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| Name |  | Code |  |
| Country |  | Signature |  |

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| **I. Chemical Oxygen Demand (COD) Test** |
| **Questions** | **Points** | **Answers** |
| **I-1** | **I-1-1** | 0.5 | (Show your working) |  |
|  *x* = |
| **I-1-2** | 0.5 | (Show your working) |
|  *z* =  |

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| **I. Chemical Oxygen Demand (COD) Test (Continued)** |
| **Questions** | **Points** | **Answers** |
| **I-1** | **I-1-3** | 0.5 | (Show your working) |  |
|  *y* = |
| **I-1-4** | 0.5 | (Show your working) |
|  *x* =  |

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| **I. Chemical Oxygen Demand (COD) Test (Continued)** |
| **Questions** | **Points** | **Answers** |
| **I-2** | **I-2-1** | 1.0 | (Show your working) |  |
|  *f* = |
| **I-2-2** | 1.0 | (Show your working) |
| Number of moles = mol |

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| **I. Chemical Oxygen Demand (COD) Test (Continued)** |
| **Questions** | **Points** | **Answers** |
| **I-2** | **I-2-3** | 1.0 | (Show your working) |  |
| COD = ppm |
| **I-2-4** | 2.0 | (Show your working) |
| Amount of C6H6 = mg/L |
|  Volume of CO2 = L |

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| **I. Chemical Oxygen Demand (COD) Test (Continued)** |
| **Questions** | **Points** | **Answers** |
| **I-2-5** | 1.0 | (Show your working) |
| Moles of Cr3+ right before titration :  | mol |
| Moles of Cr3+ after titration : | mol |

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| **I. Chemical Oxygen Demand (COD) Test (Continued)** |
| **Questions** | **Points** | **Answers** |
| **I-3** | 2.0 | (Show your working) |
| Compound Name :  |
|  COD = ppm |

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| Total points for question I |  |

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| **II. Ski Jumping** |
| **Questions** | **Points** | **Answers** |
| **II-1** |  | Forces | Choose one for each force from ① to ⑧ |
| 0.25 | Gravitational force |  |
| 0.25 | Normal force |  |
| 0.25 | Air resistance |  |
| **II-2** | 1.5 | (Show your working) |
| ** |

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| **II. Ski Jumping (Continued)** |
| **Questions** | **Points** | **Answers** |
| **II-3** | 1.5 | (Show your working) |
| *t*** |
| **II-4** | 1.25 | (Show your working) |
| *D =*  |

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| Total points for question II |  |

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| **III. Thomson’s Cathode-Ray Experiment** |
| **Questions** | **Points** | **Answers** |
| **III-1** | 1.0 | (Show your working) |
|  *u* = |
| **III-2** | **III-2-1** | 1.0 | Choose one from ① to ③ |  |
| **III-2-2** | 1.0 | Choose one from ① to ③ |  |
| **III-3** | 1.5 | (Show your working) |
|  *u* = |
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| Name |  | Code |  |

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| **III. Thomson’s Cathode-Ray Experiment (Continued)** |
| **Questions** | **Points** | **Answers** |
| **III-4** | 0.5 | (Show your working) |
|  *e/m* = |

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| Total points for question III |  |

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| **IV. Excretory System** |
| **Questions** | **Points** | **Answers** |
| **IV-1** | 1.0 |  |
| **IV-2** | 1.5 | X | Y | Z |
| g/100mL | g/100mL | g/100mL |
| **IV-3** | 1.5 | X | Y | Z |
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| Total points for question IV |  |

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| **V. Genetics** |
| **Questions** | **Points** | **Answers** |
| **V-1** | 1.0 | Multiple Choice(Choose one from ① to ⑦) |  |
| **V-2** | 1.0 | (Show your working) |
| Probability : |
| **V-3** | 1.0 | Sequence | **[5’---- ----3’]** |

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| Total points for questions V |  |

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| **VI. Blood Circulation** |
| **Questions** | **Points** | **Answers** |
| **VI-1** | 1.0 |  | Left semilunar valve(Mark either ‘**○**’ or ‘**×**’ ) | Left atrioventricular valve (Mark either ‘**○**’ or ‘**×**’ ) |
| *t*1 |  |  |
| *t*2 |  |  |
| **VI-2** | 1.0 | (Show your working) |
| Heart rate: beats/min |
| **VI-3** | 1.0 | (Show your working) |
|  Cardiac output : L/min |

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| Total points for question VI |  |