**Plant Diversity Study Guide**

* To be filled out while you view the lectures and read your associated text.

**Part 1 – Seedless Plants:**

1. Provide some examples of some ecological roles plants play and some ways that humans use plants.
2. The land plants, that include flowers, crop foods like corn and rice as well as all the trees that we can see, are thought to be derived from a shared ancestor in common with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (2 words).  The variety called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ has been discovered by scientists, using biochemical analysis, to be the closest living relative of land plants.
3. What were the first true land plants probably like?
4. List below the various types of adaptations for a land based existence.
5. List the three defining features of the plant kingdom.
6. What exactly is meant by the term dependent embryo?
7. What is meant by the concept of “Alternation of Generations?”
8. The sporophyte produces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, whereas the gametophyte produces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (such as sperm and eggs).
9. In more advanced plants such as trees and flowers, which is the more dominant generation: sporophytes or gametophytes? (Circle the correct response).
10. What is the difference between the haploid and diploid state?
    1. The sporophyte is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (referring to chromosome number).
    2. The gametophyte is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (referring to chromosome number).
11. Mosses and their kin have the dominant generation being the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is green and leafy, but the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a diminutive, brown capsule that produces spores.
12. What is meant by the term “non-vascular”? Of the 5 plant phyla, which fall under this catergory?
13. Within the gametophyte of most plants, but especially prominent in the lower plants is an enclosed female structure where eggs develop called a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, whereas the male structure that produces sperm is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
14. Why are mosses limited to living in areas that experience frequent precipitation?
15. After examining the figure of the life cycle of a moss, explain the difference between a spore and a gamete.
16. Which plants were the first to have vascular tissue?
17. Why is vascular tissue advantageous?
18. What are sporangia and what type of plants have them?
19. After examining the figure of the life cycle of a fern in your textbook, describe the shape of the gametophyte.

**Part 1 – Seed Plants:**

1. Why are seed plants better adapted to a land based existence compared to the seedless plants like moss & ferns?
2. The adaptations that are unique to seed plants that allowed them to colonize so many more habitats than moss & ferns are: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. The male gametophyte is seed bearing plants is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and the female gametophyte is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. What is the role of pollen?
5. What are the three important components of a seed?
6. What makes up the majority of the seed body? What is its purpose?

**Gymnosperms (Cone bearing plants):**

1. Gymnosperms are the plants that have “naked seeds” that do not have flowers, but still produce seeds (often enclosed within a cone like structure).  List examples of such plants here.

\*Place a star above next to the type of gymnosperm that would most likely be found in Oregon.

1. Examine the image of the conifer life cycle.  What is unusual about the cones found on such trees?

        Hint: How many different types of cones are there and where are they found respectively?

1. What are some of the main features of Conifers?
2. Conifers reproduce much more slowly than and do not compete as well as flowering plants, but still dominate in harsher environments. Speculate of the characteristics of conifers that explain this statement.

**Angiosperms (Flowering plants):**

1. Angiosperms are plants that contain their seeds within a container, like a fruit or shell.  The angiosperms are also known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plants.  List a few examples of such plants here.
2. What typically drives the shape, color and other features of a flower that a particular plant species produces?
3. In order for fruit to be produced the flower must be pollinated.

        The pollen is the male \_\_\_\_\_\_\_\_\_\_\_\_\_\_ from flowers, produced in the anthers.

        The ovule is the female \_\_\_\_\_\_\_\_\_\_\_\_\_ from flowers, deep within the carpel.

1. The female part of the flower produces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which we learned previously will become the seed once it gets fertilized.  The female part of the flower is composed of three parts: \_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_.
2. List the different parts of the flower and identify their respective roles (using your textbook as a guide).  The first structure set has been done for you.
   * Sepals: the outer most set of structures are green, cover the petal i.e the bud)
   * Petals:
3. Examine the figure of the fertilization process in flowering plants.  Describe the journey of the pollen & released sperm once it lands on a flower – including in your answer the structures that the pollen tube transverses through.
4. In flowering plants something unusual happens, it is unique to plants, which release \_\_\_\_\_\_\_\_\_\_ sperm – the process is called \_\_\_\_\_\_\_\_\_\_\_ fertilization.

* One sperm will fertilize the \_\_\_\_\_\_\_\_\_\_\_\_\_.
* One sperm will fertilize the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (2 words), becoming the endosperm, which is the nutritive tissue that feeds the young developing embryo upon germination i.e. when the seed begins to grow.

1. Once the seeds begin to form what happens to the flower?
2. Fruit serves two purposes for the plant. What are those purposes?
3. What purpose does a fruit NOT serve for the seed?
4. Who/what are the agents of dispersal?
5. Complete the following sentences in regards to the various structures associated with plant reproduction:

The seed develops from the \_\_\_\_\_\_\_\_\_\_\_\_\_ after fertilization.

        The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is considered the reproductive organ of the plant.

        The ovary swells and becomes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Label the following structures on the diagram below:

Stamen, Carpel/Pistil, Stigma, Style, Petal, Sepal, Ovary, Ovule

