

**I. ESSAY QUESTIONS** (*5 Points Each*)

1. Define the term “horticulture,” and discuss the role of horticulture in enhancing human well-being and environmental beautification..
  
  
  
  
  
  
  
  
  
  
2. Distinguish the following disciplinary areas of horticulture with the kinds of crops grown and cultural practices used.
  - a. Pomology
  - b. Olericulture
  - c. Floriculture
  - d. Nursery crops
  
  
  
  
  
  
  
  
  
  
3. Cultivated plants are classified by annuals, biennials, and perennials. Distinguish the growth and flowering habits of each group with example of horticultural crops involved in your discussion.
  - a. Annuals
  - b. Biennials
  - c. Perennials
  
  
  
  
  
  
  
  
  
  
4. If you have developed a new plant material that would enhance personal satisfaction and beautification of the environment, would you release it as a new cultivar or a variety? Explain the reason for your choice.

5. Draw a cross section of a woody plant trunk and show where the following vascular and meristematic tissues are located. Describe the function of these specialized tissues in water movement, photosynthate translocation, and stem girth enlargement.
  - a. Phloem
  - b. Xylem
  - c. Cambium
  
6. Distinguish the following terms as modifications of stem tissues and provide two examples of crops for each.
  - a. Tuber
  - b. Runner
  - c. Rhizome
  - d. Corm
  
7. Distinguish the following types of flower sex expression in plants. Include a horticultural crop for each of these flowering habit in your discussion.
  - a. Dioecious
  - b. Monoecious
  - c. Andromonoecious
  - d. Gynomonocious
  
8. What is meant by a “carbon dioxide compensation point,” and what would happen if the  $C_3$  and  $C_4$  plants are grown together in a tightly sealed terrarium with no air infiltration?

## II. SHORT ANSWERS (*Various Points*)

1. Explain the role of phytohormone abscisic acid (ABS) on the formation of abscission layer of the leaf petiole in deciduous plants. (2 points)

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2. Distinguish the cool-season and warm-season crops with their cultural requirements and two examples of horticultural crops. (2 points)

a. Cool-season crop: \_\_\_\_\_  
 b. Warm-season crop: \_\_\_\_\_

3. What is the difference between a “liana.” and a shrub? (2 points)

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4. Match the following plants with their growth characteristics: (4 points)

a. Halophyte	_____	tolerant to low pH soils
b. Glycophyte	_____	tolerant to dry climate
c. Xerophyte	_____	prefers fresh water
d. Acid-loving plant	_____	susceptible to high light conditions
e. Shade plant	_____	tolerant to salty soil

5. Explain the role of intercalary meristems on the growth of monocots like turfgrass that tolerates mowing. (2 points)

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6. What is meant by a “sport” and how is it formed and used? (3 points)

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7. Pineapple is typically a/an (\_\_\_\_\_ aggregate, \_\_\_\_\_ multiple) fruit. (2 points)

8. List names of five plant families that are horticulturally important: (3 points)

a. _____	b. _____
c. _____	d. _____
e. _____	

9. Explain the difference between a pedicel and a peduncle as the flower supporting stem. Show a drawing to support your definition. (2 points)

10. Name the Swedish botanist who perfected the plant classification system. (2 points)

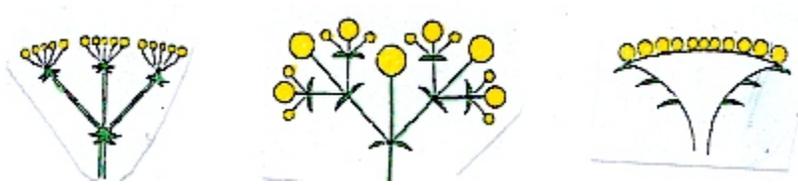
\_\_\_\_\_

11. Photosynthesis occurs in the cytoplasmic body called (\_\_\_\_ mitochondria, \_\_\_\_ chloroplast), while respiration occurs in (\_\_\_\_ mitochondria, \_\_\_\_ chloroplast). (2 points)

12. Write the names of common inflorescence: (4 points)



a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_ d. \_\_\_\_\_



e. \_\_\_\_\_ f. \_\_\_\_\_ g. \_\_\_\_\_

13. Contrast “diffusion” and “osmosis.” (2 points)

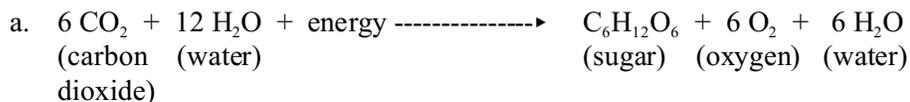
Diffusion \_\_\_\_\_

Osmosis \_\_\_\_\_

14. The first compound produced by the Calvin cycle during photosynthesis is \_\_\_\_\_, while the first compound formed by the  $C_4$  pathway ( $C_4$  plants) is \_\_\_\_\_. (2 points)

15. Match the following terms with chemical equations shown below: (3 points)

\_\_\_\_\_ Respiration  
\_\_\_\_\_ Photosynthesis



16. List plant nutrients: (3 points)

- a. Macronutrients \_\_\_\_\_
- b. Micronutrients \_\_\_\_\_

### III. MULTIPLE CHOICE (2 Points Each)

1. Which of the following is the correct nomenclature for “Honey Crisp” apple?
  - a. *Malus domestica* cv. ‘Honey Crisp’
  - b. *Malus domestica* ‘Honey Crisp’
  - c. *Malus domestica* cv. *Honey Crisp*
  - d. *Malus domestica* Honey Crisp
2. The main reason why a clonal cultivar is propagated by asexual means is to utilize genetic variation among the propagated plant.
  - a. True
  - b. False
3. Which of the following crops would grow well when soil pH is between 4.0 to 5.0?
  - a. Sugarbeet
  - b. Blueberry
  - c. Watermelon
  - d. Geranium
4. The stone cells found in peach or apricot seeds are usually:
  - a. parenchyma cells.
  - b. collenchyma cells.
  - c. meristematic cells.
  - d. sclerenchyma cells.
5. Which of the following cytoplasmic components usually stores excess salts, sugar, and starch?
  - a. Nucleus
  - b. Mitochondria
  - c. Vacuole
  - d. Chloroplast
6. The water conducting tissue of the vascular system is the phloem.
  - a. True
  - b. False

7. The stomata are generally found on the abaxial side of the leaf.  
The spongy mesophyll cells are found on the adaxial side of the leaf tissue
- Both statements are true.
  - The first statement is true and the second statement is wrong.
  - The first statement is wrong and the second statement is true.
  - Both statements are wrong.
8. Which of the following is **not** a component of a pistil?
- Ovary
  - Style
  - Filament
  - Stigma
9. The process of releasing water vapor through stomata on the leaf is called:
- translocation.
  - transpiration.
  - evaporation.
  - catabolism.
10. The C-4 plants usually grow faster than the C-3 plants, because:
- photorespiration takes place in the C-4 plants but not in C-3 plants.
  - the C-4 plants use carbon dioxide (CO<sub>2</sub>) more efficiently during photosynthesis.
  - the rate of transpiration is lower in C-4 plants than in C-3 plants.
  - the Calvin cycle does not exist in C-4 plants.

**Bonus Question (5 points)**

Make a question of your own from subjects that you have studied but not covered in this exam and answer it correctly.

***Honor Pledge:** Upon my honor I have neither given nor received aid in writing this examination.  
Signed \_\_\_\_\_*