



1. Which variable/s affect flavor more so than any other/s, during fermentation:
 - a. Yeast strain
 - b. Low Pitch Rate
 - c. High Wort Gravity
 - d. High aeration
 - e. All the above

2. True or False
Decreasing the fermentation temperature generally decreases most of the flavor compounds produced.

3. Which compound/s (quantitatively one of the most important products of fermentation) *positively* contributes to the viscosity and “body” of beer?
 - a. Glycerol
 - b. Ethanol
 - c. Maillard Reaction Products (e.g. Melanoidins)
 - d. Isoamyl alcohol
 - e. All the above

4. True or False
Yeast produces ethanol during the *anaerobic* phase of fermentation in order to get energy.

5. Yeast produces fusel alcohols from glucose metabolism and _____ metabolism which *usually* gives a _____ flavor? (worth 2pts)
 - a. Amino acid/ smooth
 - b. Amino acid/ harsh
 - c. High molecular weight proteins/ smooth
 - d. High molecular weight proteins/ harsh

6. You are judging a beer and you taste/feel a ‘hotness’ on your palate that you attribute to the presence of higher alcohols. Which would you indicate to the brewer on how to ‘fix’ this flaw:
 - a. Increase your saccharification temperature
 - b. Decrease the fermentation temperature
 - c. Cool the wort quickly
 - d. Don’t over crush your grist
 - e. All the above

7. True or False

As yeast starts to grow and bud, the production of many different by-products *increases*. Among the many different chemicals produced by fermenting yeast, ester production, *specifically*, is directly correlated with yeast growth.

8. Reducing rate of pitching will _____ fusel alcohol production, where increasing the amount of dissolved oxygen that is supplied to the yeast prior to fermentation will _____ the amount of esters produced. (worth 2pts)
- a. Increase/ Increase
 - b. Increase/ Decrease
 - c. Decrease/ Increase
 - d. Decrease/ Decrease
9. How would /can diacetyl be described?
- a. Butter
 - b. Slickness on palate
 - c. Toffee
 - d. Milky
 - e. All the above

10. Diacetyl is produced when yeast needs to make which amino acid?

A: Valine

11. True/ False

Conversion of the precursor of diacetyl (alpha acetolactate) to diacetyl is favored by a *low* pH and a *high* fermentation temperature.

12. True or False

You can taste alpha acetolactate.