

## VCE Unit 2 – Physics Revision 2018

### Exam Advice

Reading – 15 mins

Exam - 90 minutes

Formulae and data sheet provided (see below)

Bring your own scientific calculator (no CAS)

1 x A4 page notes (both sides)

How can motion be described and explained? 60 marks

Practical Investigation 30 marks

#### Instructions

Answer **all** questions in the spaces provided. Write using blue or black pen.

Where answer boxes are provided, write your final answer in the box.

If an answer box has a unit printed in it, give your answer in that unit.

In questions worth more than one mark is available, appropriate working **must** be shown.

Unless otherwise indicated, the diagrams in this booklet are **not** to scale.

- 90 marks for 90 minutes work.
- Start with questions you are confident about
- Prepare a start/finish time for each section. Leave 15 mins at the end to check over the paper.

### Revision Advice

- Refer to Chapters 9 -12 for Motion. Refer to your Summary notes and go back and do a few questions from each exercise. Doing past exam papers is not sufficient to cover all the theory. Make your Summary sheet as you go.
- Practical Investigation questions will include plotting and analysis of data, measuring uncertainties and plotting on graphs and using in calculations, recognizing mathematical relationships between variables, sources and types of errors.
- Re-do your SACS/tests (STLlink with the Unit exams)
- Review Key Knowledge on STLlink below:

<https://learn.stleonards.vic.edu.au/vcephy/unit-2/2-3-unit-2-past-exams/>

- Complete Area of Study Review in your textbook. Worked solutions for these are on STLlink.
- Do Edrolo practice exams, there are 2 for each area of study with videos of solutions
- Watch the Edrolo videos
- Past papers and revision on STLlink, remember course changed in 2016 so content from previous papers is different.

<https://learn.stleonards.vic.edu.au/vcephy/unit-2/2-3-unit-2-past-exams/>

## READING TIME

- You have 15 minutes reading time to read the paper. Unlikely this will be possible, so you need to read the questions that you find difficult, to ensure that you have a clear understanding of what the question is requiring you to do.
- Check paper, by turning to back and finding the end of the paper.
- Read as many questions as is possible, carefully, to find the Physics.
- Look at all the graphs/pictures, try to guess the question, i.e. think about the question
- Read the axes of the graphs. Look for the variables on both axes, and check the units. Make a mental note of all non-standard units
- Make sure that you use the entire 15 mins

## WRITING

- Tidy up all the 'mental' notes that you made during reading time.
- Put in your start/finish times for each section, and try to stick to them.
- Get out your highlighter and start using it to pick out important information.
- Don't write in size 6 font because it is hard for the marker to read
- Don't use a light pencil because it can be difficult to read
- **ONLY write on Black or Blue pen**
- **Only write within the box on the page**
- Start your answer on the left hand side of the page, (not in the middle), in case you need to cross it out and rewrite an answer
- Don't waste time on questions early in the paper, if you can't do them, come back to them later
- Re-read all the questions, using the highlighter to identify key elements in the questions
- If the question is worth more than 2 marks, use the dummy principle to answer the question, assume the marker is a dummy, spell your answer out in great detail.
- Use diagrams, worked examples etc. in explain type answers. Remember, that the marker actually wants to give you marks, and a good diagram is always worth marks.
- Answer explain type questions in **point form**.
- For multiple choice questions the following technique should be used
  - Don't read the answers, do the question yourself first. There is usually 1 correct answer and 4 very good distracters
  - Don't change your mind, unless you are absolutely positive that your first answer is incorrect and that the second answer is brilliant
  - Don't alter an answer by writing over it. Cross it out and write the correct answer next to it.

## EXAM TECHNIQUES

- Start where you want to.
- Write start time for the beginning of each section. Allow between 20 - 30 min for each section and 15 min at the end of exam to revise.
- Don't read the answers to the multiple choice questions until you have thought of an answer to the question then make sure they agree with your answer.
- If you have time plan your answers.
- Expect the beginning parts of each question to be easy, so don't over complicate it.
- Make sure you are actually answering the question, have you given the response that you were asked to?
- Don't just copy from your cheat sheet. These days the exam writers go to great lengths to try to eliminate this. Reword your answer from your cheat sheet to fit the question.
- Check the answer is a reasonable value. Expect the answer to make sense.

## LAST 15 MINUTES OF THE EXAM

- Check you have answered all questions.
- Fill in any empty spaces especially multiple-choice questions.

## FORMULAE

|                                                          |                                                                                               |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| velocity; acceleration                                   | $v = \frac{\Delta x}{\Delta t}; \quad a = \frac{\Delta v}{\Delta t}$                          |
| equations for constant acceleration                      | $v = u + at$ $s = ut + \frac{1}{2}at^2$ $v^2 = u^2 + 2as$ $s = \frac{1}{2}(v + u)t$           |
| Newton's second law                                      | $\Sigma F = ma$                                                                               |
| gravitational potential energy near the surface of Earth | $E_g = mg\Delta h$                                                                            |
| kinetic energy                                           | $E_k = \frac{1}{2}mv^2$                                                                       |
| mechanical work                                          | $W = Fs$                                                                                      |
| power                                                    | $P = \frac{W}{\Delta t} = \frac{\Delta E}{\Delta t}$                                          |
| Hooke's law for an ideal spring                          | $F = -k\Delta x$                                                                              |
| elastic potential energy                                 | $E_s = \frac{1}{2}k\Delta x^2$                                                                |
| torque                                                   | $\tau = F \times r$                                                                           |
| momentum                                                 | $p = mv$                                                                                      |
| impulse                                                  | $I = \Delta p$                                                                                |
| efficiency                                               | $\text{efficiency (\%)} = \frac{\text{useful energy output}}{\text{energy input}} \times 100$ |

## DATA

acceleration due to gravity,  $g = 9.8 \text{ m s}^{-2}$

## PREFIXES

| Prefix | Abbreviation | Value     |
|--------|--------------|-----------|
| giga   | G            | $10^9$    |
| mega   | M            | $10^6$    |
| kilo   | k            | $10^3$    |
| milli  | m            | $10^{-3}$ |
| micro  | $\mu$        | $10^{-6}$ |
| nano   | n            | $10^{-9}$ |