**LABORATORY QUIZ 2**

Name: ………………………………………….

1. A student is attempting to conduct an esterification reaction by combining concentrated ethanoic acid with methanol and placing it in a hot water bath (60oC) for about 15 minutes.

[2] (a) Name the third chemical required for this reaction and state its function in the reaction.

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……………………………………………………………………………………………….

[1] (b) Write the chemical equation for the reaction.

[1] (c) Write the name of the organic product of this reaction.

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[2] (d) Draw and name an isomer of this compound that is ***not*** an ester.

[2] (e) Draw and name an isomer of this compound that ***is*** an ester.

[1] (f) Describe the observation that would indicate that esterification had occurred.

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2. (a) Describe how a student could prepare a sample of 3-pentanone. The description should include the names the starting materials and a brief description of the reaction conditions.

[2]

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(b) Write a balanced chemical equation for the reaction.

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3. Four chemicals are to be tested for their reaction (or lack of reaction) with sodium metal. The four compounds to be tested are

* propanoic acid,
* propanone,
* 2-methyl-2-propanol and
* 1-propanol.

(a) Not all of these compounds will react with the sodium. Name the compound(s) that show no reaction.

[1]

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(b) Which of the compounds that ***do*** react will show the ***slowest*** rate of reaction?

[1] …………………………………………………………………………………………………….

(c) At least two of the four compounds will react with the sodium. Write a balanced chemical equation for any compound that does react.

[2]

(d) Write the name of the main (organic) compound produced.

[1] …………………………………………………………………………………………………….

4. Describe tests that would allow you to distinguish between the following pairs of chemical. Include in your answer the observations (including 'no visible change' if applicable) that would be made. (NOTE: The chemical to be used for the test in part (b) is given.)

(a)

[3]

|  |  |
| --- | --- |
| ethanoic acid and ethanal | |
| TEST | OBSERVATIONS  ethanoic acid:  ethanal: |

(b)

[2]

|  |  |
| --- | --- |
| 2-methyl-2-butanol and 1-butanol | |
| TEST  Acidified KMnO4 is added | OBSERVATIONS  2-methyl-2-butanol:  1-butanol: |

(c) With reference to the test in part (b) above, write the half equations and the full redox reaction for the reaction of acidified potassium permanganate with the 1-butanol.

[2]

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