**Amines Practice Questions**: Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ # \_\_\_\_\_\_\_

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| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Amines are a class of organic molecules related to ammonia (NH3). Shown below is an acid-base reaction between NH3 and HCl. Choose the correct statement regarding this reaction. /ilrn/books/beinl8/images/img326.png   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | NH3is the acid. |  |  |  |  | | --- | --- | --- | |  | b. | NH3 is the conjugate acid. |  |  |  |  | | --- | --- | --- | |  | c. | NH3 is the conjugate base. |  |  |  |  | | --- | --- | --- | |  | d. | NH3is the base. | |  | | |

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| |  | | --- | | **2.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Proteins are built up from organic molecules known as amino acids. These molecules, as the name implies, contain both the carboxylic acid and amine functional groups in the same molecule. Which of the molecules below would be considered to be an amino acid?   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | /ilrn/books/beinl8/images/img327.png |  |  |  |  | | --- | --- | --- | |  | b. | /ilrn/books/beinl8/images/img328.png |  |  |  |  | | --- | --- | --- | |  | c. | /ilrn/books/beinl8/images/img329.png |  |  |  |  | | --- | --- | --- | |  | d. | /ilrn/books/beinl8/images/img330.png | |  | | |

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| |  | | --- | | **3.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Which of the molecules below would be classified as a secondary amine?   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | /ilrn/books/beinl8/images/img331.png |  |  |  |  | | --- | --- | --- | |  | b. | /ilrn/books/beinl8/images/img332.png |  |  |  |  | | --- | --- | --- | |  | c. | /ilrn/books/beinl8/images/img333.png |  |  |  |  | | --- | --- | --- | |  | d. | /ilrn/books/beinl8/images/img334.png | |  | | |

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| |  | | --- | | **4.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Which of the following statements is true about adrenaline? a /ilrn/books/beinl8/images/img335.png   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | It contains a tertiary amine. |  |  |  |  | | --- | --- | --- | |  | b. | It contains a tertiary alcohol. |  |  |  |  | | --- | --- | --- | |  | c. | It contains primary amine. |  |  |  |  | | --- | --- | --- | |  | d. | It contains secondary alcohol. | |  | | |  | |

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| |  | | --- | | **5.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Basic conditions refer to:   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | fundamental conditions |  |  |  |  | | --- | --- | --- | |  | b. | reactions run in water with a pH > 7 |  |  |  |  | | --- | --- | --- | |  | c. | reactions run in water with a pH < 7 |  |  |  |  | | --- | --- | --- | |  | d. | simple conditions | |  |  |  | |  | | |

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| |  | | --- | | **6.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Which of the following is a quaternary ammonium ion?   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | /ilrn/books/beinl8/images/img336.png |  |  |  |  | | --- | --- | --- | |  | b. | /ilrn/books/beinl8/images/img337.png |  |  |  |  | | --- | --- | --- | |  | c. | /ilrn/books/beinl8/images/img338.png |  |  |  |  | | --- | --- | --- | |  | d. | /ilrn/books/beinl8/images/img339.png | |  | | |

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| |  | | --- | | **7.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Predict the products of the reaction shown below. /ilrn/books/beinl8/images/img340.png   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | /ilrn/books/beinl8/images/img341.png |  |  |  |  | | --- | --- | --- | |  | b. | /ilrn/books/beinl8/images/img342.png |  |  |  |  | | --- | --- | --- | |  | c. | /ilrn/books/beinl8/images/img343.png |  |  |  |  | | --- | --- | --- | |  | d. | /ilrn/books/beinl8/images/img344.png | |  | | |

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| |  | | --- | | **8.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | An aqueous solution with a pH = 2.0 would be considered:   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | neutral |  |  |  |  | | --- | --- | --- | |  | b. | acidic |  |  |  |  | | --- | --- | --- | |  | c. | basic |  |  |  |  | | --- | --- | --- | |  | d. | radioactive | |  | | |

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| |  | | --- | | **9.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Proteins consist of chains of amino acids bonded to each other. The amino acids in proteins are called alpha (http://webquiz.ilrn.com/ilrn/formulaImage?f=%5Calpha&ns=0)-amino acids because the amino group is bonded to the http://webquiz.ilrn.com/ilrn/formulaImage?f=%5Calpha&ns=0-carbon (the carbon next to the carboxylic acid group). Which of the amino acids below is an http://webquiz.ilrn.com/ilrn/formulaImage?f=%5Calpha&ns=0-amino acid?   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | /ilrn/books/beinl8/images/img345.png |  |  |  |  | | --- | --- | --- | |  | b. | /ilrn/books/beinl8/images/img346.png |  |  |  |  | | --- | --- | --- | |  | c. | /ilrn/books/beinl8/images/img347.png |  |  |  |  | | --- | --- | --- | |  | d. | /ilrn/books/beinl8/images/img348.png | |  | | |

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| |  | | --- | | **10.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | The amino acid cysteine is a polyfunctional molecule. Which of the functional groups listed below can be found in cysteine? /ilrn/books/beinl8/images/img349.pngCysteine   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | Carboxylic acid |  |  |  |  | | --- | --- | --- | |  | b. | Thiol |  |  |  |  | | --- | --- | --- | |  | c. | Amine |  |  |  |  | | --- | --- | --- | |  | d. | All of the above | |  | | |

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| |  | | --- | | **11.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Glycine is the simplest of the amino acids. The IUPAC name for glycine would be: /ilrn/books/beinl8/images/img350.png Glycine   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | 2-aminoethanol |  |  |  |  | | --- | --- | --- | |  | b. | 2-aminoethanal |  |  |  |  | | --- | --- | --- | |  | c. | 2-aminoethanone |  |  |  |  | | --- | --- | --- | |  | d. | 2-aminoethanoic acid | |  | | |

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| |  | | --- | | **12.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Which of the following molecules would be considered heterocyclic?   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | /ilrn/books/beinl8/images/img351.png |  |  |  |  | | --- | --- | --- | |  | b. | /ilrn/books/beinl8/images/img352.png |  |  |  |  | | --- | --- | --- | |  | c. | /ilrn/books/beinl8/images/img353.png |  |  |  |  | | --- | --- | --- | |  | d. | /ilrn/books/beinl8/images/img354.png | |  | | |

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| |  | | --- | | **13.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Classify the following molecule. /ilrn/books/beinl8/images/img355.png   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | primary |  |  |  |  | | --- | --- | --- | |  | b. | secondary |  |  |  |  | | --- | --- | --- | |  | c. | tertiary |  |  |  |  | | --- | --- | --- | |  | d. | quaternary | |  | | |

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| |  | | --- | | **14.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Classify the following molecule. /ilrn/books/beinl8/images/img356.png   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | primary |  |  |  |  | | --- | --- | --- | |  | b. | secondary |  |  |  |  | | --- | --- | --- | |  | c. | tertiary |  |  |  |  | | --- | --- | --- | |  | d. | quaternary | |  | | |

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| |  | | --- | | **15.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Classify the following molecule. /ilrn/books/beinl8/images/img357.png   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | primary |  |  |  |  | | --- | --- | --- | |  | b. | secondary |  |  |  |  | | --- | --- | --- | |  | c. | tertiary |  |  |  |  | | --- | --- | --- | |  | d. | quaternary | |  | | |

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| |  | | --- | | **16.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Classify the following molecule. /ilrn/books/beinl8/images/img358.png   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | acidic |  |  |  |  | | --- | --- | --- | |  | b. | basic |  |  |  |  | | --- | --- | --- | |  | c. | neutral |  |  |  |  | | --- | --- | --- | |  | d. | radioactive | |  | | |

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| |  | | --- | | **17.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Which is the following?  Image result for benzylamine   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | Heterocyclic aliphatic |  |  |  |  | | --- | --- | --- | |  | b. | Heterocyclic aromatic |  |  |  |  | | --- | --- | --- | |  | c. | Aliphatic |  |  |  |  | | --- | --- | --- | |  | d. | Aromatic | |  |  |  | |  | | |

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| |  | | --- | | **18.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | What is another name for 2-bromoaniline?   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | *o*-bromoaniline |  |  |  |  | | --- | --- | --- | |  | b. | *m-*bromoaniline |  |  |  |  | | --- | --- | --- | |  | c. | *p*-bromoaniline |  |  |  |  | | --- | --- | --- | |  | d. | 1-bromo-2-nitrobenzene | |  | | |

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| |  | | --- | | **19.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Which of the following are produced when the molecule below is placed in water? /ilrn/books/beinl8/images/img360.png   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | H3O+ |  |  |  |  | | --- | --- | --- | |  | b. | http://webquiz.ilrn.com/ilrn/formulaImage?f=NH_%7B4%7D%5E%7B%2B%7D+&ns=0 |  |  |  |  | | --- | --- | --- | |  | c. | O2- |  |  |  |  | | --- | --- | --- | |  | d. | OH- | |  | | |

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| |  | | --- | | **20.** | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Which of the following will have the highest vapor pressure? (Assume all of the molecules have approximately the same molecular mass.)   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | |  | a. | alcohol |  |  |  |  | | --- | --- | --- | |  | b. | alkyne |  |  |  |  | | --- | --- | --- | |  | c. | amine |  |  |  |  | | --- | --- | --- | |  | d. | anilinium salt | |  | | |