Study Guide | Botany: Unit III | Name:

mr. e | Flowers, Fruits, & Seeds

**Format:** 30 multiple choice/T or F; 3 matching sections (flower anatomy, seed dispersing agent, which edible plant part?); Essays (see end)

## Vocabulary

| | | |
|---|---|---|
| flower | staminate flower | dehiscent fruit |
| fruit | pistillate flower | indehiscent fruit |
| pollinating agent | monoecious plant | parthenocarp |
| pedicel | dioecious plant | single fertilization |
| receptacle | day/night light cycle | double fertilization |
| sepals | photoperiodism | plant embryo |
| calyx | short day plant | endosperm |
| petals | long day plant | seed coat |
| corolla | day-natural plant | berry |
| stamen | pollination | drupe |
| anther | fertilization | pome |
| filament | self pollination | legume |
| pistil | cross pollination | samara |
| stigma | hybrid | nut |
| style | hybridization | achene |
| ovule | fleshy fruits | grain |
| seed | dry fruits | cotyledon |
| pollen | simple fruits | germination |
| complete flower | aggregate fruits | plumule |
| incomplete flower | multiple fruits | radicle |
| | dormancy | viable |

**Concepts:**

1. Primary purpose of a flower (Reproduction)
2. Secondary purposes (4) of a flower
    a. Protect reproductive organs
    b. Attract pollinating agents
    c. Form fruit for consumption
    d. Beauty

3. Flower Anatomy (basic flower parts); be able to label drawing

4. Two Divisions of flowers: Complete vs. Incomplete (define/contrast)

5. Incomplete flowers (allow for dioecious plants)
    a. staminate ( Male: do not have pistils)
    b. pistillate ( Female: do not have stamens)

6. Monoecious vs. Dioecious Plants: know definition/how accomplished

7. Flowering (chief factor, photoperiodism, 3 categories)
    a. Associate peak season with photoperiodic category
    b. Other factors that affect flowering (T, fertility, density)

9. Botanist's understanding of the term "fruit"

10. Fruit & seed formation (What is a fruit? Know examples)
    a. Cycle processes and stages

        (Flower (pollination fertilization) → Fruit (dispersed) → Seed (germination)→ Tree (growth) → Mature Tree (blossoming) → Flower)
    b. Be able to draw typical cycle of fruit formation

11. Pollination vs. Fertilization (define/ key term)
    a. Which, between the two, is independent? Why?
    b. Contrast self-pollination with cross pollination
    c. How is each type of pollination accomplished?
    d. Define double fertilization
    e. How does God practically insure plant reproduction/survival? (sheer # of pollen grains)

12. Know Fruit Types (3 General; be able to match fruit with category)
    a. Simple ( 8 categories; definitions; basic examples)
    b. Aggregate (definition; basic examples)
    c. Multiple (definition; basic examples)

13. Purposes of the fruit: dispersal
    a. spreads progeny
    b. reduces competition
    c. reduces chances of predators destroying future generation

14. Associate seed structure with probable mode of dispersal

15. Purposes of hybridization
    a. produce new varieties
    b. introduce new characteristics
    c. fulfill cultural mandate

16. Climate Requirements: know requirements & location of each category
    a. Temperate
    b. Subtropical
    c. Tropical

17. Monocot vs. Dicot (contrast by their corresponding cotyledons)
18. Purpose(s) of a seed coat.
19. Why would a seed remain dormant? Know chief factors of germination
    a. adequate $H_20$ c. Favorable T e. sufficient sunlight
    b. adequate $O_2$ d. soil fertility

20. Be able to associate common foods with the plant parts from which they come.

**Matching I:** basic flower anatomy

**Matching II:** Dispersing agent (fruit/seed given, associate with appropriate seed dispersing agent).

**Matching III:** Which plant part? (fruit/seeds given, associate with appropriate plant part)

**Essays: There are tee essays presented. Choose the *three* you feel most comfortable with, circle their letters, and answer them as thoroughly as you can on a blank sheet. This section is worth 20 points, hence, depending on which three you select, any points above 20 will be considered extra credit - however, you must choose three…no more, no less!** (20 points)

a. Discuss as completely as possible the functions of the **fruit** in regard to both plants and man by sharing at least three different functions in regard to the plant itself and two functions concerning man. (8 points)

b. Describe the process involved in *fruit formation*. Begin with a blossoming pear tree and follow the process clear back to the development of a new pear tree. (8 points)

c. Choose your *favorite* flower part from the matching section. Describe its *location, function,* and the precise reason you have chosen it as your favorite (and "because I like it" doesn't count!) (3 points)

d. Once Sodom and Gomorrah were destroyed by fire and brimstone due to their obscene wickedness before the Lord, the land lay wounded and burned- a graphic testimony of the condition of their souls. However, many years later, though their cities remained lifeless, the land recovered and began to germinate anew the vegetation (albeit sparse) characteristic of that dry area. In as much detail as you have time for, analyze 3 ways in which this plant life could have re-inhabited the east side of the Jordan Valley. (10 points)

e. Many functions of flowers were discussed in class. Share at least **three** of the functions ***and*** tell **how** the flower preforms each of them. (6 points)

f. Compare and contrast **monoecious** and **dioecious** plants. In your discussion, be sure to describe the meaning of the terms *pistillate* and *staminate*. (6 points)

g. Define *pollination*. In light of this process, compare and contrast **self-pollination** and **cross-pollination**. (8 points)

h. How does God ensure *correct* fertilization? (ie. Why can't a watermelon growing in a box garden next to a tomato plant bear juicy red melons without a rind or inedible seeds- or the tomato plant bear two foot long tomatoes with seeds you could spit 15 feet or more?) (6 points)

i. Why would it be necessary for an early spring flower to be able to reproduce *asexually*? (4 points)

j. In greenhouses, veggies must be artificially *pollinated by human hands*. However, outside, God has provided a much different set of circumstances for this delicate transfer. List and explain three possible ways outdoor plants can be pollinated. (8 points)