Botany

Core Knowledge Event

Life Science Committee Trial Event

1. **DESCRIPTION:** Participants will demonstrate their knowledge of plant life and general botany principles.

   A TEAM OFUP TO: 2 **EYE PROTECTION:** A **EVENT TIME:** 50 minutes

2. **EVENT PARAMETERS:**
   a. Each participant must wear and lab coat and googles when dealing with live specimens.
   b. Each participant may bring one 8.5" x 11" sheet of paper, **which may be in** sheet protector **sealed by tape** or laminated, that may contain information on both sides in any form and from any source without any annotations or labels affixed.
   c. Each team may bring one stand-alone non-programmable, non-graphing calculator.
   d. Event Supervisors will provide appropriate selected live/preserved specimens, pictures, tables, graphs of data, microscopes, slides, and any other required equipment for the event. If used, toxic/irritants plants or specimens in liquid (e.g., Algae, protists) must be in closed, non-breakable containers.

3. **THECOMPETITION:**
   a. This event may be run as either a sit-down exam or a series of laboratory stations with questions.
   b. Participants will be expected to master the structure of plant cells, roots, stems, leaves, spore forming bodies and flowers, aspects of plant growth and differentiation, and the transport and storage of gases, water, and nutrition throughout the plant body.
   c. Participants should also have a broad knowledge of the major divisions between groups of plants (i.e., algae vs. multicellular plants, monocot vs. dicot, embryophytes vs. cryptograms, woody vs. herbaceous plants).
   d. In addition to the above listed topics participants should know:
      i. The history of botany
      ii. Basic plant genetics and reproduction
      iii. Photosynthesis
      iv. Differences between the major taxonomic groups of plants
      v. Paleo-botany and plant evolution
      vi. The role of plants in global energy and nutrient cycles
      vii. Use of plant materials by animals and humans
      viii. Competition in the plant community
      ix. Genetically Modified Organisms (GMOs)
      x. Production of foodstuffs and plant products
      xi. Plant diseases; including nutrient deficiencies and infections
   e. For Division C Only, participants are expected to know:
      i. Principles of horticulture and aquaculture
      ii. Plant biochemistry
      iii. The roles of plants in medicine and environmental management
      iv. Importance of plant diversity

4. **SAMPLE QUESTIONS/TASKS:**
   a. What leaf structure is being shown under on this microscope slide?
   b. Using the graph, identify the peak wavelength for chlorophyll absorbance.
   c. Identify three key differences between flowering plants and ferns.
   d. Which plants would be in the next wave of plant succession for the region shown?
   e. Describe the role plants play in the nitrogen cycle.

5. **SCORING**:
   a. High Score wins.
   b. Selected questions will be used to break ties.

Recommended Resources:

a. For the introductory Study of Botany - http://botany101.jstor.org/
b. The botanical Society of America - https://www.botany.org/
c. A full course on botany in Wikibooks - https://en.wikibooks.org/wiki/Botany
d. A wide-ranging free online course in botany - https://www.easybiologyclass.com/topic-botany/
e. https://www.fairchildgarden.org/Education/Camps-at-Fairchild/Downloadable-Learning-Modules#bb
f. A free online text of botany - http://herba.msu.ru/shipunov/school/biol_154/textbook/intro_botany.pdf