Name: _____ Date: _____ Period:_____

Unit 12: Interaction of Plant Systems Test Review

1. **Levels of Organization**
   a. List the levels of organization from smallest to largest (Cells → Organism):
   cells→ tissue → organ → organ system → organisms

2. **Plant Structures:**
   a. What carbohydrate is synthesized in the leaves of plants? ___Sugar_____
   b. What process occurs in the chloroplast that synthesizes sugars? __Photosynthesis_____
   c. Explain what structures are found in the roots system and in the shoots system.
      i. Roots:__Root hairs take up water, also the orgin point for xylem_____
      ii. Shoots:__Cells containing many chloroplast, and orgin point phloem_____
   d. What is the function of the roots of plants? What is the process by which water enters the roots called?
   _____To anchor plant and take in water and minerals._____osmosis_____
   e. Describe the pathway of nutrients from the soil through the reproductive, roots, and shoots systems of the plant: ____minerals are carried upwards with water through the xylem of the plants_____
   _____

3. **Hormones and Tropisms**
   a. What causes tropisms? ____stimulus and hormones_____
   b. What happens to seeds when they are in favorable conditions? How is this a way plants respond to their environment? _____the seed burst open allowing the baby zygote to grow_____
   c. Explain the following tropisms:
      i. Thigmotropism - __Plants response to touch_____
      ii. Phototropism - _____plants response to light_____
      iii. Hydrotropism - ____plants response to water_____
      iv. Geotropism- _____plants response to water_____

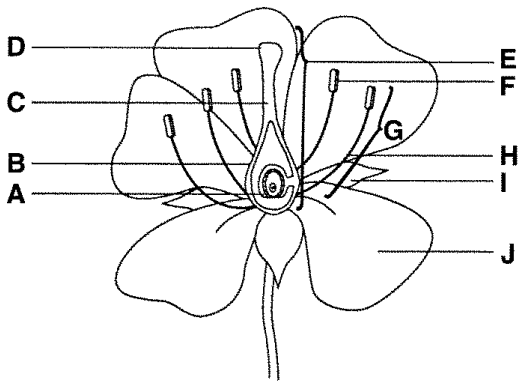
4. **Transpiration & Properties of Water**
   Watch this transpiration review video: **https://www.youtube.com/watch?v=mc9gUm1mMzc**
   a. What is transpiration? How does this occur? What plant structures are involved in transpiration?_____
   ___evaporation of water through the leaves of plants. Water exits through the stomata. Xylem and stomata are the primary parts used for transpiration_____
   b. What are the cells surrounding the stomata of a plant called? ____guard cells (open and close stomata)_
   c. How does a stoma respond to regulate the rate of transpiration?_____
   _____Opening increases transpiration and water loss, closing reduced photosynthesis and water loss._____
   d. What gasses enter & exit through stomata?
      i. Enter:___CO2_____
      ii. Exit: ____O2 & H20_____
   e. What is cohesion and how is it important to water? _____
   ____water sticking to water, important for water climbing the xylem_____
   f. Which two properties of water work together to allow to climb narrow tubes(capillary action?
   _____adhesion and cohesion_____

5. **Vascular Plants**

a. The vascular system of a plant is made of __xylem_____ and ___phloem_____. What does each of these structures transport in the plant, and in what direction do they deliver their substance (upwards, downwards, both directions)?
   i. Xylem
      1. Substance transported:____water & minerals_____
      2. Direction transported: _____upwards_____
   ii. Phloem
      1. Substance transported:_____sugar (carbohydrates)_____
      2. Direction transported: _____from leaves to other parts of the plants_____

b. To live on land, what resource did plants have to adapt to conserve? ___water_____

6. Plant Reproduction – Label the parts of the angiosperm below



a. _____
b. _____
c. _____
d. _____
e. _____
f. _____
g. _____
h. _____
i. _____
j. _____

k. Which letter produces pollen? ___F___
l. Pollen grains from the ___anther_____ attach to ___stigma_____ transferred by a pollinator.
m. Which letters are male structures? ___G_____
n. Which letters are female structures? __E_____

7. **Kingdom Plantae**

a. Circle the features of organisms in Kingdom Plantae:

Prokaryotic *Eukaryotic* *Unicellular* *Multicellular* *Autotrophic* *Heterotrophic*
Cell walls made of Cellulose *No cell wall* *Contain central vacuole* *DNA* *No cell wall*

b. Explain the benefit of the following plant adaptations:
   i. Stomata that only open at night:__move water up into the leaves, without losing to much___
   ii. Thorny stems:____Protection from predators and others_____
   iii. Thick, waxy cuticle on stems:___Prevents water loss_____
   iv. Venus fly trap catching insects: _____to supplement nutrient from nutrient poor soil_____
   v. Colorful petals in angiosperms:____attract pollinator_____