**Part 1 Marking Key Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Preparing a Slide

|  |  |
| --- | --- |
| **Description** | **Marks** |
| All steps followed. | 1 |
| No finger prints on slide or coverslip | 1 |
| Specimen is located in the middle of the slide, slide is complete. | 1 |
| No / or few air bubbles present/ less than 2 seen | 1 |
| Total | 4 |

Focussing the Microscope

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Starts on the smallest objective lens and then slowly works their way to 40X | 1 |
| Student uses coarse focus before using fine focus. | 1 |
| Specimen when viewed is in the middle of the field of view | 1 |
| When teacher looks through microscope specimen is clear and in focus. | 1 |
| **Total** | **4** |

Drawing what you see under the microscope (4 Marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| No sketching/ Lines are bold and clear | 1 |
| Name of slide and Magnification are included in correct positions, diagram is drawn inside the circle. | 1 |
| Pencil is used and dark areas are not shaded/ shaded using dots | 1 |
| Student has only drawn what they can see, drawing is neat. | 1 |
| **Total** | **4** |

Part 2 Marking Key

1. Determine the width of the mosquito’s body depicted in the image. (2 Marks)

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| --- | --- |
| **Description** | **Marks** |
| 800 µm ( 1 Mark for number, 1 mark for units) | 2 |

1. The mosquito is carrying the parasite Malaria. State the name of the transmission method that Malaria typically follows. (1 Mark)

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| --- | --- |
| **Description** | **Marks** |
| Vector | 1 |

1. State two other ways that a pathogen can be transmitted. (2 marks)

|  |  |
| --- | --- |
| **Description**  **Any two of the following** | **Marks** |
| **Direct Contact**  **Droplet**  **Airborne**  **Foodborne/ waterborne** | 1. **2** |

1. Using the data in the table above, describe what conclusions can be drawn about the relationship between humidity and malaria transmission? (4 Marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Places with the highest humidity showed the greater numbers of infections of malaria. /Places with the lowest humidity had a lower number of malaria infections | 1 |
| Mosquitos thrive best in humid conditions therefore there is a greater chance of transmission by mosquitos. | 1 |
| Refers to the data example  Ghana has an average humidity of 83% and has a prevalence of 270 per 1000 compared with Botswana which has an average humidity of 32% and has a prevalence 2 per 1000 | 2 |
| Total | 4 |

1. The conclusions made from this data might not be as valid as they could be explain why this is the case. (3 Marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| This data does not take into account any other factors that might influence the data/ conclusions only take into account 1 factor when there are others. | 1 |
| Example included 1 from below:   * Such as the wealth of the country/ socioeconomic status of country * Knowledge and healthcare system of the country | 1 |
| Links back into how this might affect the numbers infected with malaria. | 1 |

Part 3 Marking Key

1. Graph the results on this experiment on the grid below (6 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Appropriate title | 1 |
| X axis- months- labelled, scale | 1 |
| Y axis- number of mosquito larvae labelled, scale | 1 |
| 1 mark for key | 1 |
| 1 mark for plotting stagnant water correct | 1 |
| 1 mark for plotting agitated water correct | 1 |

1. Write an aim for this experiment (1 Mark)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| General purpose of the investigation.  Example  To determine if agitated water or stagnant water will best promote mosquito growth | 1 |

1. Independent and dependent variables

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Independent- condition of water agitated or stagnant | 1 |
| Dependent- number of mosquito larvae | 1 |

1. State a possible hypothesis for this experiment. (2 Marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Includes dependent and independent variable | 1 |
| Is testable | 1 |
| Examples  The stagnant water will result in more mosquito larvae |  |

1. Identify two controlled variables for this experiment and explain why they need to be controlled (2 Marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| 1 mark for stating variable and how it will affect results  2 variables stated | 1-2 |
| Examples include:   * Same volume of water🡪 larger volumes of water can hold more mosquito larvae * Same type/ properties of water🡪 if the pH is changed then the mosquito larvae would not be able to grow. * Same day in the month measured each type of water🡪 mosquito life cycle will affect the number of larvae present * Same methods for measuring/ counting larvae- to ensure that none are missed or if estimating the same technique is used. * No other organisms present in the water source🡪 fish for example are predators or larvae and will reduce numbers |  |

1. State two ways to improve this experiment and explain how they would increase the reliability of the experiment. (4 Marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Method to improve + explanation | 2 |
| 2 methods stated | 4 |
| Examples Include   * Repeating the experiment multiple times with different ponds to obtain an average (1) this will see if mosquitos are prevalent in the area affecting the results(1) * Start with the same number of mosquitos (1) agitated initially started with less than stagnant which would have affected the number of mosquitos produced and then the number of eggs they would produce(1) * Repeating experiment over many years(1) this will determine if the results of this experiment are a once off or are reliable.(1) |  |

1. Using the data in the table and your graph above, what conclusions can be drawn from this data about how to limit the transmission of malaria? (3 Marks)

|  |  |
| --- | --- |
| Description | Marks |
| Stagnant water allows more mosquito larvae to develop | 1 |
| The graph shows the number of mosquito larvae in the agitated pond is always less than in the stagnant pond. | 1 |
| Link back to their hypothesis | 1 |

1. Another scientist proposed that adding fish to the pond would be a better than agitating the water this is because the fish consume the mosquito larvae. Design an experiment that tests to see if adding fish to a pond would reduce the number of mosquito larvae (4 Marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Pond with fish + pond with no fish (only one factor changed) | 1 |
| Controlled type of fish and size of the pond stated | 1 |
| Method is well written/ easy to follow/ all steps included | 1 |
| Repeat trials | 1 |