VMW 261 Mid-term

NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SCORE \_\_\_\_\_\_/40

**Part 1 – Multiple choice (20 points)**

1. What functions do carotenoids play? (1 pt)
   1. They are accessory pigments and provide mouthfeel
   2. They are accessory pigments and flavor precursors
   3. They are accessory pigments and provide color stability
   4. They are phenolic compounds
2. The major root flushes in grapevines occur\_\_\_\_\_\_\_\_\_\_\_ (1 pt)
   1. Just before bloom and before harvest
   2. Just before bloom and after harvest
   3. Just before budbreak and after harvest
   4. There’s usually only one flush
3. In regards to root growth \_\_\_\_\_\_\_\_\_\_can overcome\_\_\_\_\_\_\_\_\_\_\_ (2 pt)
   1. Gravitropism; hydrotropism
   2. Graviphobism; hydrotropism
   3. Hydrotropism; gravitropism
   4. Hydrophobism; gravitropism
4. What occurs when leaves fall? (1 pt)
   1. They remobilize nutrients and carbohydrates
   2. They take nutrients and carbohydrates away from the plant
   3. They take up a lot of H+ from the fruit (increasing juice pH)
   4. They re-mobilize copper
5. Increases in sugar concentration after 25oBrix is a result of\_\_\_\_\_\_\_\_\_ (1 pt)
   1. Sugar loading
   2. Sugar unloading
   3. Dehydration
   4. Photosynthesis
6. Shoot growth is most rapid\_\_\_\_\_\_\_\_\_\_\_ (1 pt)
   1. From bud break until veraison
   2. After bud break, but before fruitset
   3. From veraison until harvest
   4. Shoot growth rate stays constant throughout the season
7. Which of these parts of the berry contains the most potassium? (1 pt)
   1. The skin
   2. The flesh
   3. The seeds
   4. They all contain about the same amount of potassium
8. Acids reach their highest concentration in the berry at\_\_\_\_\_\_\_\_\_\_\_\_ (1 pt)
   1. Stage 1 of berry growth
   2. Stage 2 of berry growth
   3. Stage 3 of berry growth
   4. Fruit set
9. Floret number per inflorescence is determined\_\_\_\_\_\_\_\_\_\_ (1 pt)
   1. Around bud break
   2. Around flowering during the prior season
   3. During rapid shoot growth
   4. At flowering of the current season

1. Temperatures which will encourage the maximum number of flowers to fertilize are\_\_\_\_\_\_\_\_ (1 pt)
   1. 57 – 86oF
   2. 50 – 70oF
   3. 80 – 95oF
   4. 77 – 86oF
2. Bloom until harvest takes about\_\_\_\_\_\_\_\_\_\_ (1 pt)
   1. 60 – 70 days
   2. 30 – 60 days
   3. 100 – 115 days
   4. 50 – 80 days
3. Vine vigor refers to\_\_\_\_\_\_\_\_ (1 pt)
   1. The size of a vine
   2. The rate of berry growth
   3. Shoot density
   4. The rate of shoot growth
4. What might be an advantage to having V. rotundifolia as a rootstock parent? (1 pt)
   1. It excludes K+
   2. It takes up a lot of K+
   3. It is resistant to nematodes
   4. There is no benefit
5. Stomata\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (2 pt)
   1. Are open at night
   2. Facilitates the uptake of CO2 which is used in the Krebs cycle and the output of O2 that is derived from water splitting at photosystem II
   3. Facilitates the uptake of CO2 which is used in the Calvin Cycle and the output of O2 that is derived from water splitting at photosystem II
   4. Facilitates the uptake of CO2 which is used in the Calvin Cycle and the output of O2 that is derived from water splitting at photosystem I
6. Cellular respiration occurs in order to\_\_\_\_\_\_\_\_\_\_\_\_ (1 pt)
   1. Get rid of CO2 which can be toxic to the cell
   2. Get rid of singlet oxygen which can break down cell walls
   3. Form ADP and NADPH
   4. Generate ATP
7. Phenological events are in response to\_\_\_\_\_\_\_\_\_and modulated by\_\_\_\_\_\_\_\_\_\_\_ (2 pt)
   1. Photoperiodism, temperature
   2. Temperature; photoperiodism
   3. Phototropism; temperature
   4. Temperature; phototropism
8. Why do hybrids have a tendency to overcrop? (1 pt)
   1. They produce 2 – 3 primordia/bud
   2. They produce >4 primordia/bud
   3. They tend to be low vigor
   4. They tend to have shallow root systems

**Free answer (20 points)**

1. Besides phylloxera resistance, what are 5 other factors that you might consider when choosing a rootstock? (5 points)
2. What management practices can negatively impact mycorrhizal populations? (5 points)
3. Explain bud fruitfulness. At what point(s) is fruitfulness determined and what influences potential fruitfulness? (5 points)
4. Explain how sugar is created, moved through the vascular tissue and then brought into the fruit. (5 points)

**Extra credit**

1. Explain photosynthesis and respiration and how they relate to one another. (10 points)

(Discuss the main inputs and outputs of the photosystems, the calvin cycle, glycolysis, the krebs cycle and the electron transport chain)