1. **True** or False: Simply put, mashing is a *continuation* of the malting process.

2. True or **False**: Beta glucans are a type of protein.

3. Which of the following is *not* part of the mashing process?
   a. starch gelatinization
   b. starch solublization
   c. starch hydrolysis
   d. All of the above
   e. None of the above

4. The role of yeast is well known as a significant factor for the attenuation of the final beer. What is the primary factor for attenuation?
   a. Malt varieties
   b. Fermentation temperature
   c. Mash temperature
   d. Mash and Sparge water pH
   e. The yeast

5. **True** or False: Gelatinization of starch is *not* necessary for full conversion because unmalted grains posses an enzyme that will readily cleave native starch.

6. You are judging a beer that has a viscous body. Which of the following is most likely responsible?
   a. High beta glucan levels
   b. High soluble protein Levels
   c. High mashing temperature
   d. A and C
   e. B and C

7. **True/ False**: Due to the fact that the density of ethanol is approximately .800, real attenuation is always higher than apparent attenuation.

8. You are judging a beer that seems too dry for the style. What temperature range would you suggest they mash at in order to decrease the attenuation?
   a. 120-130F
   b. 140-150F
   c. 150-155F
   d. **155-160F**
   e. 160-170F
9. True or False: The proportion of foam-active proteins to haze-active proteins can be manipulated by varying the protein rest temperatures within the range of 95-150°F (35-65°C).

10. True or False: Endoprotease enzymes produce soluble proteins and exopeptidases produce amino acids.

11. You are judging a pale beer with a dry, bitter (astringent) aftertaste. What should you suggest they do to improve the beer?
   a. Reduce the hop IBUs.
   b. Add gypsum.
   c. Mash at a higher temperature for less attenuation.
   d. Monitor the mash and runnings pH.
   e. B and D.

12. When should a protein rest be used with well-modified malts?
   a. To promote clarity in high-protein worts.
   b. To provide FAN in high-adjunct worts.
   c. To improve lautering in high-protein worts.
   d. All of the above
   e. None of the above

13. Why would one choose to do a decoction mash?
   a. To create melanoidins.
   b. To increase extraction.
   c. When using less-modified malts in recipe.
   d. When using cereal grains like corn or rice in a recipe.
   e. All of the above.

14. You are judging a dark beer with an acrid, bitter aftertaste. What should you suggest they do to improve the beer?
   a. Reduce the hop IBUs.
   b. Reduce the sparge water temperature.
   c. Add gypsum.
   d. Add calcium carbonate.
   e. All of the above.

15. Rank the following adjuncts for beta glucan levels from high to low (1 to 5).
   a. Flaked Barley
   b. Flaked Wheat
   c. Flaked Corn
   d. Flaked Oats
   e. Flaked Rye