

NAME Joyce Chan and STUDENT ID 25964107

Circle the best answer for each question (unless more are indicated) or fill in the blank with the answer where indicated (1 mark each except where noted: Total: 60 marks)

- 1) During red winemaking, when the must reaches \_\_\_g sugar/L, free run & then press wine are sent to barrels to finish fermentation. The primary reason for transferring the wine at this particular sugar level is \_\_\_\_\_:
- 30 to maintain an appropriate acidity level in the basic wine
  - 40 to avoid over-extraction of bitter and astringent tannins
  - 50 to enhance varietal aromas in the wine
  - 30 to avoid Brettanomyces growth
  - 10 to promote Brettanomyces growth

2) (2 mk). a) Name one major "climate zone" for wine-grape production (hint not Winkler or EU zones) and one sub-classified climate zone.

1a. - major: Cool-climate

1b. - sub-classified: High <sup>amplitude</sup> ~~amplitude~~ <sup>altitude</sup> climate vineyard

3) (2 marks) **Describe** (with detail for full marks) two commonly-used techniques that winemakers use to ensure that skin contact is maintained with the fermenting must/wine (note: exclude rotary fermentors):

- plunged  
pumped down or pumped over
- bubbled pressed so that it will be pumped up, the cap separated from the must.

4) *Leuconostoc enos* is significant bacteria in wine production as

- it is a common pathogen that causes fruit rot early in the vineyard season
- it produces excessive volatile acidity in wine
- it can metabolize (ferment) malic acid into lactic acid.
- under some conditions it can produce vanilla aroma compounds
- under some conditions it can produce geranium or rotting cabbage aroma compounds
- c and e

5) (5 mks) Below (on the right) are some fault aromas. Match the fault-odour to its cause (or the causal compound) on the left:

Faults cause (causal compound)

Fault Aroma

a) hydrogen sulfide/mercaptoethanol 3

1. vinegar

b) Ethyl acetate 4

2. solvent, bruised apple or sherry

c) 4-ethyl phenol 6

3. rotten egg/rotting manure

d) 2,4,6-trichloroanisole 5

4. nail polish remover

e) Acetaldehyde 12

5. Musty, corked

6. Distinct horse stable smell

6) Saignee refers to

- the wine left in the bottom of the tank after racking is completed
- an indication of the grape variety on the wine label
- the clarified wine after centrifugation
- the exclusion of some of the grapes' juice in order to increase the ratio of skins to juice
- the practice of leaving wine over the dead yeast after fermentation is complete

-2

7) Which enzyme(s) is/are sometimes added during the early stages of white wine making to improve juice extraction during a gentle press.

- a) alcohol dehydrogenase  
 b) cellulose  
 c) pectinase & cellulase  
 d) glucosidase & glucoronidase  
 e) silicon dioxide

8) Problems/taints are related to wild micro-organisms such as \_\_\_\_\_ found on the surface of grapes, while the commercial strains of yeast used for winemaking are derived from \_\_\_\_\_.

- a) Kloeckera apiculata; ----- Schizosaccharomyces species  
 b) Schizosaccharomyces; ----- Saccharomyces cerevisiae  
 c) Saccharomyces cerevisiae; ----- Kloeckera apiculata;  
 d) Acetobacter; ----- Kloeckera apiculata

9) Wine made from Cabernet Sauvignon benefits in several ways from extending grape hang-time in the vineyard. One major benefit is

- a) Acidity increases late into the ripening stage so that fruit flavours appear fresher.  
 b) Fruit notes evolve into a highly desirable "jammy" aroma  
 c) Various microbes such as powdery mildew act to introduce new flavours and increase complexity  
 d) Tannins in the skin tend to become less astringent, so that the wine texture is satiny not rough  
 e) all of a, b, d

10) Leaving a wine on the lees for an extended period is sometimes done to

- a) improve the efficiency of the racking off  
 b) introduce reduced sulfur compounds  
 c) impart a creamy mouthfeel and perhaps a bread dough character to the wine  
 d) help precipitate tartaric acid (wine diamonds)  
 e) c and d

11) Table wines produced in cool-warm climates like those in BC and Oregon are generally subjected to cold stabilization. This refers to

- a) the grapes are harvested after the first frost to condition the grapes for pressing (easier to press)  
 b) at pressing, the juice is chilled down to 0°C in order to deactivate enzymes that might cause browning  
 c) the vineyard cold air and warm air are mixed to keep the air temperature above freezing for the grapes  
 d) after fermentation, the wine is chilled down to -4.0°C to cause precipitation of tartaric acid as crystals  
 e) the chilling of red wine after hot fermentation of the must

12) Brett (Brettanomyces) is a wild yeast that can introduce some rather odd aromas into wine. Factors that often result in the growth of Brett in wine include

- a) allowing white-wine must to go above 30°C during fermentation  
 b) storing red wine in new barrels when the wine has both a high acidity and a low alcohol level  
 c) storing red wine with a relatively high pH in old barrels in a warm area  
 d) cool storage conditions during in-barrel ageing of a red wine with a low pH

13) (5 marks) Match grape variety or blend (style) with the related "typical" varietal (style) aroma(s) or bouquet

- |                            |  |
|----------------------------|--|
| a) Muscato <u>2</u>        | 1. bread dough or yeast, apple, lemon, candied ginger                    |
| b) Bordeaux Blend <u>3</u> | 2. honey, floral-orange-blossom, ripe pear/peach, canned pineapple       |
| c) Sauternes <u>5</u>      | 3. Smoky oak, hints of black currant, blackberry/cherry                  |
| d) Champagne <u>1</u>      | 4. Apple, pineapple, buttery, vanilla, popcorn/oak                       |
| e) Chardonnay <u>4</u>     | 5. honeyed, apricot/peach, guava, candied pineapple, hint of vanilla oak |



14) Amarone is produced in \_\_\_\_\_ in the region of \_\_\_\_\_ in Italy.  
 a) Chianti - Tuscany b) Marsala - Sicily (c) Valpolicella - Veneto d) Barolo - Piedmont

15) In the production of Amarone, the term Appassimento refers to

- a) the type of special yeast used for the fermentation  
 b) the grape training system used to maximize the colour of the grape  
 (c) the process of semi-drying the grapes before fermentation  
 (d) the extended maceration & soaking of the grapes' skin in the wine after completion of a slow fermentation  
 e) the region where the grapes were grown

16) In winemaking, a barrel that has "medium toast" is more likely to impart characteristics to a wine

- a) such as low vanilla with more natural woody flavour  
 b) that are not discernable from those of an unoaked wine  
 c) such as low levels of aromatic compounds (e.g. vanilla), but more smoky, spicy flavours. Less colour.  
 (d) such as more vanilla, with some roasted/toasted flavours  
 e) such as buttery aromas and lower levels of acid taste

17) In making Beaujolais nouveau, winemakers rely on one essential grape processing (carbonic maceration) that differs from regular red winemaking. This step is

- a) the juice is pressed off the skins early in fermentation to produce a rosé wine  
 b) crushed grapes are allowed to sit in their own juice for a time to improve colour & fruit extraction  
 c) grapes are inoculated with botrytis to help breakdown the skins and to release more juice  
 d) the grapes are always pressed by foot in order to avoid tannins in the wine  
 (e) the intact grapes in an anaerobic tank are allowed to ferment their own sugars to make 4-5% alcohol

18) (5 mks) Match each of the following agents/compounds with its use/function in winemaking:

<u>agent/compound</u>	<u>use/function in winemaking</u>
a) PVPP <u>14</u>	1) yeast nutrient
b) wood chips <u>5</u>	2) fining agent for tannins especially red wines
c) egg whites (albumen) <u>62</u>	3) clarification agent for juice from pressed grapes
d) silicon dioxide <u>3</u>	4) fining agent for removal of brown/oxidized pigments
e) tannins <u>46</u>	5) wine treatment substitute for oak barrel ageing
	6) fining agent for removal of protein haze

19) (3 mk) In making sparkling Champagne wine, **the tirage** contains what 3 essential ingredients for secondary fermentation (hint: the clarifying agent is **not** critical for fermentation)? **For full marks, be specific and use scientific/technical names and prescribed amounts** where applicable.

- i) sugar (24g/L or 0.5 Atm/bottle) ii) Yeast nutrients -0.5  
diammonium phosphate  
 -1 iii) 4-ethyl phenol saccharomyces bayanus or cerevisiae

20) Which one of the following choices of steps is standard for the Champagne method and in the correct order?

- a) dosage → riddling → assemblage → disgorgement → tirage → corking  
 b) assemblage → riddling → dosage → disgorgement → tirage → corking  
 c) tirage → disgorgement → riddling → assemblage → dosage → corking  
 d) dosage → tirage → riddling → assemblage → disgorgement → corking  
 (e) assemblage → tirage → riddling → disgorgement → dosage → corking

-6

21) (14 mks total) For the following wine label (below left ----label A.),

A) (3 mks) What is the **formal classification** of this wine label (name all specific categories – hint: do fill in the blanks for full marks)? No abbreviations allowed.

-0.5 i. Brut Sparkling white wine, ii. Champagne Brut - method production -1

iii. Appellation d'origine contrôlée

B) (1 mks) What is the **geographical classification**? Champagne France

-1 C) What specific variety(s) of grapes were used for this wine (3 mks)? Chardonnay, Pinot Noir, Riesling Pinot Meunier

-1 D) (7 mk) i. The climate of this wine region is a **European zone** 3 ? B

and best fits into the climate classification of a

ii. a) Maritime climate    b) Mediterranean climate     c) Cool climate     d) Continental climate

iii. Such wines typically contain sugar at a) <5 g/L     b) 5-15 g/L    c) 12-20 g/L    d) 20-40 g/L    e) 30-50 g/L



A. **iv.** The wine with the label on the right (label B) is formally a  
 a) still white wine     b) semi-sparkling white wine    c) a sparkling wine    d) fortified wine

v. The wine for label B is a) dry     b) off-dry     c) dessert style, highly sweet

vi. The formal classification for the label B wine is (abbreviations OK here only)  
 a) AVA    b) VQA    c) AOC     d) DOCG    e) QMP

vii. The Label B wine is from a) Canada    b) USA     c) Germany     d) Italy    e) France

-7.5

22) (10 mks total) A. The main variety(s) of grapes used in this style of white wine (label below) is

Chardonnay

B. Complete the list of the remaining classification details of this wine **No abbreviations.**

FORMAL: Still white table wine i. American Viticulture Association  
*Produced Bottled* -0.5 OK  
Area

ii. Vineyard & Winery by (this designation means (pick one):

- a) the in the bottle must have been at least cellared by the winery named
- b) at least 75% of the wine in the bottle was fermented and finished by the winery named
- c) the wine in the bottle was "estate-bottled" by the winery

GEOGRAPHICAL:

i. Sebastiani ii) Sonoma <sup>-2<sup>nd</sup> county</sup> iii. California iv. USA.

C. **After primary fermentation & racking off the lees**, two processes are typically used to produce distinctive aromas (bouquet) in the classic style for this wine. What are these 2 processes (no abbreviations)?

i) Malo-lactic fermentation -1 ii) Heat extraction  
oak barrel aging



MARK LYON  
WINEMAKER

PRODUCED & BOTTLED BY SEBASTIANI VINEYARDS & WINERY, SONOMA.

GOVERNMENT WARNING: (1) ACCORDING TO THE SURGE  
SHOULD NOT DRINK ALCOHOLIC BEVERAGES DURING PR  
THE RISK OF BIRTH DEFECTS. (2) CONSUMPTION OF A  
IMPAIRS YOUR ABILITY TO DRIVE A CAR OR OPERATE  
CAUSE HEALTH PROBLEMS.

-4

$$\begin{array}{r} 60 \\ - 19.8 \\ \hline 40.2 \end{array}$$

40.2 / 60 x 100

68%

NAME Jonathan Mok and STUDENT ID 72742091

Circle the best answer for each question (unless more are indicated) or fill in the blank with the answer where indicated (1 mark each except where noted: Total: 70 marks)

1) In winemaking, a barrel that has "high toast" is more likely to impart characteristics to a wine

- a) such as low vanilla with more natural woody flavour  
 b) that are not discernable from those of an unoaked wine  
 c) such as low levels of aromatic compounds (e.g. vanilla), but more smoky, spicy flavours.  
 d) such as more vanilla, with some roasted/toasted flavours  
 e) such as buttery aromas and lower levels of acid taste

2) (6 mk). a) Name two major "climate zones" for wine-grape production (hint not Winkler or EU zones) and an example wine region for each. b) Also name one sub-classified climate zone and an example region.

i. - major: Mediterranean associated region: South Rhone

ii. - major: Continental associated region: Burgundy

1b. - sub-classified: Desert / Rainshadow associated region: South Okanagan  
cool effect.

3) (2 marks) **Describe** (with detail for full marks) two commonly-used techniques that winemakers use to ensure that skin contact is maintained with the fermenting must/wine (note: exclude rotary fermentors):

-0.5 i) Pumping over & plunge skin cap. → describe

ii) Bubbling. Condensed air to break up skin cap.

4) *Leuconostoc enos* is significant bacteria in wine production as

- a) it is a common pathogen that causes fruit rot early in the vineyard season  
 b) it produces excessive volatile acidity in wine  
 c) it can metabolize (ferment) malic acid into lactic acid.  
 d) under some conditions it can produce vanilla aroma compounds  
 e) under some conditions it can produce geranium or rotting cabbage aroma compounds

f) c and e

5) (5 mks) Below (on the right) are some fault aromas. Match the fault-odour to its cause (or the causal compound) on the left:

Faults cause (causal compound)

a) hydrogen sulfide/mercaptoethanol 3

b) Ethyl acetate 4

c) 4-ethyl phenol 6

d) 2,4,6-trichloroanisole 5

e) Acetaldehyde 2

Fault Aroma

1. vinegar

2. solvent, bruised apple or sherry

3. rotten egg/rotting manure

4. nail polish remover

5. Musty, corked

6. Distinct horse stable smell

6) Saignee refers to

- a) the wine left in the bottom of the tank after racking is completed
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- c) the clarified wine after centrifugation
- d) the exclusion of some of the grapes' juice in order to increase the ratio of skins to juice
- e) the practice of leaving wine over the dead yeast after fermentation is complete

7) Which enzyme(s) is/are sometimes added during the early stages of white wine making to improve/enhance varietal aroma?

- a) alcohol dehydrogenase
- b) cellulose
- c) pectinase & cellulase
- d) glucosidase
- e) silicon dioxide

8) Problems/taints are related to wild micro-organisms such as \_\_\_\_\_ found on the surface of grapes, while the commercial strains of yeast used for winemaking are derived from \_\_\_\_\_.

- a) Kloeckera apiculata; ----- Schizosaccharomyces species
- b) Schizosaccharomyces; ----- Saccharomyces cerevisiae
- c) Saccharomyces cerevisiae; ----- Kloeckera apiculata;
- d) Acetobacter; ----- Kloeckera apiculata

9) Wine made from Cabernet Sauvignon benefits in several ways from extending grape hang-time in the vineyard. One major benefit is

- a) Acidity increases late into the ripening stage so that fruit flavours appear fresher.
- b) Fruit notes evolve into a highly desirable "jammy" aroma
- c) Various microbes such as powdery mildew act to introduce new flavours and increase complexity
- d) Tannins in the skin tend to become less astringent, so that the wine texture is satiny, not rough
- e) all of a, b, d

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- d) help precipitate tartaric acid (wine diamonds)
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- a) the grapes are harvested after the first frost to condition the grapes for pressing (easier to press)
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- c) the vineyard cold air and warm air are mixed to keep the air temperature above freezing for the grapes
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- e) the chilling of red wine after hot fermentation of the must

12) Brett (Brettanomyces) is a wild yeast that can introduce some rather odd aromas into wine. Factors that often result in the growth of Brett in wine include

- a) allowing white-wine must to go above 30°C during fermentation
- b) storing red wine in new barrels when the wine has both a high acidity and a low alcohol level
- c) storing red wine with a relatively high pH in old barrels in a warm area
- d) cool storage conditions during in-barrel ageing of a red wine with a low pH

13) (5 marks) Match grape variety or blend (style) with the related "typical" varietal (style) aroma(s) or bouquet

- a) Rhone (Grenache blend) 2 1. bread dough or yeast, apple, lemon, candied ginger  
 b) Bordeaux Blend 3 2. Raspberry, cherry, oak-leather  
 c) Sauternes 5 ~~3~~. Smoky oak, hints of black currant, blackberry/cherry  
 d) Champagne 1 4. Apple, pineapple, buttery, vanilla, popcorn/oak  
 e) Chardonnay 4 5. honeyed, apricot/peach, guava, candied pineapple, hint of vanilla oak

14) Sangiovese is produced in \_\_\_\_\_ in the region of \_\_\_\_\_ in Italy.

- a) Chianti - Tuscany ~~b) Marsala - Sicily~~ c) Valpolicella - Veneto d) Barolo - Piedmont

15) (2 mks) i. In the production of Amarone, Corvina ~~Pinot Noir~~ (fill in) is the major wine grape variety used and also in the production of Amarone

ii. the term Appassimento refers to

- a) the type of special yeast used for the fermentation  
 b) the grape training system used to maximize the colour of the grape  
c) the process of semi-drying the grapes before fermentation  
 d) the extended maceration & soaking of the grapes' skin in the wine after completion of a slow fermentation  
 e) the region where the grapes were grown

16) (6 mks) You are the vineyard manager and winemaker for 10 acres of Riesling in the south Okanagan Valley - your goal is to make a premium wine. It is now Saturday September 25<sup>th</sup> and the forecast for the coming Wednesday is for several days of rain. Outline three major criteria and/or considerations (with an example for each) that you need to use in determining if your wine grapes should be harvested now or if you should wait. You have a contract for pickers that allows you to employ them anytime you want.

- a) Are the grapes Ripe? - Check to see the acid to sugar level to see if grapes are ready to be harvested <sup>too early</sup>
- b) What kind of wines do I want? - Do I want late harvest / ice wine / ~~sparkling~~ wine or do I just want still white table wine.
- c) Health of ~~Vineyard~~ Viticulture - Are the grapes healthy is there any bacterial, fungus infection.   
 → so should you harvest now?

17) During red winemaking, when the must reaches \_\_\_g sugar/L, free run & then press wine are sent to barrels to finish fermentation. The primary reason for transferring the wine at this particular sugar level is \_\_\_\_\_:

- a) 30 to maintain an appropriate acidity level in the basic wine  
b) 40 to avoid over-extraction of bitter and astringent tannins  
 c) 50 to enhance varietal aromas in the wine  
 d) 30 to avoid Brettanomyces growth  
 e) 10 to promote Brettanomyces growth

5

24) (10 mks total) For the following wine label (below left ----label A.),

A) (3 mks) What is the **formal classification** of this wine label (name all specific categories – hint: do fill in the blanks for full marks)? No abbreviations allowed.

i. Brut ~~Champagne~~ Sparkling wine, ii. Champagne - Reims method

iii. Appellation d'origine Contrôlée

B) (1 mks) What is the **geographical classification**? Champagne France

C) What specific variety(s) of grapes were used for this wine (3 mks)? Chardonnay, Pinot Noir, Pinot Meunier

D) i. The climate of this wine region is a **European zone** B ?

and best fits into the climate classification of a

ii. Cool climate

iii. Such wines typically contain sugar at a) <5 g/L (b) 5-15 g/L c) 12-20 g/L d) 20-40 g/L e) 30-50 g/L



A.

-0

25) (10 mks total) A. The main variety(s) of grapes used in this style of white wine (label below) is

Chardonnay

B. Complete the list of the remaining classification details of this wine **No abbreviations.**

FORMAL: Still white table wine i. American Viticulture Area.

ii. Produced & bottled by (this designation means (pick one):

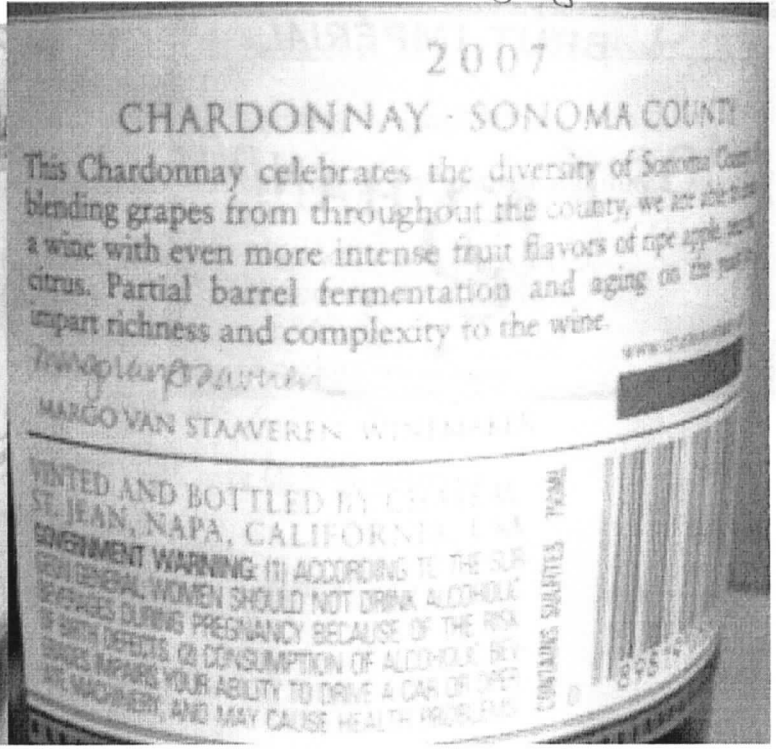
- a) the wine in the bottle must have been at least cellared by the winery named
- b) at least 75% of the wine in the bottle was fermented and finished by the winery named
- c) the wine in the bottle was "estate-bottled" by the winery

GEOGRAPHICAL:

i. ~~Sonoma~~ Sonoma ii) ~~North Coast~~ North Coast iii. California iv. USA

C. **After primary fermentation & racking off the lees**, two processes are typically used to produce distinctive aromas (bouquet) in the classic style for this wine. What are these 2 processes (no abbreviations)?

i) Malo-lactic Fermentation ii) oak barrel aging.



$$70 - 10.0 = \cancel{59.0} \frac{69.0}{70} \times 100\% = 85.7$$

A.S.