MOUNT ANNAN HIGH SCHOOL

ASSESSMENT TASK NOTIFICATION

FACULTY	Science			**COURSE**	Science - Stage 6	**YEAR**	12
TASK NUMBER	3	**TASK NAME**	First- Hand Investigation				
TASK WEIGHT	25%			**MARKS AWARDED**	35		
DATE OF NOTIFICATION	Term 2, Week 4 (Wednesday 22nd May)						
DUE DATE	Term 2, Week 6 (Wednesday 5th June)						

TASK DESCRIPTION / INSTRUCTIONS

Inquiry question: What evidence supports the classical wave model of light and what predictions can be made using this model??

Students will undertake a first- hand investigation to determine the wavelength of monochromatic light.

During the investigation students will collect quantitative data relating to Young's Double Slit experiment to calculate the wavelength of the light used during the investigation. Students will be required to individually discuss, analyse and reflect on the data collected.

This assessment is an in- class task requiring students to work on the following components and submit on 5th June 2024:

Part 1 – Planning an Investigation (10 Marks)
Students will be required to plan a first-hand investigation to determine the wavelength of a laser using a list of equipment.

The equipment available for students will be as follows:

- Retort stand with clamp
- laser
- diffraction grating
- metre ruler
- screen
- pencil

Part 2- Conducting the Investigation (4 Marks)
Students will conduct the experiment with a partner and collect appropriate data to enable them to calculate the wavelength of the laser used during the task.

Part 3- Data processing and analysis (21 Marks)
Students will work individually in the classroom to analyse and evaluate the data collected in Part 2 to calculate the wavelength of the laser.

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TASK SUBMISSION INSTRUCTIONS

Students will use their Working Scientifically skills to collect and interpret data. The task will be completed and submitted in class on Wednesday 5th June 2024.

***NOTE*: All materials required will be supplied during the task.**

OUTCOMES

Students will be demonstrating their understanding of the following outcomes:

Planning Investigations
PH12-2 designs and evaluates investigations in order to obtain primary and secondary data and information.

Conducting investigations
PH12-3 conducts investigations to collect valid and reliable primary and secondary data and information.

Processing data and information
PH12-4 selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media.

Knowledge and understanding
PH12-14 describes and analyses evidence for the properties of light and evaluates the implications of this evidence for modern theories of physics in the contemporary world.

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FAILURE TO COMPLETE OR SUBMIT AN ASSESSMENT TASK

If you do not attend school on the Due Date of an Assessment Task to submit or complete the task in person you will be given a zero mark unless you comply with the following Assessment Guidelines:

- For Assessment Task completed at home – you must submit the assessment task before school on the next day you attend.
- For Assessment Tasks completed at school – you must report to the relevant Head Teacher before school the next day you attend and discuss when you will complete task missed or a substitute task.
- Complete a 'Misadventure Form' and provide relevant information and evidence to appeal the **zero mark** awarded. Other circumstances are outlined in the MAHS Assessment Booklet for the particular year. Evidence may include an in person medical certificate for illness or a letter outlining extenuating circumstances or other deemed reasonable reasons. An outcome of your 'Misadventure Form' will be provided by the Deputy Principal.

Students found guilty of **malpractice** which includes plagiarism will be awarded a **zero mark**. If a piece of work is incomplete at the time of submission, it should be submitted as is, and you will be given a mark on what has been completed.

As per our school Assessment Procedures outlined in the MAHS Assessment Booklet for the particular year, you must see your teacher and Head Teacher on the **first day you return** back to school. Please access our school website to access our assessment procedures for each year group and a 'misadventure form' - https://mountannan-h.schools.nsw.gov.au/community/assessment-scedules.html

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PART 1: Planning an Investigation

MARKING CRITERIA	
Performance Descriptors (Outcomes PH12-2)	**Marks/Grade**
Student can: ●Comprehensively develop a plan for a first-hand investigation to determine the wavelength of monochromatic light. ● Identify valid risks AND correctly explain how to minimise these risks. ●Correctly identify the variables in the investigation.	**A** **(9-10)**
Student can: ●Effectively develop a plan for a first-hand investigation to determine the wavelength of monochromatic light. ● Identify valid risks AND correctly explain how to minimise these risks. ●Correctly identify the variables in the investigation.	**B** **(7-8)**
Student can: ●Present a sound plan for a first-hand investigation to determine the wavelength of monochromatic light. ●Identify risks and how to minimise these WITH inconsistencies. ●Correctly identify the variables in the investigation.	**C** **(5-6)**
Student can: ● Present a plan for a first-hand investigation to to determine the wavelength of monochromatic light. ●Identify a risk from a first-hand investigation incorrectly and relate how to minimize it. OR a valid risk identified without relating to risk minimisation. ●Identify variables with some inconsistencies.	**D** **(3-4)**
Student can: ● Present an outline for a first-hand investigation. ●Identify a risk from a first-hand investigation without relating to risk minimisation. ●Identify variables incorrectly	**E** **(1-2)**
Non Attempt – Non Submission – Non Serious Attempt	**0**

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PART 2 : Conducting the Investigation

MARKING CRITERIA	
Performance Descriptors (Outcomes PH12-3)	**Marks/Grade**
Student can: ●Effectively implement their plan to obtain data that is accurate, reliable and valid to determine the wavelength of the laser. ●Follow procedures in a safe manner.	**A** **(4)**
Student can: ●Accurately implement their plan to obtain data that is accurate, reliable and valid to determine the wavelength of the laser. ●Follow procedures in a safe manner.	**B** **(3)**
Student can: ● Demonstrate an investigation to collect reliable data. ● Follow procedures in a safe manner.	**C** **(2)**
Student can: ● Demonstrate an investigation that collected irrelevant data. ● Carry out investigation in an unsafe manner.	**D** **(1)**
Non Attempt – Non Submission – Non Serious Attempt	**0**

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PART 3 : Data processing and analysis

MARKING CRITERIA	
Performance Descriptors (Outcomes PH12-4, PH12-14)	**Marks/Grade**
Student can: ● Comprehensively process appropriate data, based on Young's experiment to determine the wavelength of the laser used. ●Provide a comprehensive quantitative and qualitative analysis of the data collected. ●Explain in detail how the reliability of data gathered was ensured. ●Provide a comprehensive analysis of errors and strategies to minimise them. ●Evaluate the impact of Young's experiment on our understanding of the nature of light.	**A** **(17-21)**
Student can: ● Effectively process appropriate data, based on Young's experiment to determine the wavelength of the laser used. ●Provide a thorough quantitative and qualitative analysis of the data collected. ● Explain in detail how the reliability of data gathered was ensured. ●Provide an analysis of errors and strategies to minimise them. ●Analyse the impact of Young's experiment on our understanding of the nature of light.	**B** **(13-16)**
Student can: ● Process appropriate data, based on Young's experiment to determine the wavelength of the laser used. ●Provide sound quantitative and qualitative analysis of the data collected. ● Explain how the reliability of data gathered was ensured. ●Provide a discussion of errors and strategies to minimise them. ●Explain the impact of Young's experiment on our understanding of the nature of light.	**C** **(9-12)**
Student can: ● Process data, based on Young's experiment to determine the wavelength of the laser used. ●Provide a basic analysis of the data collected. ● State how the reliability of data gathered was ensured. ●State errors and strategies to minimise them with inconsistencies. ●State the impact of Young's experiment on our understanding of the nature of light.	**D** **(5-8)**
Student can: ● Process data, based on Young's experiment with inconsistencies ●Provide a limited analysis of the data collected. ● State how the reliability of data gathered was ensured with inconsistencies. ●State errors with inconsistencies.	**E** **(1-4)**
Non Attempt – Non Submission – Non Serious Attempt	**0**