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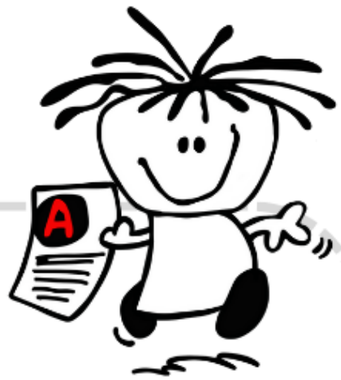
GRADE 11

Physical Sciences



2026

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- the official DBE ATP
- **T**he **A**nswer **S**eries Physical Sciences Class Text & Study Guide
- **TAS** resources
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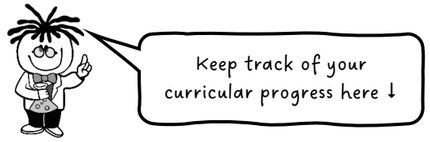

ACADEMIC WEEKS	CAPS TOPIC	CORE CONTENT & PAGE NUMBERS *Based on TAS Gr 11 PS 3-in-1 Class Text & Study Guide*		SUGGESTED EXERCISES *From TAS Gr 11 PS Class Text & Study Guide*	POSSIBLE PRACTICAL TASKS / CONSOLIDATION	DATE COMPLETED
WEEK 1 *14 – 16 Jan*	**MECHANICS** *33 school days* PAPER 1: 68 marks	**Vectors in two dimensions:** Resultant of vectors *(definition)*; Sketch parallel and perpendicular vectors in a Cartesian plane, addition of co-linear vectors *(components of resultant vector)*	p. 1.1 p. 1.1 – 1.2	**p. Q2:** Q13	Practical p.1.4: Determine the resultant of three non-linear force vectors	
		Graphical representation of horizontal and vertical components R_x and R_y *(in a Cartesian plane)*; Graphical representation of a resultant vector R	p. 1.3	**p. Q2:** Q13, Q14	Simulation of representation of vectors in a Cartesian Plane here	
WEEK 2 *19 – 23 Jan*		The magnitude of the resultant vector *(Pythagoras)*; The direction of the resultant vector *(trigonometric ratios)*	p. 1.3	**p. Q2:** Q13 **p. Q2 – Q3:** Q16		
		Resultant of two or more *(maximum 4)* 1-D and 2-D vectors: graphically – *tail-to-head & tail-to-tail (parallelogram) method;* algebraically - *component method, i.e.*	p. 1.4 – p. 1.6	**p. Q1:** Q10 **p. Q2:** Q11, Q12 **p. Q3:** Q17	Simulation on vector addition here	
WEEK 3 *26 – 30 Jan*		Resolve a vector into parallel and perpendicular components; Calculate the resultant *(component method cont.)*	p. 1.5 – p. 1.6	**p. Q1:** Q6, Q8 **p. Q2:** Q14 **p. Q3:** Q17, Q18		
		Newton's laws: Types of forces - contact and non-contact forces, *e.g.* Normal force (N or F_N) *(definition)* Frictional force (*f* or F_f) *(definition)*; $f \propto N$	p. 1.6 – p. 1.7	**p. Q3:** Q16, Q19 – Q21	- Simulation on basic forces and motion here - Use this useful summary of Newton's laws - Simulation – forces exerted on an object here	
WEEK 4 *2 – 6 Feb*		Static frictional force *(f_s) (definition)* Calculate the maximum static frictional force $f_s^{max} = \mu_k N$	p. 1.7 – p. 1.9	**p. Q3:** Q22 **p. Q4:** Q23.1 – Q23.3	Practical: The effect of different surfaces on the maximum static frictional force	
		Kinetic frictional force (f_k) *(definition); calculate kinetic friction* $f_k = \mu_k N$	p. 1.9 – p. 1.10	**p. Q1:** Q3 **p. Q4:** Q26		
		Force and free-body diagrams	p. 1.10 – p. 1.13	**p. Q1:** Q9 **p. Q3:** Q19 – Q21, Q23.4		
		Forces on an inclined plane: Parallel (II) and perpendicular (⊥) components *(of weight (F_g))*	p. 1.10 – p. 1.13	**p. Q1:** Q9 **p. Q3:** Q22	Simulation of forces on an inclined plane here	
		Newton's first law of motion: Resultant/net force of forces in equilibrium *(concept of inertia; $Fnet = 0N$)* Applications of Newton 1: Importance of safety belts	p. 1.14 – p. 1.15	**p. Q4:** Q24, Q25.1		
WEEK 5 *9 – 13 Feb*		Newton's second law of motion: $F_{net} = ma$ Resultant/net force of forces not in equilibrium; Applications of Newton II *(along a horizontal, vertical and inclined plane)*	p. 1.16 – p. 1.20	**p. Q1:** Q1, Q5 **p.Q4 – Q6:** Q25 – Q33	- Formal Practical p. 1.16: Newton's second law of motion - Experiment examples Newton's 2nd law: PART 1; P1 MEMO and PART 2; P2 MEMO - Simulation – problems 2 body systems here	
WEEK 6 *16 – 20 Feb*		Problems with two-body systems (connected with a light inelastic rope) *(combinations of 2 objects in the same or different planes, with or without friction)*	p. 1.20 – p. 1.21	**p. Q6 – Q7:** Q35 – Q38		
WEEK 7 *23 – 27 Feb*		Newton's third law of motion: Applications of Newton III; Identify Newton III pairs	p. 1.21 – p. 1.23	**p. Q6 – Q7:** Q34 – Q38		
		Newton's law of Universal Gravitation: Calculation of gravitational force; Weight	p. 1.23 – p. 1.25	**p. Q1:** Q2, Q7 **p. Q7:** Q39 – Q40	Verification of gravitational acceleration p. 1.26	
		Gravitational acceleration (g)	p. 1.26 – p. 1.27	**p. Q7:** Q39 – Q40		
		Difference between weight and mass *(weight on different planets: w = mg)*; Weightlessness	p. 1.28	**p. Q6:** Q34		

WEEK 8 *2 – 6 March*	**ELECTRICITY & MAGNETISM** *15 school days* PAPER 1: 50 marks	**Electrostatics:** Coulomb's law – Force between charges: $F = \frac{kQ_1Q_2}{r^2}$	p. 5.1 – p. 5.2		Watch this video on charging of insulators through the transfer of electrons	
		Separate forces and resultant force on a single charge; *solve problems (restricted to 3 charges in 1-D; 3 charges in 2-D at right angles; a charge on which an electrostatic force and other forces act in 2-D)*	p. 5.2 – p. 5.7	**p. Q28 – Q29:** Q12 – Q16, Q18.1, Q19.1 – Q19.2	Simulations on Coulomb's law here and here	
		Electric field around charges	p. 5.8			
WEEK 9 *9 – 13 March*		Electric field lines *(patterns)* around 2 unlike or 2 like point charges	p. 5.8	**p. Q27:** Q1 **p. Q29:** Q13.4, Q17.2		
		Electric field strength at a point in an electric field: $E = \frac{F}{Q}$ Force experienced by a charge in an electric field: $F = QE$	p. 5.9	**p. Q29 – Q30:** Q18 – Q21		
WEEK 10 *16 – 20 March*		Electric field strength at a distance r from a point charge: $E = k\frac{Q}{r^2}$	p. 5.9 – p. 5.10	**p. Q29 – Q30:** Q18 – Q21		
		Net electric field (restrict to 3 charges in a straight line)	p. 5.10 – p. 5.11	**p. Q30:** Q19.3, Q20		
WEEK 11 *23 – 27 March*	Time for consolidation and revision (5 *school days)*			**Formal Assessments: Control Test (one paper; min 100 marks) & Experiment (min 50 marks)**		

NOTE

Not all shared resources are TAS creations – some are shared contributions from our Teacher WhatsApp group.

CONTENT THAT WILL BE TESTED

- *Vectors in two dimensions*
- *Newton's laws*
- *Electrostatics*

Gr 11 Fisiese Wetenskappe (KABV) 3-in-1

HARDE KOPIE & E-BOEK

Gr 11 Physical Sciences (CAPS) 3-in-1

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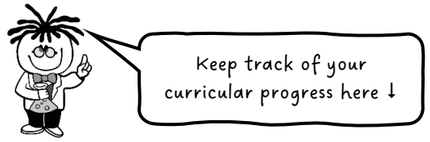
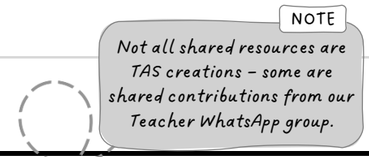


ACADEMIC WEEKS	CAPS TOPIC	CORE CONTENT & PAGE NUMBERS *Based on TAS Gr 11 PS 3-in-1 Class Text Study Guide*		SUGGESTED EXERCISES *From TAS Gr 11 PS Class Text & Study Guide*	POSSIBLE PRACTICAL TASKS / CONSOLIDATION	DATE COMPLETED
WEEK 1 *8 – 10 Apr*	**ELECTRICITY & MAGNETISM** *26 school days* PAPER 1: 50 marks	**Control Test** – Discussion and Corrections of March Control Test				
WEEK 2 *13 – 17 Apr*		**Electromagnetism:** Magnetic field around a current carrying conductor: A straight current-carrying wire; A circular conductor; A current-carrying solenoid *(magnetic field lines; direction of magnetic field - RH rule)*	p. 5.11 – 5.14	**p. Q30:** Q23 – Q27	Watch this video on the magnetic field around a current carrying conductor	
		Environmental impact of overhead electrical cables	p. 5.14			
WEEK 3 *20 – 24 Apr*		The induction of an electric current; Magnetic flux; Calculate induced emf and current ($\varepsilon = -N\frac{\Delta\phi}{\Delta t}$; *Faraday's law*)	p. 5.14 – 5.17	**p. Q30:** Q23 – Q27	Watch this video on electromagnetic induction	
WEEK 4 *28 – 30 Apr*		Faraday's Law *(state)*: Direction of induced current and magnetic field. *(Lenz's law, Right hand rule)*	p. 5.17 – 5.19	**p. Q30:** Q23 – Q27		
WEEK 5 *4 – 8 May*		**Electric circuits:** Ohm's law: relationship between R, V and I at constant T ($R = \frac{V}{I}$); Ohmic & non-ohmic conductors; Problem solving	p. 5.20 – 5.26	**p. Q31, Q32:** Q28 – Q35	- Simulation to build different circuits with series/parallel resistors here - Practical (Informal Assessment) p. 5.21: Ohm's Law	
		Power and Energy: Definition; Equation for electrical power ($P = VI$); combine with Ohm's law ($V = IR$); Problem solving	p. 5.26 – 5.28	**p. Q32, Q33:** Q36 – Q38		
		Gr 12 Physical Sciences 3-in-1 Internal resistance ($\varepsilon = I(R + r)$); Problem solving Gr 12	p. 230 – 233	Gr 12 Physical Sciences 3-in-1 **p. 235 – 236:** Q1 – Q5 **p. 254 – 256:** Q12 – 21		
WEEK 6 *11 – 15 May*		Electrical energy transferred/used; kWh; Cost of electricity	p.5.28 – 5.29	**p. Q33:** Q37.5 & Q38.3		
WEEK 7 *18 – 22 May*	**MATTER & MATERIALS** *20 school days* PAPER 1: 60 marks	**Atomic combinations**: Chemical bonding: Electron structure & valence electrons; Lewis diagrams *(elements)*; Electrostatic forces and energy *(energy & bond length graph)*; Covalent chemical bonds *(rules in the formation of bonds);* Draw Lewis diagrams *(molecules)*	p.2.1 – 2.7	**p. Q9, Q10:** Q21 – Q23	Simulation on atomic interactions & Potential Energy vs Bond Length here	
		Molecular shape: VSEPR theory *(bond pairs & lone pairs determines symmetry/shape)*	p. 2.7 – 2.9	**p. Q10:** Q25 – Q28 & Q30	Watch this video on a water molecule's shape & solubility of ionic salts in water	



WEEK 8 *25 – 29 May*	**MATTER & MATERIALS (cont.)** *20 school days* PAPER 1: 60 marks	Electronegativity of atoms: Polarity of bonds *(polarity of a molecule depends on its shape/symmetry & polarity of bonds)*	p. 2.9 – 2.13	**p. Q10:** Q23, Q24 & Q29	- Simulation on Molecule Polarity here - Simulations on Molecular shapes here and here	
		Bond length and bond energy; Bond order; Bond strength	p. 2.13 – 2.15	**p. Q9:** Q21.1 & Q21.2		
WEEK 9 *1 – 5 June*		Interatomic and intermolecular forces: Definitions; Types of intermolecular forces *(Van der Waals; Hydrogen bond)*	p. 2.15 – 2.19	**p. Q12, Q13:** Q31 – Q35		
WEEK 10 *8 – 12 June*		Intermolecular forces and physical properties *(i.e. boiling point, melting point, vapour pressure, solubility; Strength of forces relative to mass/size of molecule)*	p. 2.19 – 2.26	**p. Q10, Q12, Q13:** Q27, Q31 – Q35	Watch this video on hydrogen bonds	
WEEK 11 & 12 *17 – 26 June*	Time for consolidation and revision (8 *school days*)			**Formal Assessments: June Exam (min 150 marks – Physics 100 marks; Chemistry 50 marks)**		

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

CONTENT THAT WILL BE TESTED

- *Atomic combinations*
- *Intermolecular forces*
- *Electric circuits*
- *Electromagnetism*
- *Electrostatics*

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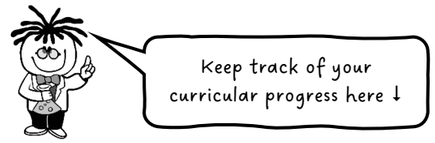

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WEEK 1 *21 – 24 Jul*	**CHEMICAL CHANGE** *38 school days* PAPER 2: 70 marks	Control Test: Discussion and corrections				
WEEK 2 *27 – 31 Jul*		**Quantitative aspects of chemical change:** Stoichiometry: The mole concept and Avogadro's constant: $n = \frac{N}{N_A}$; The mole concept and mass of a substance: $n = \frac{m}{M}$;	p. 4.1 – 4.2	**p. Q21**: Q16 – Q18 & Q21 **p. Q26**: Q54.1		
		Molar volume of gases: n = $\frac{V}{V_m}$	p. 4.3 – 4.4	**p. Q22**: Q29 – Q31 & Q34		
WEEK 3 *3 – 7 Aug*		Concentration of solutions: $c = \frac{n}{V}$	p. 4.4 – 4.6	**p. Q22**: Q28 & Q31		
		Revision of stoichiometric calculations (grade 10): Quantitative analysis *(% Composition; Empirical and molecular formulas)*	p. 4.6 – 4.8	**p. Q22**: Q23 – Q27		
		More complex calculations: Limiting reagent; Percentage yield	p. 4.8 – 4.10	**p. Q22 – Q23**: Q29 – Q36 **p. Q25**: Q50 & Q53		
WEEK 4 *11 – 14 Aug*		Practical Investigation 2: Determine the percentage $CaCO_3$ in a seashell	p. 4.10 – 4.11	**p. Q23**: Q35 & Q36		
WEEK 5 *17 – 21 Aug*		Volume relationships in gaseous reactions: Gas release and explosions; Air bags; Stoichiometric calculations	p. 4.12	**p. Q22**: Q31 & Q34		
WEEK 6 *24 – 28 Aug*		**Energy and chemical change:** During chemical reactions: Enthalpy change and heat transfer; Breaking and forming of bonds; Exothermic and endothermic reactions; Classify reactions as exothermic or endothermic; Everyday examples; Collision theory; Activation energy (E_A)	p. 4.12 – 4.15	**p. Q20**: Q1 & Q7 **p. Q24**: Q44 – Q45	Watch this useful video on exothermic and endothermic reactions	
		Potential energy diagrams: An endothermic reaction; An exothermic reaction; A catalyst	p. 4.15 – 4.16	**p. Q21**: Q15 **p. Q24**: Q44 – Q45 **p. Q26**: Q52 **p. Q27**: Q56		
WEEK 7 *31 Aug – 4 Sept*		**Types of reactions:** Acids and Bases: General properties; Common acids and bases; Definition of acids and bases; Proton transfer reaction; Conjugate acid-base pairs; Ampholytes	p. 4.17 – 4.21	**p. Q20**: Q3 – Q6 & Q8 **p. Q21**: Q11 & Q12 **p. Q25**: Q51		
		Reactions of acids with bases: Characteristic reactions of acids; Production of specific salts; Isolation of salts from solutions	p. 4.21 – 4.23	**p. Q23**: Q37 – Q40 **p. Q25**: Q49 & Q51 **p. Q26**: Q54	- Follow this titration screen experiment. - Watch this video and this video on neutralisation reactions & production of salts	
WEEK 8 *7 – 11 Sept*		Indicators; Acid-base titrations *(neutralisation reactions)* : introduction	p. 4.23 – 4.25	**p. Q23**: Q41	Practical: Preparation of a standard solution (see p. 4.5).	

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WEEK 9 *14 – 18 Sept*	**MATTER & MATERIALS** *8 school days* PAPER 2: 60 marks	**Ideal gasses and thermal properties:** Kinetic molecular theory: Motion of particles; The kinetic theory of gases; Properties of ideal vs real gases; The kinetic theory and the gas laws	p. 2.30 – 2.32	**p. Q8 & Q9**: Q4 & Q14 – Q20		
		The Ideal Gas law: Boyle's law	p. 2.32 – 2.34	**p. Q8 & Q9**: Q4 & Q14 – Q20	- Formal practical investigation: p.2.32 – 2.33 - Here is an example of a practical and memo regarding Boyle's Law - Watch this useful video on Boyle's Law	
WEEK 10 *21 – 23 Sept*	Time for consolidation and revision (*5 school days*)			**Formal Assessments: Control Test (one paper; min 100 marks) & Experiment (min 50 marks)**		

The official DBE ATP does not allow time for revision and consolidation at the end of term 3. The content of week 10 was therefore be moved to week 9, so that week 10 is available for the September control test. The content may also be spread out over week 8 and 9.

CONTENT THAT WILL BE TESTED

- *Qualitative aspects of chemical change*
- *Ideal gas and thermal properties*
- *Energy and chemical change*

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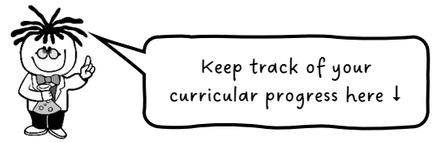

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WEEK 1 *6 – 9 Oct*	**CHEMICAL CHANGE** *14 school days* PAPER 2: 70 marks	September Control Test: Discussion & Remedial work				
WEEK 2 *12 – 16 Oct*		Acid-base *(neutralisation)* reactions (continue) Acid-base titrations; Practical application *(write down neutralisation reactions of common laboratory acids and bases)*	p. 4.24 – 4.25	**p. Q23**: Q41 – Q43 **p. Q25**: Q51 **p. Q26:** Q54.2	- Formal practical investigation: p.4.24 – 4.25 - Watch a video on an acid-base titration here and here	
		pH scale *(calculate the pH of strong acids and strong bases)*	***Gr 12 3-in-1*** p. 183 – 184	**p. 214**: Q25.1 ***(Gr 12 3-in-1)***		
WEEK 3 *19 – 23 Oct*		Redox reactions: Oxidation numbers: Charges of atoms in a compound; Rules for the allocation of oxidation numbers; Allocation of oxidation numbers to atoms in a compound	p. 4.28 – 4.30	**p. Q24**: Q46.3 & Q47.1 **p. Q26 – Q27:** Q55	Interesting video on everyday examples of redox- reactions here	
		Oxidation-reduction reactions: Electron transfer; Types of redox reactions	p. 4.26 – 4.28	**p. Q24**: Q46 & Q47.2	Introductory video on oxidation-reduction reactions here	
		Identification of oxidation and reduction half-reactions, and reducing and oxidising agents *(using electron transfer or a change in oxidation number)* Hydrogen sulphide (H_2S) as reducing agent; Potassium permanganate ($KMnO_4$) as oxidising agent; Balancing of redox reactions	p. 4.30 – 4.33	**p. Q24 – Q25**: Q46 – Q48	NOTE: *Not all shared resources are TAS creations – some are shared contributions from our Teacher WhatsApp group.*	
WEEK 4 & 5 *26 Oct – 6 Nov*	**ALL TOPICS**	Consolidation and Revision				
WEEK 6 – 9 *9 Nov – 9 Dec*	Time for consolidation and revision *(23 school days)*			**Final Examination: Paper 1: 150 marks Paper 2: 150 marks**		

FINAL EXAMINATION	
PHYSICS PAPER 1 (100 marks)	**CHEMISTRY PAPER 2 (100 marks)**
• Vectors in two dimensions • Newton's laws • Electrostatics • Electromagnetism • Electric circuits	• Atomic combinations • Intermolecular forces • Ideal gases and thermal properties • Quantitative aspects of chemical change • Energy and chemical change • Types of reaction