



ORANGE HIGH SCHOOL

ASSESSMENT TASK NOTIFICATION

Subject	HSC Physics
Task name	Depth Study
Year	12
Weighting	35%
Teacher	J. Percival
Head Teacher	J. Huggett
Date given	Term 2, Week 3
Date due	Term 2, Week 5, Tuesday 28th of May, Period 2

Assessment Outline

PART 1 – Summary Report

- To complete this task, you are required to create a summary report outside of class. The summary report will be no longer than 2 double-side A4 sheets. (10 marks)

PART 2 – In Class Examination

- Students will sit an in-class 60 minute examination based on the syllabus content and skills points from the next page
- Students will be tested on their knowledge and skills and how they can apply their researched information and understanding of skills in given HSC style examination questions. (43 marks)

Non-completion of Task:

If you know you are going to be away on the day that the task is due, you must make alternative arrangements with your classroom teacher beforehand. If you are away on the day the task is due, you must contact your classroom teacher or Head Teacher on your return to school and make alternate arrangements. Documentation will be required in both cases.

Failure to follow the above procedures may result in a zero award.

Plagiarism:

Plagiarism - using the work of others without acknowledgement - will incur serious penalties and may result in a zero award. Any cheating will also incur penalties.

Failure to follow the above procedures may result in a zero award. The policies and procedures that are outlined in the HSC Assessment Book will be followed regarding the non-completion of assessments.

Outcomes Assessed

PHYS12-1 - develops and evaluates questions and hypotheses for scientific investigation

PHY12-4 - selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media

PHY12-5 - analyses and evaluates primary and secondary data and information

PHY12-6 solves scientific problems using primary and secondary data, critical thinking skills and scientific processes

PHY12-7 communicates scientific understanding using suitable language and terminology for a specific audience or purpose

PHY12-15 explains and analyses the evidence supporting the relationship between astronomical events and the nucleosynthesis of atoms and relates these to the development of the current model of the atom

Year 12 Physics Assessment Task 2

DEPTH STUDY - MODULE 8: From the Universe to the Atom

Due Date: Tuesday 28th of May 2024, Period 2, Week 5, Term 2

Task Overview:

This task contains two parts.










PART 1 – Summary Report

Develop a summary report that is no more than 2 double-sided A4 sheets, it must also include a reference list. You will use this information to answer questions as part of the assessment in class on its due date.

You are to complete research in and out of class time in the following areas:

Inquiry question: *How can the energy of the atomic nucleus be harnessed?*

You are to:

- analyse the spontaneous decay of unstable nuclei, and the properties of the alpha, beta and gamma radiation emitted (ACSPH028, ACSPH030) 
- examine the model of half-life in radioactive decay and make quantitative predictions about the activity or amount of a radioactive sample using the following relationships:
 - $N_t = N_0 e^{-\lambda t}$
 - $\lambda = \frac{\ln 2}{t_{1/2}}$where N_t = number of particles at time t , N_0 = number of particles present at $t = 0$, λ = decay constant, $t_{1/2}$ = time for half the radioactive amount to decay (ACSPH029)  
- model and explain the process of nuclear fission, including the concepts of controlled and uncontrolled chain reactions, and account for the release of energy in the process (ACSPH033, ACSPH034) 
- analyse relationships that represent conservation of mass-energy in spontaneous and artificial nuclear transmutations, including alpha decay, beta decay, nuclear fission and nuclear fusion (ACSPH032)  
- account for the release of energy in the process of nuclear fusion (ACSPH035, ACSPH036) 
- predict quantitatively the energy released in nuclear decays or transmutations, including nuclear fission and nuclear fusion, by applying: (ACSPH031, ACSPH035, ACSPH036)  
 - the law of conservation of energy
 - mass defect
 - binding energy
 - Einstein's mass–energy equivalence relationship $E = mc^2$

PART 2 – In Class Examination

Students will then be required to answer HSC style questions (both short answer and extended response questions) utilising their completed researched summary information sheet in class on the given date. Students will have 60 minutes to complete the task, and it will be based on the syllabus content and skill points listed above.

TASK PREPARATION

- To complete this task students should use available evidence from different aspects of your study of this module, as well as other information that you have gathered.
- Students must familiarise themselves with the marking rubric and ensure that they address the criteria.
- Students' information should cover all aspects of the task, in appropriate detail, to be able to complete the in-class task. The information they have gathered and processed in Part 1 will be collected after the completion of Part 2 and will be marked according to the marking criteria shown.

Marking Rubric: Part 1 - Summary Report

NAME: _____

Criteria: (mark)	Outstanding (A)	High (B)	Sound (C)	Basic (D)	Limited (E)
<p>PHYS12-1 & PHYS12-15</p> <p style="text-align: center;">/ 10</p>	<ul style="list-style-type: none"> Research uses at least five different sources. Research presented in their own words. Consistent use of scientific notations and terminology Bibliography correctly written. Research done within the 2 x A4 limit. <p style="text-align: center;">10 - 9 marks</p>	<ul style="list-style-type: none"> Research uses at least four different sources. Research presented in their own words. Regular use of scientific notations and terminology. Bibliography correctly written. Research done within the 2 x A4 limit. <p style="text-align: center;">8 - 7 marks</p>	<ul style="list-style-type: none"> Research uses at least three different sources. Research presented mostly in their own words. Regular use of scientific notations and terminology. Research at appropriate level. Bibliography attempted. Research done within the 2 x A4 limit. <p style="text-align: center;">6 - 5 marks</p>	<ul style="list-style-type: none"> Research uses at least two sources. Research presented not in their own words. Occasional use of scientific notations and terminology. Bibliography attempted. Research done within the 2 x A4 limit. <p style="text-align: center;">4 - 3 marks</p>	<ul style="list-style-type: none"> Research presented not in their own words. No use of scientific notations and terminology. Bibliography not present. Research done within the 2 x A4 limit. <p style="text-align: center;">2 - 1 marks</p>

***The rubric for Part 2 - In Class Examination will not be provided before the task, as this would provide students information about unseen material.**

Outcomes					
<p>PHYS12-1 & PHYS12-15 (Summary Report)</p> <p>= / 10</p>	<p>PHYS12-4 & PHYS12-5 (In Class Examination)</p> <p>= / 23</p>		<p>PHYS12-6 & PHYS12-7 (In Class Examination)</p> <p>= / 20</p>		
<p>Total = / 53</p>					
Grade	<p>A 53 – 50</p>	<p>B 49 – 40</p>	<p>C 39 – 20</p>	<p>D 19 – 9</p>	<p>E 8 – 0</p>

Feedback
