



2021 Sec 4 Physics Mid-Year Examination (SA1)

Topics & Guidelines for Revision

Name: () Class: 4/

Date:

2020 Sec 3				T2 week			June week						
Topical Notes		Practicals/ Textbook		Assignments			8	9	10	1	2	3	4
2	Kinematics <ul style="list-style-type: none"> Speed, velocity, acceleration Graphical analysis Free-fall Equations of motion 	PR3: Falling ball <i>Read Chapter 2 (textbook)</i>	AS2.1: Speed, velocity & acceleration										
			AS2.2: s-t & v-t graphs										
			AS2.3: Equations of motion										
3	Dynamics <ul style="list-style-type: none"> Types of forces, free-body diagram, balanced & unbalanced forces Newton's 1st, 2nd & 3rd laws of motion Vector addition Vector resolution 	PR4: Forces in equilibrium <i>Read Chapters 3 & 4</i>	AS3.1: Types of forces & free-body diagrams										
			AS3.2: Newton's 1 st law										
			AS3.3: Newton's 2 nd & 3 rd laws										
			AS3.4: Vector addition of forces										
2021 Sec 4				T2 week			June week						
8	Refraction <ul style="list-style-type: none"> Laws of refraction Refractive index Refraction ray diagrams Total internal reflection 	PR8: Refraction <i>Read Chapter 13.2</i>	AS 8.1: Refraction										
			AS 8.2: Total internal reflection										
9	Lenses <ul style="list-style-type: none"> Thin lens, magnification of images, ray diagrams Lens formula 	PR1: Convex lens <i>Read Chapter 13.3</i>	AS9.1: Lenses										
			AS9.2: Lens formulae										
10	Electromagnetic spectrum <ul style="list-style-type: none"> Properties, applications, effects on cells & tissue 	<i>Read Chapter 14</i>											
11	General wave properties <ul style="list-style-type: none"> Wave motion, wave terms Longitudinal & transverse waves Reflection & refraction of plane waves 	<i>Read Chapter 12</i>	AS11: General wave properties										
12	Sound <ul style="list-style-type: none"> Sound waves, speed of sound & echo Ultrasound Use of C.R.O. 	<i>Read Chapter 15</i>	AS12: Sound										
13	Static electricity <ul style="list-style-type: none"> Electrostatics Electric fields Applications 	<i>Read Chapter 16</i>	AS13: Static electricity										
14	Current of electricity <ul style="list-style-type: none"> Charge & electric current E.m.f. & p.d. Resistance 	PR2: Measuring current & p.d. <i>Read Chapter 17</i>	AS14: Current of electricity										
15	D.C. circuits <ul style="list-style-type: none"> Series & parallel circuits Potential divider circuit Diode, thermistor, LDR 	PR3: Resistors connected in parallel PR5: p.d. & current in a resistor, lamp PR5: resistance wire <i>Read Chapter 18</i>	AS15.1: D.C. circuits										
			AS15.2: Thermistor & LDR										
16	Practical electricity <ul style="list-style-type: none"> Sources of electrical energy Electric power & energy Dangers & safe use of electricity in the home 	<i>Read Chapter 19</i>	AS16: Practical electricity										

Note:

- **Track your progress using “✓” (planned) and “X” (revised) against each item.**
- **Also read up on *Glossary of Terms & Mathematical Skills* in *Building a Strong Foundation in Physics* notes (given in 2021).**

Schedule & Format for Physics Papers

Date	Time (duration)	Paper (marks)	Structure & marks	Remarks
Term 3 week 1 2 July Friday (in class-rooms)	0845 -0930h (45 min)	Paper 1 (30 marks)	<ul style="list-style-type: none"> • 30 MCQ • Shade all answers on Optical Answer Sheet (OAS) using 2B pencil. 	Shade the answers along the way. Do NOT wait till end of paper to start shading!
	1015 -1130h (1 hour 15 min)	Paper 2 (50 marks)	Section A (40 marks) <ul style="list-style-type: none"> • short structured questions Section B (10 marks) <ul style="list-style-type: none"> • 1 long question 	Answer all questions in the spaces provided. <i>Spend about 1 hour.</i> Answer all questions in the spaces provided. <i>Spend about 15 min.</i>

Advice for Exam Preparation

- Plan (by date/week) and start your revision **before** end of Term 2 so that you have sufficient time to
 - cover all topics thoroughly (notes & assignments),
 - have a quick review of past assessments (quizzes, exams, etc.) and
 - **do summary notes for key/difficult topics**
 - practise questions from previous years' MYE papers and physics workbook/past-year series.
- Be prepared to handle questions for all **Specific Instructional Objectives** (on first page of topical notes). Also refer to **textbook** "All about Physics" for detailed explanations, worked examples and additional practice **questions** (at the end of each topic).

General Advice for Exam Day

- Get ready your scientific **calculator** (in good working order), a mathematical set (including **protractor**, & **set square**) and a **30 cm semi-transparent ruler**.
- Have sufficient sleep/rest the day before the paper.
- Ensure you have a spare pen, **2B** pencil and eraser.
- **You are NOT allowed** to use any correction fluid/tape in the exam venue.
- **Manage your time carefully during the papers!** (Every 1 mark is about 1.5 minutes of work.)

Problem Solving Approach in Physics : I SEE*

**Adapted from University Physics (with Modern Physics) by Young and Freedman, 2008 (12th Edn).*

IDENTIFY the relevant concepts Try to understand the physics of the problem first	1. identify the required variable(s) 2. recall related physical laws/principles, formulae and equations 3. recall similar systems in related topics
SET UP the problem	1. Sketch a diagram (this is usually helpful). 2. Choose & state the equations or formulae you'll use to solve the problem. 3. Try to keep expressions algebraic (using suitable symbols) rather than numerical.
EXECUTE the solution	1. List known and unknown quantities . 2. Solve the equations for the unknowns. 3. Show your working neatly and clearly on the page, and explain what you are doing and why you are doing it.
EVALUATE the answer	1. Check the units of your answer. 2. Generally, use 2 or 3 significant figures in your final numerical answer (keep <u>more s.f.s for intermediate steps</u>). 3. Check the magnitude of your answer against common sense or other knowledge.