK 6 *17 – 21 Feb*		Electromagnetic (EM) spectrum: Relationship between frequency (*f*), wavelength (λ) and speed (c) of EM radiation Types of EM radiation (properties)	p. 2.13 – 2.14	**p. Q8:** Q15.3; **p. Q9:** Q15.4, Q16, Q17.3 & Q17.4		
		Penetrating ability *(energy)*; Dangers of radiation	p. 2.14 – 2.15			
WEEK 7 *24 & 25 Feb*		Particle nature of EM radiation: Quantization (*define photon*); Energy of a photon: $E = hf = h\frac{c}{\lambda}$	p. 2.15 – 2.16	**p. Q8:** Q15.1 – 15.3 **p. Q9:** Q17.3 & Q17.4		
WEEK 7 *26 – 28 Feb*	**Electricity, and Magnetism** *13 school days* PAPER 1: 35 marks	**Electrostatics:** Positive and negative charges *(protons and electrons) in materials; objects can be neutral, positively or negatively charged*	p. 4.5	**p. Q14:** Q8, Q9 & Q10.1– 10.3	Watch this video on charging of insulators through the transfer of electrons	
		The transfer of charge; *triboelectric charging of insulators*	p. 4.5 – 4.6	**p. Q14:** Q9, Q10.1– 10.4	Electroscope; glass and Perspex rod and cloths	
WEEK 8 *3 – 7 March*		Charge conservation *(state and apply principle)*: Calculation of charge after contact: $Q = \frac{Q_1+Q_2}{2}$; the SI unit for charge: coulomb	p. 4.7 – 4.8	**p. Q14:** Q12 **p. Q15:** Q13		
		Charge Quantization *(state and apply principle)*: $q = ne$	p. 4.8 – 4.9	**p. Q14:** Q12; **p. Q15:** Q13		
		Forces between like and unlike (opposite) charges	p. 4.6 – 4.7	**p. Q14:** Q11; **p. Q15:** Q14		
		Forces between charged and uncharged objects *(polarization of molecules inside insulators)*	p. 4.7	**p. Q14:** Q10.5; **p. Q15:** Q15 & Q16	Watch this video on polarisation in insulators	



WEEK 9 *10 – 14 March*		**Electric circuits:** Important Circuit components; circuit diagrams	p. 4.9 – 4.10		Simulations to build electric circuits & investigate Voltmeter & Ammeter readings: here and here	
		Potential difference; emf *(define and calculate)*: $V = \frac{W}{Q}$	p. 4.11 – 4.12	**p. Q15:** Q17 & Q18		
		Electric current strength *(define and calculate)*: $I = \frac{Q}{\Delta t}$ Direction of current *(electron and conventional)*	p. 4.12 – 4.13	**p. Q16:** Q19		
		Measuring current and voltage: ammeter and voltmeter	p. 4.13			
		Resistance *(define)*	p. 4.13 – 4.14	**p. Q16:** Q20		
WEEK 10 & 11 *17 – 28 March*	Time for consolidation and revision *(9 school days)*			**Formal Assessments: Term Test (min 75 marks)**		



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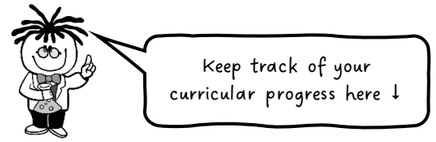

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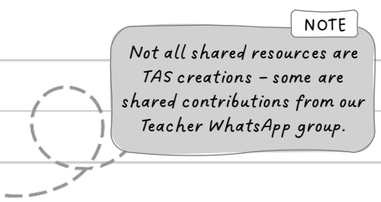
WEEK 1 *8 – 11 Apr*	**Electricity, and Magnetism** *4 school days* PAPER 1: 35 marks	**Control Test** – Discussion and Remedial Work of Control Test				
		Electric Circuits	p. 4.13 – 4.18			
WEEK 2 *14 – 17 Apr*		Resistance: Resistors in series *(same current; potential dividers; total resistance)*	p. 4.14 – 4.15	**p. Q16, Q17:** Q20 – Q25	Simulation to build different circuits with series/parallel resistors here	
		Resistors in parallel *(same potential difference; current dividers; total resistance);* Solve problems *(Ohm's law)*	p. 4.15 – 4.16		- Formal Practical p. 4.14 - Here is an assessment on electric circuits	
WEEK 3 *22 – 25 Apr*	**Matter and Materials** *24 school days* PAPER 2: 70 marks	**Revision of matter and classification:** The material(s) of which an object is composed; properties	p. 1.1 – 1.15	**p. Q2, Q3:** Q8		
		Mixtures: Homogeneous and Heterogeneous	p. 1.2 – 1.3	**p. Q1, Q2:** Q1 – Q4		
		Pure substances: Elements and Compounds: Evidence for purity	p. 1.3 – 1.4	**p. Q1, Q2:** Q1 – Q4	Watch this video on paper chromatography	
		The states of matter and the kinetic molecular theory: Particulate nature *(diffusion, Brownian motion)*; Three states of matter; Freezing point, melting point, boiling point	p. 1.11 – 1.13	**p. Q3:** Q9, Q11	Watch this video on Brownian motion	
WEEK 4 *29 Apr – 1 May* ***(Holidays)***		The states of matter *(cont.)*: Identify the state of a substance given the MP, BP); State/phase changes	p. 1.13 – 1.14	**p. Q3: Q9,** Q10	- Formal Practical p. 1.14 - Watch videos on the heating curve of water video 1 and video 2	
		Kinetic molecular theory: Solids, liquids and gases	p. 1.14 – 1.15	**p. Q3:** Q9, Q11	Practical – heating curve of water here	
		The Atom: Basic building block of all matter Atomic mass and diameter (actual); Relative atomic mass	p. 1.18 – 1.19		Watch interesting videos on the development of the atom here and here	
		Structure of the atom: Protons, neutrons, electrons; The atomic number (Z); The atomic mass (A)	p. 1.19 – 1.20	**p. Q3:** Q12	Simulation on Rutherford's experiment here	
WEEK 5 *5 – 9 May*		Isotopes: Calculate the average atomic mass; Representing atoms using ${}^{A}_{Z}E$ notation	p. 1.20 – 1.21	**p. Q4:** Q12.4.1, Q13	Simulation on isotopes here	
		Electron configuration: Orbitals; The Aufbau principle; Orbital box diagrams; Spectroscopic electron notation	p. 1.21 – 1.24	**p. Q3, Q4:** Q14 – Q16	Watch this video of s- and p-orbitals	
		Names and Formulae of substances: Elements; Compounds; Write name when formula is given and vice versa; Using prefixes in names	p. 1.4 – 1.8	**p. Q2:** Q5 – Q7		
		Metals, Non-metals and Metalloids	p.1.8 – p.1.9	**p. Q2, Q3:** Q8		
		Electrical conductors, Non-Conductors, Semi-conductors	p.1.10	**p. Q2, Q3:** Q8		
		Thermal Conductors and Non-Conductors	p.1.10	**p. Q2, Q3:** Q8		
		Magnetic and Non-Magnetic Materials	p.1.11			



WEEK 6 *12 – 16 May*	**Matter and Materials** **(cont.)** *24 school days* PAPER 2: 70 marks	**The Periodic Table:** The relationship between the position of elements in the PT and their electron arrangement: Groups and periods; The electron structure and the PT	p. 1.25 – 1.27	**p. Q5:** Q21		
		Periodic repetition of properties of elements	p. 1.27 – 1.29	**p. Q4, Q5:** Q18.2 & Q18.3		
		Periodicity of ionisation energy, electron affinity and electronegativity	p. 1.29 – 1.32	**p. Q4:** Q17		
		Similarities in the chemical properties of elements in the same groups (1, 2, 17 and 18)	p. 1.32 – 1.34	**p. Q4, Q5:** Q18		
WEEK 7 *19 – 23 May*		**Chemical Bonding:** Covalent bonding, Ionic bonding *(Definition; Lewis dot diagrams of elements, covalent molecules, ions and ionic compounds)*; Revision of naming	p. 1.34 – 1.37	**p. Q5:** Q19 – Q22	Simulation on building an atom here	
WEEK 8 *26 – 30 May*		Metallic bonding	p. 1.37 – 1.38		Practical Demonstration: Watch this video on the reaction between Fe and S	
		Revision of relative molecular and formula mass	p. 1.39 – 1.41	**p. Q12:** Q15		
		Physical and chemical change: Separation of particles during physical and chemical change *(properties; definition)*; Synthesis reactions; Decomposition reactions	p. 3.1 – 3.4	**p. Q9:** Q1 & Q2		
WEEK 9 *2 – 6 June*	**Chemical Change** *10 school days* PAPER 2: 60 marks	Conservation of atoms and mass	p. 3.4 – 3.5	**p. Q9:** Q3.3.3 **p. Q10:** Q4.1.5 & Q5 **p. Q11:** Q9.1.2	- Watch this video on everyday examples of Physical and Chemical Changes - Watch videos on the conservation of mass here and here	
		Law of constant composition	p. 3.5 – 3.6	**p. Q10:** Q6 **p. Q11:** Q9.2	Watch this video on the Constant Composition of Compounds	
		Representation of chemical change: Writing and balancing chemical equations; Interpreting balanced equations	p. 3.6 – 3.8	**p. Q11:** Q7, Q8 & Q9.1	Simulation to balancing equations here	
WEEK 10 *9 – 13 June*		**Quantitative Aspects of chemical change:** Atomic mass and mole concept *(Avogadro's number)*	p. 3.16 – 3.17	**p. Q12:** Q15.1, Q15.4 & Q15.5		
		Molecular mass and formula mass: Molar mass; Relationship between m, M and n ($n = \frac{m}{M}$)	p. 3.17	**p. Q12:** Q15.2 & Q15.3		
		Amount of substance (n), molar volume (V_m) (of gasses at STP)	p. 3.20 – 3.21	**p. Q13:** Q19 & Q22.4		
WEEK 11 & 12 *17 – 27 June*	Time for consolidation and revision *(9 school days)*			**Formal Assessments: June Exam (min 100 marks) & Experiment (min 50 marks)**		

NOTE

Schools will be closed during the week of 28 April to 2 May 2025, due to public holidays on the Monday and Thursday. The content scheduled for week 4, must therefore be divided between week 3 and week 5.

The content of week 10 can also be moved to week 9 to leave more time for revision and the June exam.