***Human Biology ATAR – Task 7: Validation***

***Extraction of DNA (5%)***

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| --- | --- | --- | --- |
| Name: | | | |
| Time allowed: 1 Lessons | | | |
| **Section** | Your Mark | Marks available | Percentage of Investigation |
| **Section 1:**  Investigation |  | 25 | 50% |
| **Section 2**:  Validation Test |  | 25 | 50% |
|  |  | **50** | **100%** |

**Declaration of Authenticity**

I (Student Name) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ declare that this work is my own and I have not plagiarised from any source.

Signature:  
  
Date:

1**.** State the aim of this investigation **(1 mark)**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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2. Given that safety glasses were worn to prevent chemicals getting into your eyes, outline **three** other risks you needed be aware of during this practical. **(3 marks)**

|  |  |
| --- | --- |
| **Risk** | **How risk was mitigated** |
|  |  |
|  |  |
|  |  |

3. Describe the role of the soap/detergent in the buffer solution **(2 marks)**

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4.Explain why it was necessary to crush the strawberry fruit. **(2 marks)**

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5. Explain why you had to be careful not to over handle the strawberry fruit.

(**2 marks)**

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6**.** Explain the purpose of the gauze **(2 marks)**

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7**.** Describe what you observed when an equal volume of ice-cold ethanol was placed on the filtered strawberry fruit solution. **(2 marks)**

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8. State the name of the substance collected at this stage. **(1 marks)** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. A team of geneticists is conducting a study on the BRCA1 gene to understand its connection to breast cancer. The BRCA1 gene, located on chromosome 17, plays a critical role in the repair of DNA damage. Mutations in this gene can lead to an increased risk of developing breast and ovarian cancers.

To carry out their research, the geneticists need to extract and sequence DNA from a sample population.

1. State the independent variable for their research **(1 mark)**

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1. State the dependent variable for their research **(1 mark)**

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1. Write a suitable hypothesis for this investigation.  **(2 marks)**

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1. Name and describe **two** ethical principles the scientists must follow.

**(4 marks)**

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1. Explain why it is important that a large number of people are included in the investigation. **(2 marks)**

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**END OF VALIDATION TEST**