

FD SC 4300 Prelim 2

April 2, 2009

Directions: All questions will be equally weighted (2 points each)

Fill in the letter corresponding to the best answer for each question on the answer sheet provided. Please hand in only the answer sheet. You may keep the questions.

1. What is not true when a beer is in the 'storage' stage?
 - A. The concentrations of diacetyl and H₂S decrease.
 - B. Acetaldehyde concentrations and green apple flavor increase.**
 - C. Haze stability improves.
 - D. The remaining yeast largely sediments.

2. Bock beer is traditionally sold in which season?
 - A. Spring**
 - B. Summer
 - C. Fall
 - D. Winter

3. We tasted 'malt liquor' in class. What is **not** true about the production of malt liquor?
 - A. Increased production of fusel oils (higher alcohols)
 - B. Increased production of iso-alpha acids**
 - C. Typically uses the same lager yeast used for regular and light beer fermentations
 - D. The fermentation is carried out warm and fast.

4. Yeast are polyploid, which means:
 - 1 - They have more than two copies of each gene.
 - 2 - They sporulate poorly.
 - 3 - They have large cell size.
 - 4 - They are genetically stable.
 - A. Only 1, 2 and 3 are true
 - B. Only 1, 3 and 4 are true
 - C. Only 1, 2 and 4 are true
 - D. 1, 2, 3, and 4 are all true**

5. What distinguishes the Belgian Lambic beer that we had in class from other beers, other than the addition of fruit to the beer?
 - A. Heavy kilning produces a darker malt, giving it a deeper color
 - B. Undergoes a spontaneous fermentation, often with lactic acid bacteria**
 - C. Dry hopping gives them a distinctive floral aroma
 - D. Rice is used as an adjunct at high levels

6. Which of the following does **not** contribute to the microbial stability of beer?
- A. Low simple sugar and amino acid concentration
 - B. Iso-alpha acids, which inhibit Gram+ bacteria
 - C. **Ethyl esters, which are toxic to yeast**
 - D. Acidic conditions—pH 3.9-4.5
7. Historically, what were the contents of a brewer's "little black book?"
- A. The St. Pauli Girl's phone number
 - B. Conversion factors from metric to English units
 - C. **Traditional, but not necessarily scientific methods for solving problems**
 - D. Precise equations for determining specific gravity
8. What constitutes a "good wine"?
- A. An age worthy red wine
 - B. **A favorable consumer perception**
 - C. An expensive French wine
 - D. High Wine Spectator score
9. All of the following are components of balance **except**?
- A. Sugar and acid
 - B. Acid and tannin
 - C. **Red and white**
 - D. Oak and fruit
- ~~10. Which of the following has been demonstrated to have an effect upon a consumer's perception of a wine and the pleasure they derive from it:~~
- ~~A. — The name on the label~~
 - ~~B. — The color of the wine~~
 - ~~C. — The amount of acidity is has~~
 - ~~D. — **All of the above**~~
- This question was misprinted on the test that was handed out; everyone was given credit for the question.**
11. Which of the following is probably **not** essential to being a winemaker?
- A. Biochemistry
 - B. Viticulture
 - C. Microbiology
 - D. **Particle physics**
12. The modern champagne industry was made possible by:
- A. Veuve (widow) Clicquot's riddling rack to produce clear sparkling wines.
 - B. Jean-Antone Chaptal's "Art of Making Wine"
 - C. André François's formula for sugar addition.
 - D. **All of the above**

13. The "gushing" of sparkling wine can be caused by:
- A. CO₂ dissolved in the wine becoming a gas.
 - B. Dust in the bottle.
 - C. Yeast in the wine.
 - D. **All of the above.**
14. What is the correct order for Champagne production?
- A. **Pressing, fermentation, blending, second fermentation, disgorging, topping up**
 - B. Fermentation, pressing, second fermentation, blending, disgorging, topping up
 - C. Pressing, fermentation, second fermentation, blending, topping up, disgorging
 - D. Disgorging, pressing, fermentation, blending, second fermentation, topping up
15. What is retronasal smell?
- A. A smell that evokes memories of past smells
 - B. **A smell experienced while exhaling during ingestion of a food or beverage**
 - C. A smell experienced from the head-space of a food or beverage
 - D. A smell of a 2004 meritage blend made in the style of a 1976 Bordeaux
16. What do we mean when we say that a sparkling wine is undergoing "tirage"?
- A. **It is aging slowly on its lees.**
 - B. The yeast is being removed from the bottle.
 - C. A small amount of sugar is being added just before bottling.
 - D. Finished sparkling wine is being moved from one bottle to another.
17. Which of the following is **not** a sparkling wine production method that is used to some degree in Champagne?
- A. Methode Champenoise
 - B. Transversage
 - C. Traditional Method
 - D. **Charmat Method**
18. What addiction-related substance abuse has the lowest chance of recovery or successful long-term treatment?
- A. **Obesity**
 - B. Alcohol
 - C. Tobacco
 - D. Heroin

19. Which of the following is a symptom of thiamine deficiency in alcohol-dependent individuals?

- A. **Amnesia: individual forms no new memories**
- B. Hyperactivity and insomnia
- C. Cardiac arrhythmia
- D. Increased susceptibility to sulfa drugs

20. All of the following are long term effects of alcohol abuse **except**:

- A. Decreased dopamine in nucleus accumbens and ventral tegmental area
- B. Depletion of serotonin
- C. **Decreases in the stress hormone cortisol**
- D. Inhibits glutamate activity at NMDA

21. What percent of the US population is heavily dependent on alcohol?

- A. 3%
- B. 5%
- C. **8%**
- D. 12%

22. 90, 239 and 198 are all clones of Riesling. What is a clone?

- A. A population of vines that come from different regions in the world and respond differently to temperature.
- B. **A population of vines selected for a specific trait from a mother vine and propagated vegetatively.**
- C. A population of vines with a specific disease that impacts fruit quality.
- D. A population of vines with larger or smaller root systems – the number indicates the average size of the roots.

23. Your parents purchase you a new vineyard in the Finger Lakes region of NY as a graduation gift. You check the weather data for the site and note that in 3 of the past 10 years, the temperature has gone down to -10°F . What species should you plant at the site?

- A. Any vinifera
- B. **Hardy vinifera and moderately-hardy hybrids**
- C. Hardy hybrids and labrusca
- D. Only labrusca

24. Which of the following best describes a balanced grapevine?
- A. **The vine is neither overly vigorous nor overly fruitful, the fruit and leaves are well-exposed**
 - B. The two canes are of equal length, resulting in consistent canopy fill and good photosynthesis by leaves
 - C. The fruit is in the middle of the canopy, with equal leaf cover on both sides
 - D. The clusters of the vine are spread along the shoot and not clustered towards the bottom
25. How can the use of a cover crop in a vineyard improve fruit composition?
- A. Plant volatiles are released by the cover crop and metabolized by the fruit into phenolic compounds
 - B. **The cover crop competes with the vine for water and nutrients, resulting in a smaller canopy and more exposed fruit**
 - C. The cover crop adds nitrogen to the soil, resulting in a smaller canopy and more exposed fruit
 - D. The shoots of the vine grow upwards to avoid contact with the cover crop, resulting in more exposed fruit
26. A good vineyard site should get at least:
- A. 100 frost-free days and 500 growing degree-days (°C)
 - B. 180 frost-free days and 800 growing degree-days (°C)
 - C. **180 frost-free days and 1700 growing degree-days (°C)**
 - D. 210 frost-free days and 2000 growing degree-days (°C)
27. Fruit exposure is generally encouraged in cool climate vineyards, so that:
- A. **Sugars increase, acids decrease, methoxypyrazines decrease, and phenolics increase**
 - B. Sugars increase, acids increase, methoxypyrazines increase, and phenolics increase
 - C. Sugars increase, acids decrease, methoxypyrazines increase, and phenolics decrease
 - D. The fruit gets sunburned, because sunburned fruit makes the best wine
28. For all grape cultivars, chewing on unripe grape skins releases vegetal/herbaceous aromas due to t-2-hexenal, cis-3-hexenol, and related compounds. Which is a **true** statement about this group of compounds?
- A. They are also the key odor compounds associated with the aroma of raw asparagus, peas, and green peppers.
 - B. **They are the same compounds released by freshly mowed grass**
 - C. Their aromas can mask fruity aromas, but the opposite (fruity aromas masking vegetal aromas) does not happen

- D. The concentration of precursors for these compounds increases during grape ripening
29. What condition is well correlated with the presence of high levels of hydrogen sulfide (H₂S) finished wines?
- A. **Too low yeast assimilable nitrogen (YAN) in the grapes**
 - B. Excessive early-season sulfur sprays, which are stored in the plant vacuoles during berry development
 - C. Low fermentation temperatures
 - D. Storage in low toast oak barrels
30. Which is **not true** about tools for removing mercaptans and hydrogen sulfide (H₂S) from wine?
- A. Copper sulfate can be added to form insoluble copper salts with these compounds
 - B. Aeration can decrease their concentration by oxidizing these stinky compounds to less potent forms
 - C. Aeration can decrease their concentration because they are relatively volatile, and thus are lost by volatilization
 - D. **Ascorbic acid can be used to oxidize these compounds to non-odorous sulfates**
31. The aroma of "volatile acidity" ("VA") is characterized by the presence of ethyl acetate and acetic acid. Which of these statements about VA is **not true**?
- A. High levels of VA are often a sign of lactic acid bacteria spoilage
 - B. **Because the more potent aroma compound associated with VA is ethyl acetate, the concentration of ethyl acetate in wine is legally regulated rather than acetic acid**
 - C. Ethyl acetate and acetic acid are in equilibrium within a wine, such that high levels of one usually indicates high levels of the other
 - D. High levels of VA will impart a solvent-like or "nail polish remover" off-aroma to wines
32. Which is **not** a strategy currently used in the cork industry to **reduce** the incidence of cork taint (TCA)?
- A. Testing of TCA concentrations in batches of corks by sensitive analytical techniques
 - B. Air-drying of harvested cork bark takes place on concrete slabs rather than in direct contact with the earth
 - C. Non-polar solvents or high temperature vapor are used to remove TCA or its precursors
 - D. **Hypochlorite bleach has replaced the use of peroxides to sterilize and whiten corks**

33. What best describes the typical pattern associated with methoxypyrazine (MP) concentrations in wine grapes during the growing season?
- A. **MPs are at low levels at fruit set, increasing to a maximum at veraison, then are degraded during ripening**
 - B. MPs are at a maximum at three weeks after fruit set, then decrease in concentration due to berry expansion and subsequent dilution
 - C. MPs are at low levels pre-veraison, then increasing post-veraison to a maximum level at ~40 days post-veraison, then decreasing modestly due to dilution
 - D. MPs are at a maximum level within 1 week after fruit set, then are degraded near the end of ripening (~20 days before harvest).
34. Which of these statements is **not true** about red winemaking?
- A. Anthocyanin concentration (color) reaches a maximum early in fermentation, while tannin concentrations (astringency) will continue to increase throughout the fermentation
 - B. Oxygen is intentionally introduced during, and sometimes after, fermentation to favor formation of stable "polymeric pigments"
 - C. **Red wine color will continue to increase for the first several weeks after fermentation due to hydrolysis of non-colored anthocyanin glycosides.**
 - D. Because the pigmented compounds in most grapes are located only in the skins, red wine making generally requires longer periods of skin contact than with white winemaking
35. Which of these statements about oak is **not true**?
- A. Since some oak aromas are derived from glycosides, oaky/woody aromas can continue to increase even once the wine is removed from contact with oak as the glycoside precursors are hydrolyzed.
 - B. "Oak alternatives" like oak chips have a proportionally higher surface area than oak barrels, and therefore the contact time duration between oak alternatives and wine is much shorter.
 - C. **The smoky aromas associated with toasted oak are due to thermal degradation of starch in the oak wood**
 - D. Oak will be "seasoned" by either air-drying or kiln-drying to reduce moisture content and undesirable bitter compounds prior to barrel-making.
36. Which of the following is **not** a reason why glass bottles have long been the preferred storage container for finished wine?
- A. Highly inert surface has little effect on wine quality
 - B. Inexpensive to manufacture
 - C. Easy to clean and sanitize
 - D. **High silicon content binds mercaptans**

37. Which of the following is the only **white** grape allowed for use in traditional-method Champagne?

- A. Pinot Meunier
- B. Riesling
- C. **Chardonnay**
- D. Catawba

38. Serving a wine at a low temperature will have all of the following effects on a person's perception of that wine **except**:

- A. Will decrease the overall aroma intensity of a wine
- B. Perception of tannins will be exaggerated
- C. Decreases the perception of sweetness
- D. **Perception of alcohol will be exaggerated**

39. "Rutherford Dust" is a term used by a group of winemakers in California's Napa Valley to characterize an odor event that occurs when they taste Cabernet Sauvignon-based wines from a sub-appellation in Napa called Rutherford. This odor event is said to be distinguishable from other odors common to Cabernet Sauvignon, such as cassis, blackberry, cedar, and bell pepper. Famed wine writer Hugh Johnson describes this distinguishing odor as "allspice," which has a fruity-herbaceous aroma; this differs from John Williams' description, which involved the dry, earthy aroma of the dust on his grandmother's velvet sofa. How can we reconcile the apparent conflict in these descriptions?

- A. Hugh Johnson smells the dust in the context of berry and pepper odors and synthesizes "allspice" as a combination of dust with other herbal and berry odors.
- B. Hugh Johnson is anosmic to the dusty stimulants and forms his impressions of Rutherford wine from different qualia.
- C. Johnson and the winemakers are experiencing the same qualia, but the winemaker cohorts have developed a different lexicon.
- D. **Any of the above.**

40. About how many acres are planted to vineyard in California's Napa County?

- A. 5,000
- B. **45,000**
- C. 150,000
- D. 530,000