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|  | Module 5: Lesson 1 ASSIGNMENT |

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|  | Lesson 1 Assignment: Properties of Acids and Bases |

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|  | 1. Use the results of the litmus tests to categorize the solutions in the following table.  (4 marks)  |  |  |  | | --- | --- | --- | | Acids | Bases | Neutral | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |

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|  | 2. | Explain the purpose of testing the apparatus using distilled water before testing each of the solutions. (1 mark) |

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|  | 3. | Evaluate the use of the conductivity apparatus in this experiment. (1 mark) |

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|  | 4. | Some of the litmus tests took a long time to develop, such as the test for CaO(aq). Suggest an improvement to the experimental design that would fix this problem. (1 mark) |

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|  | 5. | Are there any solutions that do not seem to fit Arrhenius’s theory of acids and bases? Explain. (2 marks) |

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|  | 6. | Evaluate Arrhenius’s theory based on the evidence gathered in this lab. (2 marks) |

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|  | 7. | For each of the following, determine whether the statement is true or false. For those that are false, write a brief sentence indicating the required correction. |

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|  | a. | The prefix *hydro-* is used to indicate that an acid has hydrogen. (1 mark) |

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|  | b. | A conductivity apparatus is not that useful in separating acids from bases because both solutions conduct electricity. (1 mark) |

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|  | c. | The hydronium ion contains a water molecule bonded to a hydrogen ion. (1 mark) |

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|  | d. | Arrhenius’s original theory of acids does not explain why compounds like carbon dioxide are acids in solution. (1 mark) |

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|  | e. | The modified Arrhenius theory is much better than Arrhenius’s original theory at **predicting** the products of an acid reacting with water. (1 mark) |

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|  | 8. | Write equations that show how each of the following substances reacts with water. |

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|  | a. | Hydrogen fluoride gas reacts with water to form an acidic solution. (1 mark) |

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|  | b. | Solid sodium hydrogen sulfite reacts with water to form an acidic solution. (1 mark) |

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|  | c. | Solid sodium oxide, Na2O(s), reacts with water to form a basic solution*.* (1 mark) |

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|  | d. | Solid sodium phosphate (Na3PO4) dissociates in water to form a basic solution. (1 mark) |

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|  | e. | Solid potassium hydroxide reacts with water to form a basic solution. (1 mark) |

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| Once you have completed all of the questions, submit your work to your teacher. | | | |