Product 6 – Standard theory exams

Field: Viticulture

1. Grape Varieties

1. Name the grape varieties!

A B C D

A _____ **B** _____

C _____ **D** _____

2. Which of the following features are true for the variety Gamay?

Size of leaves:	○ small	○ medium	○ large
Number of lobes:	○ three	○ five	○ more than 5
Surface of leaves:	○ smooth	○ blistered	○ rough

3. Which of the following features are true for the variety Kadarka?

Demand on soil:	○ sandy, gravel		○ deep, heavy
Lime resistance:	○ low	○ medium	○ high
Drought resistance:	○ low	○ medium	○ high

4. Which of the following statements is true for the variety Sauvignon Blanc?

○ Sensitive to *Plasmopara viticola* (powdery mildew)

○ Sensitive to *Uncinula necator* (downy mildew)

○ Sensitive to *Plasmopara viticola* and *Uncinula necator*

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5. Which of the following features are true for the Merlot variety?

Size of leaves:	○ small	○ medium	○ large
Number of lobes:	○ three	○ five	○ more than 5
Berry:	○ small	○ medium	○ large

6. Which of the following features are true for the Chardonnay variety?

Size of leaves:	○ small	○ medium	○ large
Number of lobes:	○ three	○ five	○ more than 5
Berry:	○ small	○ medium	○ large

7. Which of the following features are true for the Cabernet-Sauvignon variety?

Demand on soil:	○ gravel	○ medium heavy	
Chlorosis susceptibility:	○ low	○ medium	○ high
Winter hardiness:	○ low	○ medium	○ high

8. Which of the following grape varieties is *not* sensitive to botrytis?

○ Cabernet-Sauvignon
○ Nebbiolo
○ Pinot noir

9. Match the different periods of development with the suitable time periods by putting the letters A – H to each time period!

Vegetation period:

A) blossom	*E) budding*
B) ripening	*F) falling of leaves*
C) weeping ("crying")	*G) developing of bunches*
D) sprout growing	*H) rest period*

End of February – beginning of March: _____

End of March – middle of April: _____

Middle of April – End of May: _____

End of May – Middle of June: _____

Middle of June: _____

September – October: _____

November: _____

Middle of November – End of February: _____

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10. Which of the following grape varieties are white ones, which red ones?

Blaufränkisch	○ white	○ red
Cabernet franc	○ white	○ red
Cabernet - Sauvignon	○ white	○ red
Chardonnay	○ white	○ red
Furmint	○ white	○ red
Gamay	○ white	○ red
Gelber Muskateller	○ white	○ red
Grenache	○ white	○ red (*could red or white →catalogue*)
Grüner Veltliner	○ white	○ red
Kadarka	○ white	○ red
Merlot	○ white	○ red
Müller Thurgau	○ white	○ red
Nebbiolo	○ white	○ red
Palomino	○ white	○ red
Pinot blanc	○ white	○ red
Pinot gris	○ white	○ red
Pinot noir	○ white	○ red
Rheinriesling	○ white	○ red
Sangiovese	○ white	○ red
Sauvignon blanc	○ white	○ red
Syrah	○ white	○ red
Tempranillo	○ white	○ red
Traminer	○ white	○ red
Welschriesling	○ white	○ red
Zweigelt	○ white	○ red

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2. Rootstocks & planting

1. Allocate the following rootstocks to their parents!

   Rootstocks: *Ruggeri 140* *Kober 5BB*
   SO 4 *Paulsen 1103*

   V. berlandieri x *V. riparia* *V. berlandieri* x *V. rupestris*

   _____ _____

   _____ _____

2. Write in the spaces next to each rootstock the names of the two American vine species used to make it.

   Ruggeri 140: _____ x _____

   Couderc 3309: _____ x _____

   SO 4: _____ x _____

   Kober 5 BB: _____ x _____

3. Which kind of problem was solved with the use of American species as rootstocks?

   ○ soils problems ○ high wine acidity ○ plant pathology

4. What is the effect of the rootstock 1.103 Paulsen concerning the ripening of the grapes?

   ○ earlier ripening ○ no effect ○ later ripening

5. Which of the following rootstocks is most recommendable for a soil with nematodes problems?

   ○ 99R ○ 161-49C ○ 110R

6. Where is the original home of Vitis vinifera?

   ○ Caucasus ○ North Africa ○ South Europe

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7. Put the following images which show the preparation of ready-made grafts in a correct order!

A

B

C

D

E

F

G

H

I

J

Correct order of the pictures: _____

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8. Calculate for the following Chardonnay vineyard:
   Space between the rows: 2.5 m
   Space between vines within the row: 1 m
   Missing vines: 4%
   Average number of clusters: 6 per vine
   Average weight of a Chardonnay cluster: 120 g

   a) How many kilograms grape can you harvest from 1 ha of this vineyard?

   _____ kg grapes

   b) How many hectolitres must can you produce from that harvest if you produce quality wine (yield is 70 %)?

   _____ hl must

9. Indicate those characteristics that are typical for each rootstock variety!

Rootstock	**vigour**			**sensitivity to chlorosis**		
	low	medium	high	low	medium	high
Ruggeri 140	○	○	○	○	○	○
Couderc 3309	○	○	○	○	○	○
SO 4	○	○	○	○	○	○
Kober 5BB	○	○	○	○	○	○

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3. Grapevine training and pruning

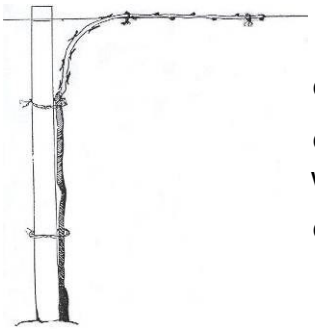
1. Which of the following parameters are true for a medium high training system?

Height of trunks:	O 20 cm	O 90 cm	O 120 cm
Number of wire pairs:	O one	O two	O three
Shoots are:	O outside wires	O within wires	O both
Usual type of pruning:	O spur pruning	O long spur pruning	O no pruning
Vines per hectare:	O 1,500 – 2,000	O 3,000 – 6, 000	O 10,000 – 12,000
Space between rows:	O 0.8 – 1.2 m	O 2.0 – 2.8 m	O 2.8 – 3.4 m

2. The Guyot pruning system belongs to the group of which system?

O short O mixed O long

3. Look at the picture and give the reason for cutting the buds of the vine!

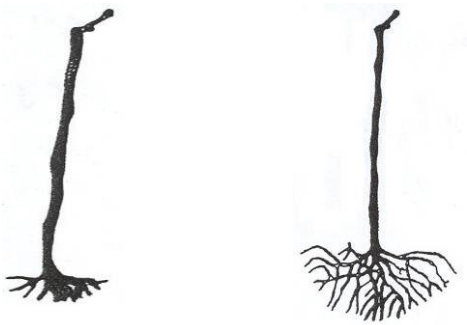


O Aesthetics reasons

O To induce stronger ramifications, regardless of the ones which bud ahead, in the wire

O To originate a dense vegetative mass

4. Pay attention to the following pictures.



A **B**

a) Which is the rootstock suitable for planting with a water spear? _____

b) Which is the rootstock most suitable to planting in holes in the ground? _____

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5. What does “shoot tip” mean?

   ○ The top of the shoot

   ○ The lowest leaves of the vine

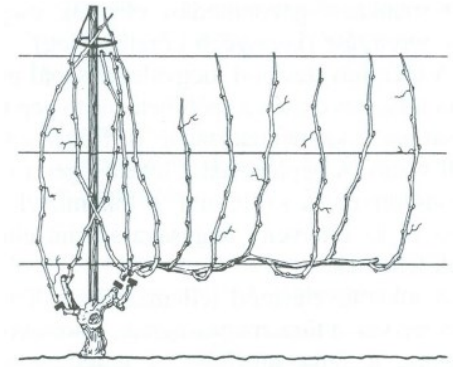
   ○ Propagation organ

6. Which training systems are shown in the pictures? Match the given training systems to the pictures!

Training systems: *A) Umbrella* *E) Sylvoz*

B) GDC *F) Guyot*

C) Head training *G) Lenz Moser*



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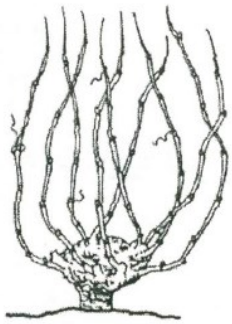

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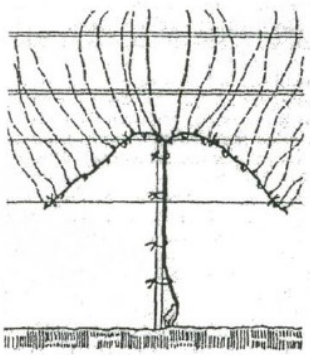

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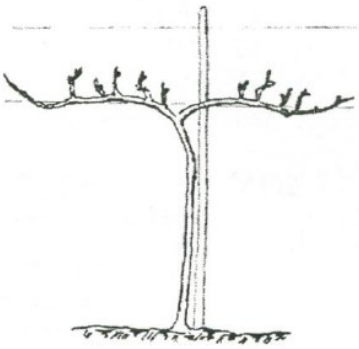

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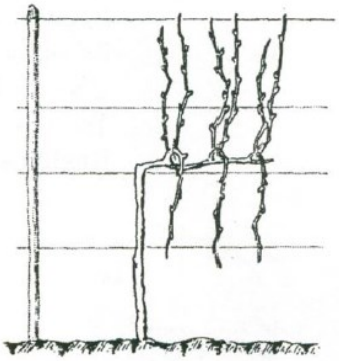

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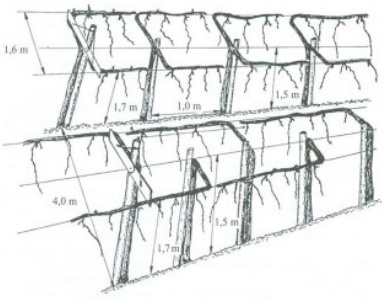

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4. Plant nutrition

1. Which deficiency can you recognize in the pictures?

_____
Which nutrient is missing?

_____
Which nutrient is missing?

_____
Which nutrient is missing?

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2. Allocate the following effects to the nutrients! (One answer per line).

Effects:

Formation of sugar	*Support of growth*
Formation of bouquet	*Support of frost resistance*
Prevention of couluring	*Element of all aminoacids*

Boron	**Nitrogen**	**Potassium**
_____	_____	_____
	_____	_____
		_____

3. Match the statements A – F to the nutrients they refer to (One answer per line).

Effects:

A) It enhances perfume and refinement in wine
B) It favours auxin synthesis
C) It regulates flower bud differentiation
D) It is a basic element in the composition of nucleic acids
E) It favours the growth of root tips
F) It is a basic element in the composition of the chlorophyl molecule

Mg	**Zn**	**P**
_____	_____	_____
	_____	_____
		_____

4. Allocate the following effects to the nutrients!

Effects:

A) favours growth of root tips
B) increases winter-hardiness
C) component of chlorophyll molecule
D) promotes water uptake into roots
E) basic element of all aminoacids
F) delays maturity

Nitrogen	**Phosphor**	**Potassium**	**Magnesium**
_____	_____	_____	_____
_____	_____	_____	_____

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5. What abnormality does the lack of Boron cause in the development of the vine?

   ○ creation of millerandage ○ too fast development ○ Chlorose

6. Which fertilizer improves the ripening process and the yield of grapes?

   ○ urea ○ phosphoric acid ○ potassium nitrate

7. The superficial fertilisation of the vineyard is done in…?

   ○ spring, early summer ○ autumn ○ winter

8. Which of the following statements is true for the nutrient nitrogen?

   ○ nitrogen anticipates the maturation process

   ○ nitrogen makes the growth slower

   ○ nitrogen slows down the maturation process

9. Which of the following compound fertilisers is suitable for fertilising in a 1-2-1 balance?

   ○ 7 kg N + 7 kg P + 14 kg K

   ○ 7 kg N + 14 kg P + 7 kg K

   ○ 14 kg N + 7 kg P + 14 kg K

10. You have a compound fertilizer 5-15-25.

    a) How many kg / ha of fertilizer are required to supply the soil with 120 kg nitrogen?

    _____

    b) By using 3.000 kg fertilizer per ha, how many kg P are supplied to the soil?

    _____

    c) By using 3.000 kg fertilizer per ha, how many kg K are supplied to the soil?

    _____

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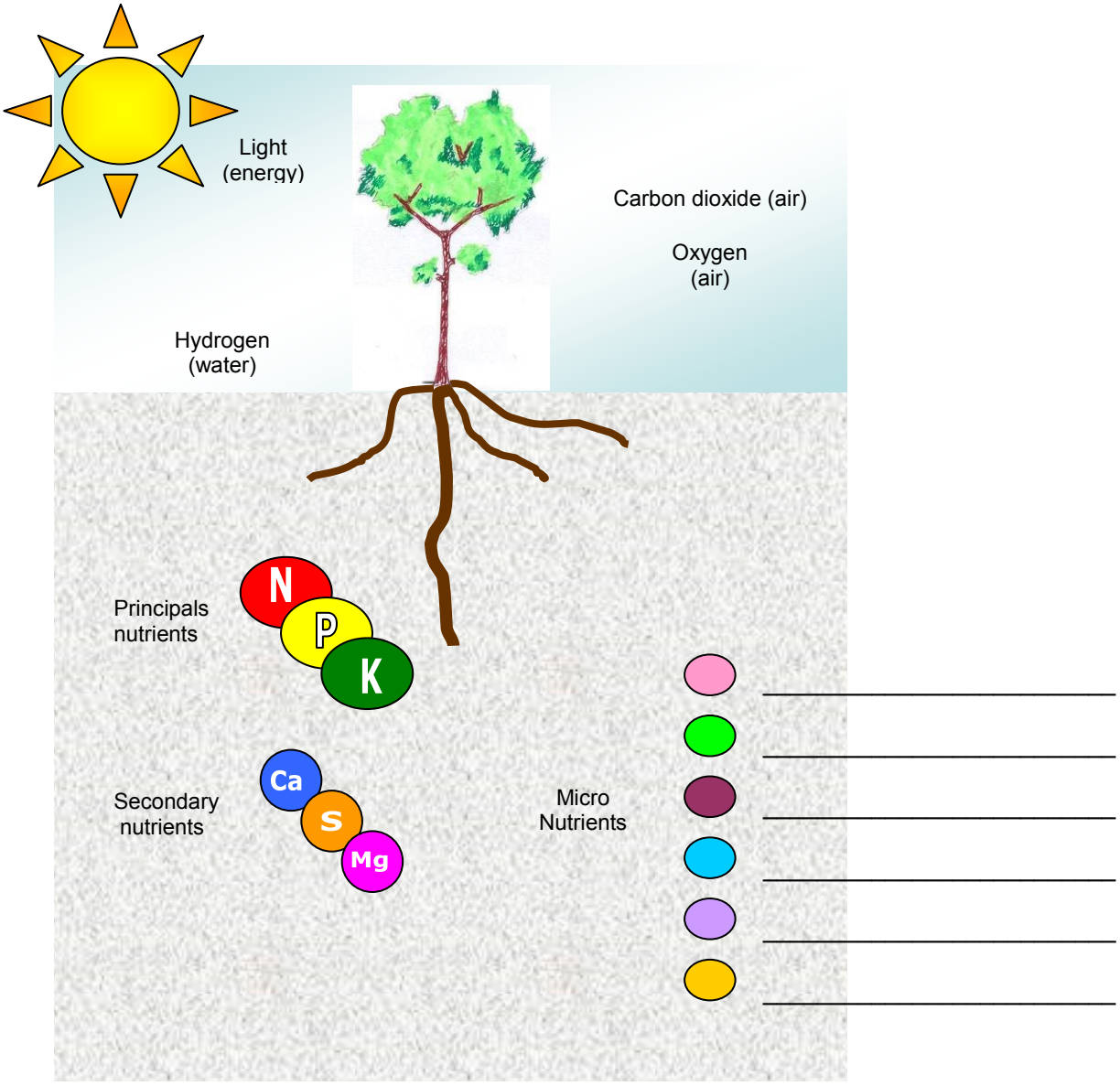
11. What is the basic equation of photosynthesis?

- ○ $C_6H_{12}O_6 \rightarrow 2\ H_2O + 6\ CO_2$
- ○ $6\ H_2O + 6\ O_2 \rightarrow C_6H_{12}O_6 + 6\ CO_2$
- ○ $6\ CO_2 + 6\ H_2O \rightarrow C_6H_{12}O_6 + 6\ O_2$

12. What does “immune soil” mean?

- ○ soil which has a hard ground
- ○ soil that contains 75 – 80% quartz
- ○ soil which is not good for Phylloxera

13. Look to following picture and insert the principal micronutrients for the vine!



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5. Irrigation of the vineyard

1. What is the water demand of the grapevine?

   ○ over 800 mm

   ○ the vine is draught resistant because its root can reach several metres under the soil

   ○ between 500 – 700 mm

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6. Pests and diseases of the grapevine

1. Name the following diseases!

_____

_____

_____

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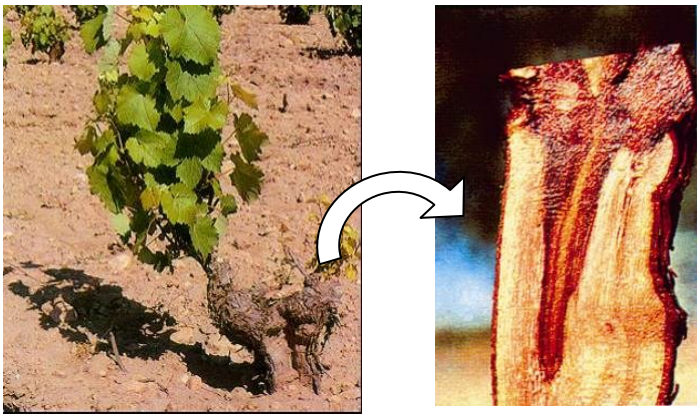

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2. Put into each line the letter corresponding to the pests and diseases shown in the pictures, choosing from those listed below.




_____ _____ _____ _____

Pest and diseases:
A) Uncinula necator
B) Eotetranychus carpini
C) Kloeckera a. – Saccaromycopsis v.
D) Hyalesthes obsoletus
E) Plasmopara viticola
F) Lobesia botrana
G) Botrytis cinerea
H) Empoasca vitis
J) Phomopsis viticola
K) Byctiscus betulae
L) Calepitrimerus vitis
M) Phylloxera vastatrix

3. Put into each line the letter corresponding to the pests and diseases shown in the pictures, choosing from those listed below.




_____ _____ _____ _____

Pest and diseases:
A) Crown Gall of Grape
B) Grape louse
C) Esca
D) Grey mould

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4. Put into each line the letter corresponding to the pests and diseases shown in the pictures, choosing from those listed aside.

_____

_____

_____

_____

A ***phomopsis cane and leaf spot***
(Phomopsis viticola)

B ***powdery mildew***
(Erysiphe/Uncinula necator)

C ***grey mould***
(Botrytis cinerea)

D ***green leafhopper***
(Empoasca vitis)

E ***downy mildew***
(Plasmopara viticola)

F ***vine leaf roller***
(Byctiscus betulae)

G ***grapevine decline***
(Eutypa lata)

H ***grape berry moth***
(Lobesia botrana)

I ***grape phylloxera***
(Dactylosphaira vitifoliae)

J ***rust mite***
(Calepitrimerus vitis)

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5. Which of the following statements is true for oidium, which ones for mildew? Write the name of these two diseases under the correct picture. Then allocate the statements to the pictures.

Name: _____

Statements:

_____

Name: _____

Statements:

_____

statements:
A) It needs humidity for propagation
B) It makes floury, white cover on the leaves and bunches
C) It is most aggressive at 30 °C
D) The secondary infection's prerequisite is the primary infection
E) It does not attack the ripe berry
F) Countermeasures: agents with S
G) In case of infection the berries crack
H) A translucent spot appears on the leaf's surface
J) In case of infection a musty smell can occur around the vineyard
K) Countermeasures: agents with Cu
L) Spores can live on the fallen dry leaves during winter
M) Came from America to Europe in the 1870-s

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6. Which of the following pictures show natural predators, which pests? Name the three predators / pests!

O pest O predator

Name: _____

O pest O predator

Name: _____

O pest O predator

Name: _____

O pest O predator Name: _____

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O pest O predator Name: _____

O pest O predator Name: _____

O pest O predator

Name: _____

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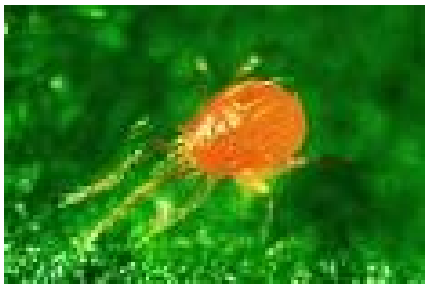

O pest O predator

Name: _____

O pest O predator

Name: _____

O pest O predator

Name: _____

O pest O predator

Name: _____

O pest O predator

Name: _____

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7. What is used in the biological control of Aphis gossypii?

   ○ blue sheets ○ yellow sheets ○ sexual hormone diffusers

8. In which phase do fungus diseases occurs most commonly?

   ○ sprouting period, at vigorous varieties

   ○ blooming period, at vigorous varieties

   ○ ripening period, with the increase of sugar content

9. What is the effect of the virus Grapevine Fanleaf?

   ○ curly wood ○ variegated ○ short node

10. There are various methods of control of vine diseases and pests. Match correctly!

A-Chemical control B-Biotechnical control C-Biological control D-Cultural control		1 - Natural fauna of the environment to control certain enemies or pesticides with biological agent's pesticides 2 - Control the enemy population and prevent reproduction 3 - Pesticides 4 - Techniques to reduce the conditions which favour outbreaks

11. In which phase of the vegetative cycle do the following diseases cause the major damages. Match correctly!

A - Downy Mildew (Plasmopara viticola) B - Powdery Mildew (Uncinula necator) C - Grey Rot (Bothrytis cinerea)		1 - Flowering and beginning of berry touch 2 -Berry Touch/Harvest 3 - Flowering and Berry Ripening 4 - Flowering and fruit set

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12. The picture represents the adult European grapevine moth (Lobesia Botrana Schiff). Allocate the damage done by the three generations!

A- First generation worm		1 - Chew the berries allowing the appearance of the grey rot
B- Second generation worm		2 - Perforations on the berries and devour of the flower buds
C- Third generation worm		3 - The berries still green, dry and rotten in wet weather

13. Identify the two methods in the pictures which are common in integrated production to control the European grapevine moth.

_____ _____

14. In which months is the natural predator Chrysopa carnea active here in this country? Mark the correct months!

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

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7. Handling pesticides

There is no sense in learning active substances. Therefore this chapter is covered only by practical tasks (including calculations).

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8. Quality improvement measures

1. In a region with late frost danger, how can we protect the graft?
    - ○ Covering only the base bud
    - ○ Not covering any bud
    - ○ Covering both / two buds

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Product 6 – Standard theory exams

Field: Oenology

For each question there is only 1 correct answer!

1. Must analysis

1. Generally, the acid which appears in the largest quantity in the must is

   ○ Lactic acid ○ Malic acid ○ Tartaric acid

2. The refractometer is used to

   ○ Determine residual sugar in grape juice
   ○ Determine total sugar in grape juice
   ○ Determine alcohol in grape juice

3. How much water is there in must from fresh grapes?

   ○ 40% ○ 55% ○ 70% ○ 90%

4. The sugar determination by a refractometry method is:

   ○ A direct one ○ An indirect one ○ A qualitative one

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2. Wine analysis

1. The total acidity of the wine:
   - ○ Is the sum of the volatile acids of the wine and the tartaric acid
   - ○ It includes the carbon dioxide (CO2) and the sulphur dioxide (SO2)
   - ○ Is the sum of all the titrable acids of the wine

2. For determining the total acidity by acid-base titration you can use as indicator:
   ○ Methyl violet ○ Bromthymol blue ○ Eriochrome black T

3. You can determine the volatile acidity by
   ○ Rebelein Method ○ Fractioned destillation Method ○ Paul Method

4. When you use a potensiometric method to determine the pH value of a wine
   - ○ You work with a temperature nearly to 20 ºC.
   - ○ You work with a temperature nearly to 35 ºC
   - ○ The temperature doesn't influence in the measurement

5. By the Ripper method you can determine the sulphur dioxide levels through
   ○ Acid-base titration ○ Redox titration ○ Complex-forming titration

6. In the titration of SO_2, the starch is used as
   ○ Titrant reagent ○ Titrable reagent ○ Indicator

7. To obtain the Total Polyphenol Index (TPI) you need to operate at:
   ○ 750 nm ○ 280 nm ○ 250 nm

8. The volumetric alcohol content
   - ○ Can be defined as the amount of ethanol contained in 10 litres of wine
   - ○ It includes ethanol, its homologues and the esters of both
   - ○ It includes only ethanol

9. In the Rebelein method, the unreacted excess of Cu2+ can be determined by:
   ○ Iodometry ○ Spectometry ○ Argentometry

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10. In the determination of SO_2 by the Ripper method it is true that:

- ○ You can use bromthymol blue as indicator
- ○ You can use I2 as titrant reagent
- ○ Ascorbic acid cannot give titration errors

11. Generally, the volatile acidity of a wine can be between:

○ 0.90 - 1.30 g/L ○ 0.20 - 0.80 g/L ○ 0.10 – 0.20 g/L

12. Identify the correct sentence below

- ○ Sulphur dioxide is present in musts and wines only as free and molecular form
- ○ Total sulphur dioxide is calculated by the addition of the combined and the active SO_2
- ○ Active sulphur dioxide is the form of SO_2 which is more effective against the microorganisms
- ○ With addition of sulphur dioxide a higher fermentation temperature is possible

13. The malo-lactic fermentation is currently controlled by the following analysis

○ tartaric acid ○ alcoholic strength ○ L-malic and L-lactic acids

14. Total acid content in must may be around:

○ 10% ○ 25 g/l ○ 7 g/l ○ 7%

15. What is glycerine?

- ○ tertiary alcohol
- ○ quaternary alcohol
- ○ primary alcohol
- ○ subsidiary alcohol

16. Which one of the following grape varieties contains the most methyl alcohol?

- ○ table grapes
- ○ interspecific hybrids
- ○ seedless grapes
- ○ Vitis vinifera

17. Calculate the fix acidity of the wine, knowing that:
    - The total acidity of the wine is 5,4 g/L of tartaric acid
    - The volatile acidity of the wine is 0,28 g/L of acetic acid

    Use the following relationship between the numerical acidity expressions:

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- Tartaric acidity x 0,653 = sulphuric acidity
- Sulphuric acidity x 1,530 = tartaric acidity
- Acetic acidity x 0,816 = sulphuric acidity
- Acetic acidity x 1,250 = tartaric acidity
- Sulphuric acidity x 1,224 = acetic acidity

The fix acidity of the wine is _____ g of tartaric acid/L.

18. For the determination of the volatile acidity of a wine using the Cazenave-Ferré method, it should be done a:

O Simple Distillation O Steam distillation O Liquid-liquid extraction

19. What is the meaning of a wine with a total alcoholic degree of 9,5 % vol. ?

O 9,5 g of ethanol in 100 g of wine

O 9,5 L of ethanol in 100 L of wine

O 9,5 mL of ethanol in 1 L of wine

20. The total SO_2 content of this wine is 30 mg/L. Calculate it's amount of combined sulphur-dioxide.

Answer: _____ mg/L

21. Iodometric titration is used to determine the total and the free SO_2 content. What type of reaction is it ?

O acid- base reaction O potentiometria O redoxi- reaction

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3. Grape processing

1. The objective of SO_2 addition to the must is
   - ○ Increase the acidity, reduce the coloration and accelerate the fermentation
   - ○ Inhibit the bacteria, control the oxidation and select the yeasts
   - ○ Avoid iron break, enrich the wine bouquet and destroy undesirable bacteria

2. When a grape is completely healthy, it does not have the enzyme
   - ○ Tyrosinase ○ Laccase ○ Pectolase

3. The grape natural sugars are:
   - ○ Glucose & sucrose ○ Fructose & sucrose ○ Glucose & fructose

4. The acids from grape are:
   - ○ Tartaric, malic and citric acids
   - ○ Tartaric and malic acids
   - ○ Citric and tartaric acids

5. Which acid is not present in the must?
   - ○ lactic acid ○ citric acid ○ malic acid ○ succinic acid

6. In order to minimize the SO_2 content in the fermenting must, we have
   - ○ to reject the grapes in bad sanitary condition, and to adopt good winery sanitary practices
   - ○ to pick grapes with optimum sugar / acid balance
   - ○ to add SO_2 as potassium metabisulfite

7. Skin maceration for white wine production process is used in order
   - ○ to extract aromatic compounds from the fruit
   - ○ to extract small quantities of tannin from the seeds
   - ○ to stimulate yeast growth before pressing
   - ○ to increase the total acidy of the must

8. For high quality red wines production, a good press to use is

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- ○ a continuous press
- ○ a vertical press
- ○ no pressing system is suitable

9. What is prevented by destemming?
   - ○ Malolactic fermentation
   - ○ Wine oxidation
   - ○ High content of nitrogen
   - ○ High content of potassium

10. What is prevented by destemming?
    - ○ High content of tannin
    - ○ Fast fermentation
    - ○ Malolactic fermentation

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4. Wine making

1. The good quality of white wine is damaged by…
   - ○ Warm grape harvest
   - ○ Cold grape harvest
   - ○ The use of very small harvest containers

2. Pectin hydrolysing enzymes are added to the fresh crushed grapes because:
   - ○ they are a nitrogen source for the yeasts
   - ○ they guarantee a more adequate must viscosity for the yeast fermentation activity
   - ○ they facilitate the extraction of colour and aroma compounds

3. You want to add residual sweetness of 4 grams per litre to a tank of 1.500 litres of wine. How much must concentrate do you need?
   The density of the must concentrate is 1.34. It contains 65 per cent sugar by weight (65 gram sugar per 100 gram must concentrate).

   Answer: _____ litres of must concentrate

4. What kind of racking is more suitable for white wines?
   - ○ Racking from tank to tank without oxygen
   - ○ Racking with oxygen
   - ○ No racking is suitable

5. What is the maximum increase of alcohol allowed by addition of sugar in the must for quality wines in the European Union?

   ○ 1% vol. alcohol ○ 2% vol. alcohol ○ 3% vol. alcohol

6. A must has a potential alcohol by volume content equal to 10%. How many litres of concentrated must should be added to it in order to increase the potential alcohol content by 2 degrees ? The volume of must to be corrected is 1000 litres and the concentrated must to be added has a potential alcohol content equal to 40%.

   Answer: _____ litres of must concentrate

7. Melioration of must:

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You have 60 hl of grape juice with 9,5 % vol. alcohol potential degree. You have a concentrate grape juice with 50% vol. alcohol potential degree. You want to obtain a wine with 11,5% vol. alcohol degree.
Calculate the volume of concentrate grape juice you need.

Answer: _____ litres of must concentrate

8. What is the product of the malolactic fermentation process?

   ○ Malic acid ○ Tartaric acid ○ Lactic acid

9. The floculation can start due to

   ○ Rising in acidity and the temperature
   ○ The union of gelatine and tannins
   ○ A decrease in the acidity of the wine

10. The red wines best suited for ageing well are the ones that

    ○ Have a high content of phenolic compounds
    ○ Have a brownish colour
    ○ Have a higher alcoholic degree

11. The inert atmosphere is composed of

    ○ Pure SO_2
    ○ Pure Nitrogen
    ○ Pure Oxygen

12. The sulfiting process consists of

    ○ The elimination of the free SO_2 of the wine
    ○ The addition of SO_2 to wine
    ○ The addition from 25 to 40 mg/l of combinated SO_2 to the wine

13. During the fermentation it is necessary to measure daily:

    ○ The density and the temperature of the must
    ○ The pH and the concentration of sulphur dioxide
    ○ The alcoholic degree and the acidity of the must

14. The yeast that acts at the end of the fermentation in must with high level of sugar is

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- ○ The Saccharomyces oviformis, which enlarges the alcohol % vol.
- ○ The Saccharomyces ellipsoideus, which is the most abundant one
- ○ The Saccharomyces rosei, which reduces the volatile acidity

15. The necessary conditions to produce the biological decomposition of the acids in malic acid rich wines are…
    - ○ High turbidity and presence of sugars
    - ○ pH and correct temperature
    - ○ CO_2 in must and low temperature

16. How do you prepare commercial yeast for fermenting ?
    - ○ Putting in the must a selected enzyme
    - ○ Preparing a wine-water solution
    - ○ Rehydrating and nourishing a culture of selected yeast

17. By means of the alcoholic fermentation you mainly get
    - ○ Glycerine and acetic acid
    - ○ Carbonic anhydride and alcohol
    - ○ Alcohol and acetic acid

18. When is the must decanting process recommended during the white wine-making process?
    - ○ Before the press process
    - ○ Immediately after the press process
    - ○ After the fermentation process

19. The press type that produces a well distributed, uniform and low pressure is…
    - ○ Vertical
    - ○ Pneumatics horizontal
    - ○ Continuous of bands (conveyor belt press)

20. It is recommended to add SO_2
    - ○ at the first day after the alcoholic fermentation starts
    - ○ before the yeast inoculation
    - ○ at the vineyard on the grapes in containers, after hand picking

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21. Which process takes place during barrique aging?

○ Enzymatisation ○ Micro-oxygenation

22. The yeast performance during the alcoholic fermentation is currently evaluated by:

○ volatile acidity evolution

○ temperature and density evolution

○ total acidy evolution

23. Selected yeasts are currently used in the white wine production in order

○ to guarantee a better fermentation aroma

○ to allow fermentation at higher temperatures

○ to increase the oxygen level

24. During red wine alcoholic fermentation, pumping over is needed in order

○ to increase the juice extraction rate from the fruit

○ to extract colour and tannin compounds from the skins

○ to stimulate the malo-lactic fermentation

25. When the malo-lactic fermentation is being planned, SO_2 is supposed to be added:

○ before the malo-lactic fermentation starting

○ during malo-lactic fermentation

○ when malo-lactic fermentation is finished

26. Some of the physiological characteristics of malo-lactic bacteria are

○ They are not sensitive to the sulphur dioxide, and need a pH > 3,2

○ Small amounts of both total and free sulphur dioxide, and pH<3,2, are harmful for them

○ They need to have some sugar available to succeed the malo-lactic fermentation

27. What factor increases glycerine content in wines?

○ Low content of glucose in must

○ Temperature of 30 °C in fermentation

○ Content of 0,5 grams per litre of APA

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○ Temperature of fermentation around 17 °C

28. When do acetic bacteria develop in wines?

○ At the middle of alcoholic fermentation

○ At the end of alcoholic fermentation

○ In musts with a lot of nitrogen

29. What can be a consequence of malolactic fermentation?

○ Decrease of pH in wine ○ Precipitation of potassium bitartrate

○ Decrease of alcohol content ○ Increase of titratable acidity

30. What conditions stop malolactic fermentation?

○ High content of thiamine ○ Medium content of lysozyme

○ Excess of sulphurate proteins ○ Alcohol content less than 10%

31. What is the product of the malolactic fermentation process?

○ Tartaric acid and acetic acid ○ Ethyl alcohol and O_2

○ acetic acid and CO_2 ○ Lactic acid and CO_2

○ Malic acid and CO_2

32. Which reaction cannot occur ?

○ Tannins + proteins ○ Anthocyanins + monosaccharides

○ Tannins + pectins ○ Tannins + anthocyanins

33. Which method of fermentation is used for major red wines in Europe?

○ Absence of skins ○ Presence of stems

○ Temperature of about 15 °C ○ Temperature of about 25 °C

34. What is the scientific name for wine yeast?

○ Botrytis cinera ○ Cladosporum cellare

○ Saccharomyces cerevisiae var. ellipsoideus ○ Brettanomyces

35. What is the proper temperature for using pectic enzymes?

○ 35 °C ○ 15 °C ○ 5 °C

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36. What is autolysis?

- ○ Dissolvement of the different wine-making additives in the wine
- ○ Decomposition of dead yeast cells
- ○ A kind of extraction
- ○ Homogenisation

37. What are the components of tirage liquor?

- ○ Wine and invert sugar
- ○ Sugar and citric acid
- ○ Wine, sugar and yeast
- ○ Wine, yeast and ethyl alcohol

38. What is controlled fermentation?

- ○ The fermentation takes place in a stainless steel tank
- ○ The fermentation takes place in a wooden cask
- ○ The addition of yeast and temperature control during fermentation
- ○ Wild yeast fermentation

39. Which of the following gases is inert ?

○ Air ○ N_2 ○ SO_2

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5. Barrels, tanks & equipment

1. Which kind of wooden cask is used for original barrique aging?

   ○ Chestnut ○ Pine tree

   ○ Oak ○ Acacia

2. Disinfection is

   ○ Elimination of microorganisms

   ○ Elimination of organic and mineral dirt from the surfaces

   ○ Removing tartaric deposits

3. What is the volumetric capacity of a barrique cask?

   ○ 50 litres ○ 136 litres ○ 225 litres ○ 450 litres

4. Disinfection of the wine storage tank. Usage conditions: 1% concentration, Temperature: max. 60ºC. Calculate the amount of disinfectant for 250 L water solution

   Answer: _____ L disinfectant

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6. Wine treatment and stabilisation

1. Which method is the most suitable for long term tartaric stabilisation ?

   ○ Tartaric acid ○ Cooling

   ○ Meta-tartaric acid ○ Calcium carbonate

2. Why do you rack white wines ?

   ○ Increase the oxygen content

   ○ Clarify after fermentation

   ○ Reduce acidity

3. Why do you aerate wines ?

   ○ Increase oxygen content ○ Clarify after fermentation

   ○ Reduce acidity ○ Decrease the pH

4. Which substances is a clarifying agent ?

   ○ Silica gel ○ Blue fining ○ Gelatine

   ○ Citric acid ○ Potassium

5. Which substance can remove polyphenol?

   ○ Silica Gel ○ hydrochloric acid

   ○ Tannin ○ PVPP ○ Potassium bicarbonate

6. Which possibility is the best suitable for the reduction of acidity in wines ?

   ○ KOH ○ $CaCO_3$

   ○ H_2O ○ $CaSO_4$

7. Tartar stabilization by cooling: Which statement is correct?

   ○ Cooling at 4° C ○ Cooling with metatartric acid ○ Cooling at minus 4° C

8. By using calcium carbonate, you want to reduce the acid content of 1000 litres of wine from 8 g/L to 7 g/L. How many grams of calcium carbonate do you need?

   Answer: _____ grams of calcium carbonate

   OR

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○ 670 g ○ 6.7 g ○ 67 g ○ 0.67 g

9. If we do not carry out the racking process in time
   - ○ We can make an acidification
   - ○ The wine is exposed to microbiological alterations
   - ○ The wine could develop off flavour

10. If the level of alcohol in a wine is low, the racking process will take place:
   - ○ Before than a wine with more alcohol
   - ○ Later than a wine with more alcohol
   - ○ At the same time for all the wines

11. In order to reduce the total acidity of the must by chemical process you may use:

○ $(NH_4)_2S0_4$ ○ $KHCO_3$ ○ KOH

12. Wine tartaric stabilisation at low temperature (refrigeration)
   - ○ Doesn't eliminate microorganisms and doesn't protect wines against oxidation
   - ○ Is also used for elimination of bad tastes
   - ○ Could increase the pH and the potassium level
   - ○ Precipitates tartrate salts in excess, and protect wines against oxidation

13. Select the correct operations sequence of a wine tartaric stabilisation system by the continuous method
   - ○ Cold recuperation – filtration at low temperature
   - ○ Filtration at low temperature – crystallisation
   - ○ Crystallisation – filtration at low temperature

14. Filtration at low temperature during the wine tartrate stabilization process by refrigeration is important because
   - ○ It reduces the bacteria contamination
   - ○ It improves the wine colour
   - ○ It succeeds to maximize the tartrate crystals extraction

15. Which method can you use to stabilise tartrate?

○ β-tartaric acid ○ Warming wine up to 60 °C

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○ Tartaric acid ○ Meta-tartaric acid

16. How can you increase tartaric precipitations?

○ Using meta-tartaric acid ○ Racking using nitrogen

○ Deep filtration ○ Adding citric acid

17. Which product supplies a higher quantity of SO_2?

○ 5 g of gas SO_2 ○ 10 g of 8% liquid SO_2 solution

○ 1 g of burnt sulphur ○ 5 g of potassium metabisulphite

18. Adding 50 mg/L SO_2 into wine has the following effect:

○ Total acidity decreases

○ All microrganisms die

○ Malolactic fermentation does not start

○ Tartaric precipitations do not occur

19. Sulphuring: Calculate the necessary amount of pure SO_2. 100 hectolitres of wine contain 30 mg/L free SO_2. How much pure SO_2 do you need for sulphuring up to 60 mg / L free SO_2, if half the amount of SO_2 is bound?

Answer: _____ grams of pure SO_2

20. What is the best temperature to clarify wine?

○ below 8 °C ○ 10 – 20 °C ○ above 25 °C ○ 35 – 40 °C

21. Which of the following compounds can be found in wine as a result of desacidification ?

○ potassium hydroxide ○ ethyl acetate

○ malic acid ○ calcium tartrate

22. Correction by sulphurous anhydride:
    - Wine volume: 700 L
    - Quantity of sulphurous anhydride to use for correction the wine: 6 g/hl
    - Concentration percentage of sulphurous solution: 6%

Calculate the volume of a 6% sulphurous solution that you must add to 700 L wine.

Answer: _____ litres sulphurous solution

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7. Fining

1. What is the purpose of bentonite fining?
   - ○ Reduction of polyphenols
   - ○ A decrease in total acidity
   - ○ An increase in pectins
   - ○ Prevention of protein precipitation

2. The use of bentonite in wine determines:
   - ○ A decrease in colour intensity
   - ○ An increase in pectins
   - ○ Strong wine oxidation
   - ○ A decrease in total acidity

3. Which fining agent can correct some excess of Fe in a white wine ?
   - ○ Bentonite
   - ○ Casein
   - ○ Gelatine

4. Select the correct sentence about fining general technology
   - ○ Fining products are spread gently on the wine surface in order to mix slowly with all the wine
   - ○ Solid fining products are always first dissolved in a small volume of the same wine to be clarified
   - ○ Using adequate fining products we improve efficiency of the subsequent filtration process

5. Select the correct sentence about fining product capacities
   - ○ Bentonite cannot be used to remove proteins from white wines
   - ○ Casein is used for improving the red wines colour
   - ○ Using PVPP we can remove low molecular weight polyphenols from the wine

6. Which of the following fining agents are mineral based ?
   - ○ Casein
   - ○ PVPP
   - ○ Malic acid
   - ○ Bentonite

7. In which way protein heat unstable molecules can be removed from wine?
   - ○ by using pectic enzymes
   - ○ by adding ethyl alcohol
   - ○ by warming at 90° C
   - ○ by using mineral based fining agents

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8. Which secondary effect can have anti-odour products containing activated carbon ?

   ○ They reduce the acidity of the wine

   ○ They destroy microbes in the wine

   ○ They reduce the colour of the wine

9. Calculate the amount of bentonite and gelatine for 1 litre of wine.
   Products and doses to test:
   Bentonite: 100 gr / 550 L of wine; Liquid gelatine at 15%: 20 g / 550 L of wine.

Bentonite	**Gelatine**
_____	_____

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8. Bottling

1. Which kind of pump is the best for bottling?

   ○ Piston pump ○ Peristaltic pump

2. Some of the most critical bottling line operations (HACCP) are

   ○ labelling and capsuling

   ○ casing and case transport system

   ○ rinsing and filling

3. If the wine temperature by bottling is much lower than 20°C, you should fill the bottles

   ○ a little bit less than the normal volume

   ○ a little bit more than the normal volume

   ○ no importance

4. To avoid wine leaking after bottling with cork closure, the bottles should be

   ○ Kept horizontal as soon as possible

   ○ Kept upright for a couple of hours

   ○ Stored in a frigorific room as soon as possible

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Product 6 – Standard theory exams

Field: wine sensory & wine geography

1. Wine geography

1. Bring the following wine growing areas in order according to their size!
   (1 = largest wine growing area, 5 = smallest wine growing area)

   Areas: *Pfalz* *Toscana*
   Rhone *Eger* *Navarra*

   1 _____

   2 _____

   3 _____

   4 _____

   5 _____

2. Bring the following wine growing areas in order according to their size!
   (1 = largest wine growing area, 5 = smallest wine growing area)

   Areas: *Champagne (F)* *Valais (CH)* *Wachau (A)*
   Sicily (I) *Rheinhessen (D)*

   1 _____

   2 _____

   3 _____

   4 _____

   5 _____

3. Bring the following wine growing areas in order according to their size!
   (1 = largest wine growing area, 5 = smallest wine growing area)

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Areas: *Bordeaux (F)* *Luxemburg (L)* *Weinviertel (A)*
Le Marche (I) *Nahe (D)*

1 _____

2 _____

3 _____

4 _____

5 _____

4. Allocate the following grape varieties to the wine growing areas below!

Varieties: *Dornfelder* *Sangiovese* *Furmint*
Tempranillo *Rheinriesling*

Rioja _____

Toscana _____

Wachau _____

Württemberg _____

Tokaji _____

5. Allocate the following grape varieties to the wine growing areas below!

Varieties: *Trebiano* *Chardonnay* *Grüner Veltliner*
Kekfrankos *Tempranillo* *Sauvignon blanc*
Montepulciano *Rheinriesling*

Abruzzo _____

Bordeaux _____

Rioja _____

Mosel _____

Champagne _____

Wachau _____

Szekszárd _____

Veneto _____

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6. What is the most typical grape variety in the regions or countries listed below?!

Varieties: *Tinta Cao* *Sémillon* *Hàrslevelù* *Traminer* *Garnacha tinta*

Bordeaux _____

South Tyrol _____

Portugal _____

Rioja _____

Hungary _____

7. Match the following wine regions with the grape varieties below!

Regions: *Sicily* *Mosel* *Baden* *Rioja* *Eger* *Ticino* *Champagne* *Douro* *Podravje*

Ruländer _____

Müller Thurgau _____

Alvarinho _____

Kadarka _____

Muškat Otonel _____

Fendant _____

Pinot Meunier _____

Catarratto Bianco _____

Tempranillo _____

8. Match the following wine regions with the grape varieties below!

Regions: *Tuscany* *Wachau* *Baden* *Rioja* *Tokaj* *Ticino* *Champagne* *Duoro* *Podravje*

Ruländer _____

Grüner Veltliner _____

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Alvarinho _____

Muscat Lunel _____

Malvazija _____

Fendant _____

Pinot Meunier _____

Sangiovese _____

Tempranillo _____

9. Name the most typical grape variety for the following wine growing areas (one variety per area)!

Mosel _____

Burgundy _____

Tuscany _____

Sommontano _____

Piemont _____

10. Which country produces which speciality?

Speciality	***Country***
Jerez	_____
Madeira	_____
Armagnac	_____
Tokaji aszú	_____
Teran	_____
Uhudler	_____
Petite Arvine	_____
Prosecco	_____

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11. Allocate one of the specialities given to each of the countries listed below!

Specialities: *Cave* *Tokaj* *Portwine* *Prosecco*
Traminer *Vin Jaune* *Uhudler* *Eiswein*

Country	***Speciality***
Spain	_____
Italy	_____
Portugal	_____
France	_____
Germany	_____
Hungary	_____

12. What is the typical speciality in the areas or countries listed below?

Specialities: *Sherry* *Tokaj* *Madeira* *Prosecco*
Traminer *Uhudler* *Armagnac* *Eiswein*

Country	***Speciality***
Spain	_____
South Tyrol	_____
Portugal	_____
Austria	_____
Germany	_____
Hungary	_____

13. Allocate the following countries to the terms below. For each term, one or two countries can be possible!

Countries: *Germany* *France*
Italy *Austria*
Portugal *Spain*
Hungary

Bikaver	_____	_____
Cava	_____	_____

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Crianza _____ _____

DOC _____ _____

Port wine _____ _____

Schilcher _____ _____

Spätlese _____ _____

VDQS _____ _____

14. Allocate the following countries to the terms below. For each term, one or two countries can be possible!

Countries:	*Switzerland*	*Germany*	*France*
	Italy	*Austria*	*Slovenia*
	Portugal	*Spain*	*Hungary*

Refosk _____ _____

D.O.C.G. _____ _____

Reserva _____ _____

Vin de Pays _____ _____

Kabinett _____ _____

Kadarka _____ _____

Kerner _____ _____

Riserva _____ _____

Eiswein _____ _____

Passito _____ _____

15. Name the country each wine growing area belongs to!

Aosta _____

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Baden _____

Carnuntum _____

Elsass _____

Lagoa _____

Nahe _____

Penedes _____

Puglia _____

Sopron _____

Tavira _____

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2. Wine sensory

1. Match the causes to the following wine faults! Write the letter from the list below to the corresponding fault!

Wine fault	Nb.
Oxidation	
Volatile acidity	
Smell of hydrogen sulphide:	
Irregularity caused by Brettanomyces	

Causes:

A) the activities of yeasts, sulphur is reduced to hydrogen sulphide

B) oxidation of ethanol

C) enzymatic browning

D) Acetobacter species

E) fault of low acid wines, when fermentation is irregular

2. Allocate the wine aromas to the proper group of aromas by writing the letters to each group!

Aromas:

A) violet	G) anise	M) pepper
B) smoke	H) hay	N) banana
C) tar	I) black currant	O) clove
D) strawberry	J) raspberry	P) pineapple
E) thyme	K) rose	Q) linden flower
F) SO2	L) H2S	R) cinnamon

Group of aroma

Tropical fruit aromas _____

Flower aromas _____

Berry fruit aromas _____

Dried plant aromas _____

Spicy aromas _____

Chemical aromas _____

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3. What are the most typical aromatic characteristic of the following wine varieties?

Aromas: *plum* *butter* *hay* *pepper*

Chardonnay _____

Cabernet Sauvignon _____

Sauvignon blanc _____

Merlot _____

4. What are the most typical aromatic characteristic of the following wine varieties?

Aromas: *green pepper* *exotic fruit* *passion fruit / citrus*
red pepper *peach*

Chardonnay _____

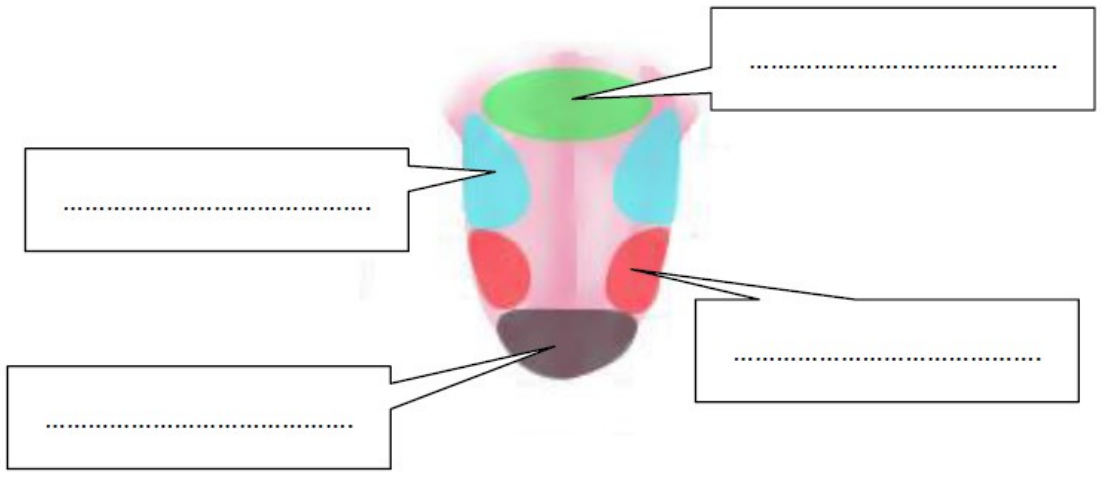
Cabernet Sauvignon _____

Sauvignon blanc _____

Merlot _____

Riesling _____

5. Where do you taste salty, sour, bitter and sweet on the tongue? Write this four tastes on the drawing!



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3. Wine service

1. Allocate the proper temperature which is appropriate for tasting to the following drinks!

temperatures: *12 - 14°C* *7 - 8°C* *10 - 12°C*
8 - 10°C *14 - 18°C* *room temperature*

Cognac, Brandy _____

Red wine _____

Liqueur wine _____

White wine _____

Rose, light red wine _____

Champagne _____

2. Allocate the proper temperature which is appropriate for tasting to the following drinks!

temperatures: *8 - 10°C* *10 - 12°C* *12 - 14°C*
14 - 16°C *18 - 20°C*

Sparkling wine _____

Young white wine _____

red matured wine
aged in wood _____

Young red wine _____

White matured wine _____

3. Allocate the proper temperature which is appropriate for tasting to the following drinks!

temperatures: *8 - 10°C* *10 - 12°C* *12 - 14°C*
14 - 16°C *18 - 20°C*

Sparkling wine “Charmat” method _____

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Sparkling wine “traditional” method _____

red matured wine aged in wood _____

Young red wine _____

White matured wine _____

4. Match the wines with the dishes below!

Wines:

A) Cognac, Brandy, spicy wines
B) Dry red wines
C) Late harvested white wines
D) Full-bodied, long-aged red wines
E) Aromatic, dry white wines
F) Light, dry Champagne

Grilled or stewed chicken, turkey

Wine recommendation: _____

Pork stew

Wine recommendation: _____

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Games

Wine recommendation: _____

Fruit cake

Wine recommendation: _____

Camembert cheese

Wine recommendation: _____

Aperitif without food

Wine recommendation: _____

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