

**Registration form**

**Carnivorous Plant Identification and Cultivation  
CEU Training Course \$100.00**

**48 HOUR RUSH ORDER PROCESSING FEE ADDITIONAL \$50.00**

**Start and finish dates:** \_\_\_\_\_

*You will have 90 days from this date in order to complete this course*

**Name** \_\_\_\_\_ **Signature** \_\_\_\_\_

**(This will appear on your certificate as above)**

**Address:** \_\_\_\_\_

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**License**  
**Operator ID #** \_\_\_\_\_ **Exp Date** \_\_\_\_\_

**Class/Grade** \_\_\_\_\_

**Please circle which certification you are applying the course CEU's.**

Commercial Applicator Residential Applicator Industrial Applicator Pesticide Handler

Advisor Agricultural Applicator Aerial Applicator Other \_\_\_\_\_

***Your certificate will be mailed to you in about two weeks.***

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*Please mail or fax this survey along with your final exam*

# **CARNIVOROUS PLANT IDENTIFICATION AND CULTIVATION CEU COURSE PROFESSIONAL DEVELOPMENT COURSE**

*CUSTOMER SERVICE RESPONSE CARD*

DATE: \_\_\_\_\_

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

E-MAIL \_\_\_\_\_ PHONE \_\_\_\_\_

***PLEASE COMPLETE THIS FORM BY CIRCLING THE NUMBER OF THE APPROPRIATE ANSWER IN THE AREA BELOW.***

1. Please rate the difficulty of your course.  
Very Easy   0   1   2   3   4   5   Very Difficult
2. Please rate the difficulty of the testing process.  
Very Easy   0   1   2   3   4   5   Very Difficult
3. Please rate the subject matter on the exam to your actual field or work.  
Very Similar   0   1   2   3   4   5   Very Different

4. How did you hear about this Course? \_\_\_\_\_

5. What would you do to improve the Course?  
\_\_\_\_\_  
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Any other concerns or comments.  
\_\_\_\_\_  
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# Carnivorous Plants Key

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## **Carnivorous Plant Identification and Cultivation CEU Training Assignment**

You will have 90 days from the start of this course to have successfully completed this assignment with a score of 70% or better. You may e-mail the answers to TLC, info@tlch2o.com; you can find a copy of this assignment in Word on the Assignment Page on TLC's website or fax the answers to TLC (928) 468-0675. Course assistance is available on the Assignment Page under Course Assistance at www.abctlc.com. Write the answers on the answer key.

### **Plant Identification Terms**

1. One with a blade in one piece; not compound.
  - A. Stolon
  - B. Spur
  - C. Spikelet
  - D. Spike
  - E. Simple leaf
  
2. A narrow, non-spreading inflorescence.
  - A. Stolon
  - B. Spur
  - C. Spikelet
  - D. Spike
  - E. Simple leaf
  
3. The structure formed where leaves, stems, and roots grow together.
  - A. Crown
  - B. Cotyledons
  - C. Calyx
  - D. Compound leaves
  - E. Clasping leaves
  
4. A creeping, underground stem.
  - A. Rosette
  - B. Rhizome
  - C. Pubescence
  - D. Ligule
  - E. Sheath
  
5. All the flower leaves together, normally green in color.
  - A. Crown
  - B. Cotyledons
  - C. Calyx
  - D. Compound leaves
  - E. Clasping leaves

Always call us after faxing the paperwork to ensure that we've received it.

6. A single or group of floral structures in a grass.
- A. Stolon
  - B. Spur
  - C. Spikelet
  - D. Spike
  - E. Simple leaf
7. A circular, normally basal, clump of leaves.
- A. Rosette
  - B. Rhizome
  - C. Pubescence
  - D. Ligule
  - E. Sheath
8. At the base of a plant or plant part.
- A. Plume
  - B. Axil
  - C. Biennial
  - D. Basal
  - E. Bract
9. Plant that germinates in one growing season, then flowers, seeds, and dies during the next year.
- A. Plume
  - B. Axil
  - C. Biennial
  - D. Basal
  - E. Bract
10. Leaf-like structure at the base of flowers or leaves.
- A. Plume
  - B. Axil
  - C. Biennial
  - D. Basal
  - E. Bract
11. The extension of leaf tissue surrounding a stem.
- A. Rosette
  - B. Rhizome
  - C. Pubescence
  - D. Ligule
  - E. Sheath
12. The angle formed between a leaf and a stem.
- A. Plume
  - B. Axil
  - C. Biennial
  - D. Basal
  - E. Bract

13. A hollow appendage on a flower.

- A. Stolon
- B. Spur
- C. Spikelet
- D. Spike
- E. Simple leaf

14. A creeping stem along the surface of the ground.

- A. Stolon
- B. Spur
- C. Spikelet
- D. Spike
- E. Simple leaf

15. A hair-like or feather-like structure, often on a seed.

- A. Plume
- B. Axil
- C. Biennial
- D. Basal
- E. Bract

16. The structure at the collar of a grass leaf between the sheath and the stem.

- A. Rosette
- B. Rhizome
- C. Pubescence
- D. Ligule
- E. Sheath

17. The hairs on a leaf, stem or flower.

- A. Rosette
- B. Rhizome
- C. Pubescence
- D. Ligule
- E. Sheath

18. The first leaf-like structures that appear after germination; seed leaves.

- A. Crown
- B. Cotyledons
- C. Calyx
- D. Compound leaves
- E. Clasping leaves

19. Leaves that appear to wrap around the stem at their base.

- A. Crown
- B. Cotyledons
- C. Calyx
- D. Compound leaves
- E. Clasping leaves

20. Leaves with 2 or more distinct leaflets.
- A. Crown
  - B. Cotyledons
  - C. Calyx
  - D. Compound leaves
  - E. Clasping leaves
21. Deeply and repeatedly divided into smaller parts.
- A. Leaflets
  - B. Dissected
  - C. Head
  - D. Glumes
  - E. Entire
22. Not toothed or otherwise cut.
- A. Leaflets
  - B. Dissected
  - C. Head
  - D. Glumes
  - E. Entire
23. The 2 bracts surrounding a grass spikelet.
- A. Leaflets
  - B. Dissected
  - C. Head
  - D. Glumes
  - E. Entire
24. A group of flowers borne tightly together.
- A. Leaflets
  - B. Dissected
  - C. Head
  - D. Glumes
  - E. Entire
25. Leaf-like structures within a compound leaf.
- A. Leaflets
  - B. Dissected
  - C. Head
  - D. Glumes
  - E. Entire
26. Leaves that are arranged singly up the stem; not opposite each other.
- A. Auricle
  - B. Awn
  - C. Anther
  - D. Annual
  - E. Alternate

27. Plant that germinates, flowers, seeds, and dies during one growing season.

- A. Auricle
- B. Awn
- C. Anther
- D. Annual
- E. Alternate

28. Structure in a flower in which pollen is formed

- A. Auricle
- B. Awn
- C. Anther
- D. Annual
- E. Alternate

29. Lobe-like structure at the collar of a grass leaf.

- A. Auricle
- B. Awn
- C. Anther
- D. Annual
- E. Alternate

30. Slender bristle at the tip of grass seed structures.

- A. Auricle
- B. Awn
- C. Anther
- D. Annual
- E. Alternate

31. The edge of a leaf.

- A. Margin
- B. Opposite
- C. Nodding
- D. Midrib
- E. Membranous

32. Thin and flexible, usually not green.

- A. Margin
- B. Opposite
- C. Nodding
- D. Midrib
- E. Membranous

33. The center and usually most prominent vein on a leaf.

- A. Margin
- B. Opposite
- C. Nodding
- D. Midrib
- E. Membranous

34. A flower that is not pointed upward, but bent downward or sidewise to the stem.
- A. Margin
  - B. Opposite
  - C. Nodding
  - D. Midrib
  - E. Membranous
35. Leaves situated directly across the stem from each other.
- A. Margin
  - B. Opposite
  - C. Nodding
  - D. Midrib
  - E. Membranous
36. Egg-shaped in outline.
- A. Petiole
  - B. Panicle
  - C. Pinnate
  - D. Perennial
  - E. Ovate
37. A much-branched inflorescence.
- A. Petiole
  - B. Panicle
  - C. Pinnate
  - D. Perennial
  - E. Ovate
38. A plant that lives for more than 2 growing seasons.
- A. Petiole
  - B. Panicle
  - C. Pinnate
  - D. Perennial
  - E. Ovate
39. A leaf stalk.
- A. Petiole
  - B. Panicle
  - C. Pinnate
  - D. Perennial
  - E. Ovate
40. With 2 rows of leaflets, like a feather.
- A. Petiole
  - B. Panicle
  - C. Pinnate
  - D. Perennial
  - E. Ovate

41. A thick, central root with minimal branching.
- A. Trifoliate leaf
  - B. Lobed
  - C. Whorled
  - D. Taproot
  - E. Linear
42. A leaf made of 3 leaflets; clover-like.
- A. Trifoliate leaf
  - B. Lobed
  - C. Whorled
  - D. Taproot
  - E. Linear
43. 3 or more similar structures arranged as spokes on a wheel.
- A. Trifoliate leaf
  - B. Lobed
  - C. Whorled
  - D. Taproot
  - E. Linear
44. Long, narrow, and slender.
- A. Trifoliate leaf
  - B. Lobed
  - C. Whorled
  - D. Taproot
  - E. Linear
45. A cut into a leaf from the edge toward the center; greater than toothed, but not quite compound.
- A. Trifoliate leaf
  - B. Lobed
  - C. Whorled
  - D. Taproot
  - E. Linear

**This section will come from the text of the reading assignment.**

46. Carnivorous plants (sometimes called insectivorous plants) are plants that derive some or \_\_\_\_\_ (but not energy) from trapping and consuming animals or protozoans, mostly focusing on insects and other arthropods. About 400 plants are carnivorous.
- A. Acidic bogs and rock outcroppings
  - B. Venus flytrap
  - C. Produce digestive enzymes
  - D. Nitrogen and potassium
  - E. Most of their nutrients

47. Carnivorous plants do not eat meat, but they do trap animals — mostly insects. The best known is probably the Venus flytrap. As its name implies, the plant traps flies and other insects and ingests them for their \_\_\_\_\_.

- A. Acidic bogs and rock outcroppings
- B. Venus flytrap
- C. Produce digestive enzymes
- D. Nitrogen and potassium
- E. Most of their nutrients

48. The \_\_\_\_\_ has honey-coated leaves that attract insects. Each leaf has sensitive trigger hairs that detect when an insect has landed on the leaf and then snaps shut.

- A. Acidic bogs and rock outcroppings
- B. Venus flytrap
- C. Produce digestive enzymes
- D. Nitrogen and potassium
- E. Most of their nutrients

49. The \_\_\_\_\_ produces enzymes that help it digest its prey.

- A. Acidic bogs and rock outcroppings
- B. Venus flytrap
- C. Produce digestive enzymes
- D. Nitrogen and potassium
- E. Most of their nutrients

50. Carnivorous plants usually grow in places where the soil is thin or poor in nutrients, especially nitrogen, such as \_\_\_\_\_.

- A. Acidic bogs and rock outcroppings
- B. Venus flytrap
- C. Produce digestive enzymes
- D. Nitrogen and potassium
- E. Most of their nutrients

51. True carnivory is thought to have evolved in at least 10 separate lineages of plants, and these are now represented by more than a dozen genera in 5 families. These include about 625 species that attract and trap prey, \_\_\_\_\_, and absorb the resulting available nutrients.

- A. Acidic bogs and rock outcroppings
- B. Venus flytrap
- C. Produce digestive enzymes
- D. Nitrogen and potassium
- E. Most of their nutrients

52. Five basic \_\_\_\_\_ are found in carnivorous plants.

- A. Lobster-pot traps
- B. Bladder traps
- C. Snap traps
- D. Pitfall traps
- E. Trapping mechanisms

53. \_\_\_\_\_ (pitcher plants) trap prey in a rolled leaf that contains a pool of digestive enzymes or bacteria.
- A. Lobster-pot traps
  - B. Bladder traps
  - C. Snap traps
  - D. Pitfall traps
  - E. Trapping mechanisms
54. \_\_\_\_\_ use a sticky mucilage.
- A. Lobster-pot traps
  - B. Bladder traps
  - C. Flypaper traps
  - D. Pitfall traps
  - E. Trapping mechanisms
55. \_\_\_\_\_ utilize rapid leaf movements.
- A. Lobster-pot traps
  - B. Bladder traps
  - C. Snap traps
  - D. Pitfall traps
  - E. Trapping mechanisms
56. \_\_\_\_\_ suck in prey with a bladder that generates an internal vacuum.
- A. Lobster-pot traps
  - B. Bladder traps
  - C. Snap traps
  - D. Pitfall traps
  - E. Trapping mechanisms
57. \_\_\_\_\_ force prey to move towards a digestive organ with inward pointing hairs.
- A. Lobster-pot traps
  - B. Bladder traps
  - C. Snap traps
  - D. Pitfall traps
  - E. Trapping mechanisms
58. \_\_\_\_\_ is a passive flypaper that secretes mucilage, but whose leaves do not grow or move in response to prey capture. Meanwhile, sundews are active flypapers whose leaves undergo rapid growth, aiding in the retention and digestion of prey.
- A. Butterworts
  - B. Carnivorous plants
  - C. Triphyophyllum
  - D. Darlingtonia
  - E. Downward-pointing

59. \_\_\_\_\_ may be subdivided into 2 major groups; those with passive traps and those with active traps. For some of these traps, the actual method of insect decomposition involves digestive enzymes produced by the plant and bacterial decay within the trap.
- A. Butterworts
  - B. Carnivorous plants
  - C. Triphyophyllum
  - D. Darlingtonia
  - E. Downward-pointing
60. A classic passive trap is the "pitfall trap" of pitcher plants, including \_\_\_\_\_ and *Sarracenia* of the Sarraceniaceae and *Nepenthes* of the Nepenthaceae, where an insect falls into a vase-like modified leaf.
- A. Butterworts
  - B. Carnivorous plants
  - C. Triphyophyllum
  - D. Darlingtonia
  - E. Downward-pointing
61. \_\_\_\_\_ hairs on the slippery walls prevent the insect from crawling out, and the hapless victim ultimately drowns in a pool of digestive enzymes at the bottom.
- A. Butterworts
  - B. Carnivorous plants
  - C. Triphyophyllum
  - D. Darlingtonia
  - E. Downward-pointing
62. Other well-known passive traps are the "flypaper" or adhesive traps of sundews (*Drosera*, Droseraceae) and \_\_\_\_\_ (*Pinguicula*, Lentibulariaceae).
- A. Butterworts
  - B. Carnivorous plants
  - C. Triphyophyllum
  - D. Darlingtonia
  - E. Downward-pointing
63. The leaves are covered with sticky, gland-tipped hairs (\_\_\_\_\_) or a sticky (viscid) layer of mucilage (*Pinguicula*) which entangle the hopeless, struggling victim.
- A. Butterworts
  - B. Carnivorous plants
  - C. *Drosera*
  - D. Darlingtonia
64. \_\_\_\_\_ are thought to have evolved independently on at least four occasions.
- A. Plant trap
  - B. Pitfall traps
  - C. Sarraceniaceae
  - D. Insectivorous plants

65. The simplest \_\_\_\_\_ are probably those of *Heliamphora*, the sun pitcher plant.
- Plant trap
  - Pitfall traps
  - Sarraceniaceae
  - Insectivorous plants
  - Sarracenia purpurea*
66. In this genus, the \_\_\_\_\_ are clearly derived evolutionarily from a simple rolled leaf whose margins have sealed together. These plants live in areas of high rainfall in South America such as Mount Roraima and consequently have a problem ensuring their pitchers do not overflow.
- Plant trap
  - Pitfall traps
  - Sarraceniaceae
  - Insectivorous plants
67. \_\_\_\_\_ or any of various insectivorous plants of the genera *Sarracenia*, *Nepenthes*, or *Darlingtonia*, having pitcher-like leaves that attract and trap insects.
- Pitcher trap
  - Plant traps
  - Sarraceniaceae
  - Insectivorous plants
68. In these \_\_\_\_\_ the leaves form deep cups or pitchers in which water collects. Visiting insects, falling into this water, are drowned and digested by the action of enzymes secreted by cells located in the walls of the pitcher-like structures of these plants.
- Pitcher trap
  - Pitfall traps
  - Sarraceniaceae
  - Insectivorous plants
69. Often these \_\_\_\_\_ climb by tendrils. The end of a tendril may develop into a pitcher, which captures and digests insects.
- Pitcher trap
  - Pitfall traps
  - Sarraceniaceae
  - Insectivorous plants
  - Sarracenia purpurea*
70. \_\_\_\_\_ better known as Purple Pitcher Plant, commonly found on the east coast of the US.
- Pitcher trap
  - Pitfall traps
  - Sarraceniaceae
  - Insectivorous plants
  - Sarracenia purpurea*

71. Only use distilled water, reverse osmosis or rain water for your pitcher plants and other \_\_\_\_\_.
- Pitcher trap
  - Pitfall traps
  - Sarraceniaceae
  - Carnivores
  - Sarracenia purpurea*
72. *Heliamphora* is a member of the \_\_\_\_\_, a New World family in the order Ericales (heathers and allies).
- Pitcher trap
  - Pitfall traps
  - Sarraceniaceae
  - Insectivorous plants
  - Sarracenia purpurea*
73. *Heliamphora* is limited to South America, but the family contains two other genera, \_\_\_\_\_ and *Darlingtonia*, which are endemic to Florida and California respectively. *S. purpurea* subsp. *purpurea* (the northern pitcher plant) has a more cosmopolitan distribution, found as far north as Canada.
- Water-saturated
  - Releasing nitrates
  - Sarracenia*
  - Genus
  - Unusual tubular
74. \_\_\_\_\_ is the pitcher plant genus most commonly encountered in cultivation, because it is relatively hardy and easy to grow.
- Water-saturated
  - Releasing nitrates
  - Sarracenia*
  - Genus
  - Unusual tubular
75. \_\_\_\_\_ are any carnivorous plant with pitcher-, trumpet-, or urn-shaped leaves.
- Water-saturated
  - Releasing nitrates
  - Sarracenia*
  - Pitcher plants
  - Unusual tubular
76. Several families include pitcher plants: Nepenthaceae (Old World pitcher plants), Cephalotaceae, Asclepiadaceae (\_\_\_\_\_) and especially Sarraceniaceae (New World pitcher plants, particularly those in the eastern North American genus *Sarracenia*).
- Water-saturated
  - Releasing nitrates
  - Sarracenia*
  - Milkweed family
  - Unusual tubular

77. Pitcher plants inhabit bogs, swamps, wet or sandy meadows, or savannas where the soils are \_\_\_\_\_, acidic, and deficient in nitrates or phosphates.
- Water-saturated
  - Releasing nitrates
  - Sarracenia
  - Genus
  - Unusual tubular
78. Pitcher plants \_\_\_\_\_ leaves have a series of nectar-secreting glands that extend from the lip down into the interior and attract insects.
- Water-saturated
  - Releasing nitrates
  - Sarracenia
  - Genus
  - Unusual tubular
79. Once in the pitcher plants, the prey tumbles down into a liquid pool and drowns, after which an enzyme secreted within the leaf digests it, \_\_\_\_\_ and other nutrients, which supplement the meager nutrient supply of bogs.
- Water-saturated
  - Releasing nitrates
  - Sarracenia
  - Genus
  - Unusual tubular
80. Most pitcher plants produce pitcher-shaped, insect-catching leaves in the spring and \_\_\_\_\_ in the fall. Their flowers are showy and have an agreeable scent.
- Water-saturated
  - Releasing nitrates
  - Sarracenia
  - Genus
  - Tubeless leaves
81. In the genus \_\_\_\_\_, the problem of pitcher overflow is solved by an operculum, which is essentially a flared leaflet that covers the opening of the rolled-leaf tube and protects it from rain.
- Water-saturated
  - Releasing nitrates
  - Sarracenia
  - Genus
  - Unusual tubular
82. Possibly because of this improved waterproofing, Sarracenia species secrete enzymes such as proteases and \_\_\_\_\_ into the digestive fluid at the bottom of the pitcher; Heliamphora relies on bacterial digestion alone.
- Phosphate ions
  - Phosphatases
  - Possesses
  - Pitcher plants
  - Tendri

83. The enzymes digest the proteins and nucleic acids in the prey, releasing amino acids and \_\_\_\_\_, which the plant absorbs.
- Phosphate ions
  - Phosphatases
  - Possesses
  - Pitcher plants
  - Tendri
84. *Darlingtonia californica*, the cobra plant, \_\_\_\_\_ an adaptation also found in *Sarracenia psittacina* and to a lesser extent in *Sarracenia minor*: the operculum is balloon-like, and almost seals the opening to the tube.
- Phosphate ions
  - Phosphatases
  - Possesses
  - Pitcher plants
  - Tendri
85. The second major group of \_\_\_\_\_ are the monkey cups or tropical pitcher plants of the genus *Nepenthes*.
- Phosphate ions
  - Phosphatases
  - Possesses
  - Pitcher plants
  - Tendri
86. In the hundred or so species of genus *Nepenthes*, the pitcher is born at the end of a \_\_\_\_\_, which grows as an extension to the midrib of the leaf.
- Phosphate ions
  - Phosphatases
  - Possesses
  - Pitcher plants
  - Tendri
87. Most \_\_\_\_\_ species catch insects, although the larger ones, particularly *N. rajah*, also occasionally take small mammals and reptiles.
- Phosphate ions
  - Phosphatases
  - Nepenthes*
  - Pitcher plants
  - Tendri
88. These pitchers represent a convenient source of food to small insectivores. \_\_\_\_\_ possesses two sharp thorns that project from the base of the operculum over the entrance to the pitcher, providing some protection from raids by freeloading mammals.
- Pitfall trap
  - N. bicalcarata*
  - Cephalotus follicularis*
  - Pitcher plants
  - Sarracenia flava*

89. The \_\_\_\_\_ has evolved independently in at least two other groups.
- Pitfall trap
  - N. bicalcarata*
  - Cephalotus follicularis*
  - Pitcher plants
  - Sarracenia flava*
90. The Albany pitcher plant \_\_\_\_\_ is a small pitcher plant from Western Australia, with moccasin-like pitchers. The rim of its pitcher's opening (the peristome) is particularly pronounced (both secrete nectar) and provides a thorny overhang to the opening, preventing trapped insects from climbing out.
- Pitfall trap
  - N. bicalcarata*
  - Cephalotus follicularis*
  - Pitcher plants
  - Sarracenia flava*
91. The lining of most \_\_\_\_\_ is covered in a loose coating of waxy flakes, which are slippery for insects, prey that are often attracted by nectar bribes secreted by the peristome and by bright flower-like anthocyanin patterning.
- Pitfall trap
  - N. bicalcarata*
  - Cephalotus follicularis*
  - Pitcher plants
  - Sarracenia flava*
92. In at least one species, \_\_\_\_\_, the nectar bribe is laced with coniine, a toxic alkaloid also found in hemlock, which probably increases the efficiency of the traps by intoxicating prey.
- Pitfall trap
  - N. bicalcarata*
  - Cephalotus follicularis*
  - Pitcher plants
  - Sarracenia flava*
93. Another carnivore with a pitfall-like trap is the bromeliad, \_\_\_\_\_. Like most relatives of the pineapple, the tightly-packed, waxy leaf bases of the strap-like leaves of this species form an urn.
- Pitfall trap
  - Brocchinia reducta*
  - Cephalotus follicularis*
  - Pitcher plants
94. In most bromeliads, water collects readily in this urn, and may provide habitats for frogs, insects and, more usefully for plant, \_\_\_\_\_ (nitrogen-fixing) bacteria.
- Diazotrophic
  - Flowering plants
  - Digestive bacteria
  - Carnivorous bromeliad

95. In *Brocchinia*, the urn is a specialized insect trap, with a loose, waxy lining and a population of \_\_\_\_\_.
- Diazotrophic
  - Flowering plants
  - Digestive bacteria
  - Carnivorous bromeliad
  - Grey-leaved epiphytic
96. *Brocchinia reducta* are \_\_\_\_\_.
- Diazotrophic
  - Flowering plants
  - Digestive bacteria
  - Carnivorous bromeliad
  - Grey-leaved epiphytic
97. Bromeliaceae (the bromeliads) is a large family of \_\_\_\_\_ native to the tropical and warm temperate New World.
- Diazotrophic
  - Flowering plants
  - Digestive bacteria
  - Carnivorous bromeliad
  - Answers B and D
98. The family includes both \_\_\_\_\_, such as Spanish moss (*Tillandsia usneoides*), and ground (terrestrial) plants, such as the pineapple (*Ananas comosus*). Many bromeliads are able to store water in a "tank" formed by their tightly-overlapping leaf bases.
- Diazotrophic
  - Flowering plants
  - Digestive bacteria
  - Carnivorous bromeliad
  - Epiphytes
99. The family is diverse enough to include the tank bromeliads, \_\_\_\_\_ *Tillandsia* species which gather water only from leaf structures called trichomes, and a large number of desert-dwelling succulents.
- Diazotrophic
  - Flowering plants
  - Digestive bacteria
  - Carnivorous bromeliad
  - Grey-leaved epiphytic
100. The largest bromeliad is *Puya raimondii*, which reaches 3–4 m tall in vegetative growth with a flower spike 9–10 m tall, and the \_\_\_\_\_ is probably Spanish moss.
- Terrestrial species
  - Dry deserts
  - Northern limit
  - Smallest
  - New World tropics

101. Bromeliads are a Neotropical family which means they grow virtually exclusively in the \_\_\_\_\_ (and subtropics).

- A. Terrestrial species
- B. Dry deserts
- C. Northern limit
- D. Greatest number
- E. New World tropics

102. Bromeliads come from South America with the \_\_\_\_\_ of species found in Brazil.

- A. Terrestrial species
- B. Dry deserts
- C. Northern limit
- D. Greatest number
- E. New World tropics

103. Bromeliads range from Chile and Argentina in South America, through Central America and the Caribbean reaching their \_\_\_\_\_ around Virginia in the southeastern United States. A single species (*Pitcairnia feliciania*) is found in western Africa.

- A. Terrestrial species
- B. Dry deserts
- C. Northern limit
- D. Greatest number
- E. New World tropics

104. Bromeliads altitude range is from sea level to over 14,000 feet. They can be found in a wide variety of habitats from hot, \_\_\_\_\_ to moist rainforests to cool mountainous regions.

- A. Terrestrial species
- B. Dry deserts
- C. Northern limit
- D. Greatest number
- E. New World tropics

105. Bromeliads are found in a variety of growing situations: \_\_\_\_\_ are found growing in the ground (the way we expect most plants to grow).

- A. Terrestrial species
- B. Dry deserts
- C. Northern limit
- D. Greatest number
- E. New World tropics

106. Bromeliads may be found growing in bright sun along sandy beaches to the shady understory of a forest among the leaf litter and debris. \_\_\_\_\_ species are found growing on rocks.

- A. Rosette
- B. Air Plants
- C. Organic nutrients
- D. Saxicolous
- E. Flattened configuration

107. Bromeliads may grow on hard rocky outcrops where their roots may penetrate cracks and fissures to locate moisture or \_\_\_\_\_; sometimes they are found growing tenuously on sheer cliff faces.

- A. Rosette
- B. Air Plants
- C. Organic nutrients
- D. Saxicolous
- E. Flattened configuration

108. Epiphytic species are found growing on other plants, usually trees, shrubs or cactus: sometimes they can be found on telephone poles or even on the telephone lines themselves. This capability to take their nutrition and moisture from the atmosphere has earned these bromeliads the name " \_\_\_\_\_".

- A. Rosette
- B. Air Plants
- C. Organic nutrients
- D. Saxicolous
- E. Flattened configuration

109. All bromeliads are composed of a spiral arrangement of leaves sometimes called a " \_\_\_\_\_".

- A. Rosette
- B. Air Plants
- C. Organic nutrients
- D. Saxicolous
- E. Flattened configuration

110. The number of degrees between successive leaves for Bromeliads varies from species to species with a few having a 180 degree separation between leaves. This causes the plant to grow in a \_\_\_\_\_ with its leaves lined up in a single plane. The bases of the leaves in the rosette may overlap tightly to form a water reservoir.

- A. Rosette
- B. Air Plants
- C. Organic nutrients
- D. Saxicolous
- E. Flattened configuration

111. The Bromeliads' central cup also collects whatever leaf litter and insects happen to land in it. The more ancestral terrestrial bromeliads do not have this water storage capability and rely primarily on their roots for water and \_\_\_\_\_.

- A. Rosette
- B. Air Plants
- C. Nutrient absorption
- D. Saxicolous
- E. Flattened configuration

112. Tank bromeliads (as the water storing species are often called) rely less heavily on their roots for nourishment and are more often found as epiphytes. The roots of \_\_\_\_\_ species harden off after growing to form holdfasts as strong as wire that help attach the plant to its host.

- A. Trichomes
- B. Epiphytic
- C. Parasitos
- D. Fertilizer
- E. Bromeliad

113. Even though bromeliads are commonly called \_\_\_\_\_ in Spanish-speaking countries, these epiphytes do not take sustenance from their host but merely use it for support.

- A. Trichomes
- B. Epiphytic
- C. Parasitos
- D. Fertilizer
- E. Bromeliad

114. In some \_\_\_\_\_ species, the bases of the leaves form small chambers as they overlap and these protected spaces are often home to ants. In exchange for shelter, the ants' waste may provide the bromeliad with extra fertilizer.

- A. Trichomes
- B. Epiphytic
- C. Parasitos
- D. Fertilizer
- E. Bromeliad

115. Certain bat-pollinated wild pineapples, members of the bromeliad family, do the exact opposite of most flowers by opening their flowers at night and closing them during the day to protect them from \_\_\_\_\_, which are most active during daylight hours.

- A. Trichomes
- B. Epiphytic
- C. Parasitos
- D. Weevils
- E. Bromeliad

116. All bromeliads share a common characteristic: tiny scales on their leaves called \_\_\_\_\_, . These scales serve as a very efficient absorption system. In species found in desert regions where the air is hot and dry and the sun beats down relentlessly, these scales also help the plant to reduce water loss and shield the plants from the solar radiation. These plants are so covered with scales that they appear silvery-white and feel fuzzy.

- A. Trichomes
- B. Epiphytic
- C. Parasitos
- D. Fertilizer
- E. Bromeliad

117. On many \_\_\_\_\_ species (especially in more humid areas), the scales are smaller and less noticeable. Sometimes the scales can form patterns and banding on the leaves that add to the plant's beauty.

- A. Trichomes
- B. Epiphytic
- C. Parasitic
- D. Fertilizer
- E. Bromeliad

118. With few exceptions, the Bromeliad \_\_\_\_\_ is produced from the center of the rosette. The stalk (or scape as it is called), may be long with the flowers held far away from the plant (either erect or hanging pendants) or the scape may be short with the flowers nestled in the rosette.

- A. Pups
- B. Scape bracts
- C. Flower stalk
- D. Vegetatively produce new plantlets
- E. Mother

119. The scape may produce a single flower or many individual flowers and may have colorful leaf-like appendages called \_\_\_\_\_ that serve to attract pollinators and delight bromeliad enthusiasts.

- A. Pups
- B. Scape bracts
- C. Flower stalk
- D. Vegetatively produce new plantlets
- E. Mother

120. With rare exceptions, bromeliads only flower a single time - once the plant stops producing leaves and produces its flower, it will not start making leaves again. It will, however, \_\_\_\_\_ called "offsets" or "pups".

- A. Pups
- B. Scape bracts
- C. Flower stalk
- D. Vegetatively produce new plantlets
- E. Mother

121. Bromeliad plants will feed off the " \_\_\_\_\_ " plant until they are large enough to set roots of their own and survive as a separate plant.

- A. Pups
- B. Scape bracts
- C. Flower stalk
- D. Vegetatively produce new plantlets
- E. Mother

122. The Bromeliad mother may sometimes survive a generation or two before finally dying off. \_\_\_\_\_ are usually produced near the base of the plant - inside the sheath of a leaf.

- A. Pups
- B. Scape bracts
- C. Flower stalk
- D. Vegetatively produce new plantlets
- E. Mother

123. Sometimes, \_\_\_\_\_ may be produced on long stolons or atop the inflorescence (flower spike) of the mother plant. The green, leafy top of a pineapple is in fact a pup that may be removed and planted to start a new plant.

- A. Pups
- B. Scape bracts
- C. Flower stalk
- D. Vegetatively produce new plantlets
- E. Mother

124. Bromeliads are particularly suited to rainforest environments. They are epiphytes in that they often cling onto and climb up the outside of trees and tree stumps, but they gain most of their nutrients not from the roots, but from the reservoir of water and \_\_\_\_\_ stored in the middle of the leaf well.

- A. Detritus
- B. Mucilage glands
- C. Store water
- D. Flypaper trap
- E. Butterwort

125. In fact Bromeliads can \_\_\_\_\_ for an incredible length of time, enabling them to survive lengthy periods of drought.

- A. Detritus
- B. Mucilage glands
- C. Store water
- D. Flypaper trap
- E. Butterwort

126. The flypaper trap is based on a sticky \_\_\_\_\_, or glue.

- A. Detritus
- B. Mucilage
- C. Store water
- D. Flypaper trap
- E. Butterwort

127. The leaf of flypaper traps is studded with \_\_\_\_\_-secreting glands, which may be short and nondescript (like those of the butterworts), or long and mobile (like those of many sundews).

- A. Detritus
- B. Mucilage
- C. Store water
- D. Flypaper trap
- E. Butterwort

128. *Pinguicula moranensis* is also known as the \_\_\_\_\_. Found in Mexico.

- A. Detritus
- B. Mucilage glands
- C. Store water
- D. Flypaper trap
- E. Butterwort

129. \_\_\_\_\_ release their digestive enzymes only when an insect has been caught.

- A. Detritus
- B. Mucilage glands
- C. Store water
- D. Flypaper trap
- E. Butterworts

130. In the genus *Pinguicula*, the \_\_\_\_\_ are quite short (sessile) and the leaf, whilst shiny (giving the genus its common name of 'butterwort'), does not appear carnivorous.

- A. Detritus
- B. Mucilage glands
- C. Store water
- D. Flypaper trap
- E. Butterwort

131. The fact that the leaf is an extremely effective trap of small flying insects (such as fungus gnats), and whose surface responds to prey by relatively \_\_\_\_\_.

- A. Thigmotropic growth
- B. Thigmotropism
- C. Rapid growth
- D. Negatively thigmotropic
- E. Gravitopism

132. \_\_\_\_\_ may involve rolling of the leaf blade (to prevent rain from splashing the prey off the leaf surface), or 'dishing' of the surface under the prey, to form a shallow digestive pit.

- A. Thigmotropic growth
- B. Thigmotropism
- C. Rapid growth
- D. Negatively thigmotropic
- E. Gravitopism

133. \_\_\_\_\_ is the directional response of a plant organ to touch or physical contact with a solid object. This directional response is generally caused by the induction of some pattern of differential growth.

- A. Thigmotropic growth
- B. Thigmotropism
- C. Rapid growth
- D. Negatively thigmotropic
- E. Gravitopism

134. The \_\_\_\_\_ phenomenon is clearly illustrated by the climbing tendrils of some plants, such as the sweet pea. The tendrils actually "feel" the solid object, which results in the coiling response. The clearest example of thigmotropism is the coiling that occurs in some tendrils.

- A. Thigmotropic growth
- B. Thigmotropism
- C. Rapid growth
- D. Negatively thigmotropic
- E. Gravitopism

135. Roots also depend on touch sensitivity to navigate their way through the soil. The general touch response in roots is negative. That is, when a root "feels" an object, the root grows away from the object. In comparison, most tendrils grow toward the touch stimulus, allowing for the tendril to wrap around the object which it is in contact with. Therefore, roots are said to be "\_\_\_\_\_".

- A. Thigmotropic growth
- B. Thigmotropism
- C. Rapid growth
- D. Negatively thigmotropic
- E. Gravitopism

136. \_\_\_\_\_ allows the roots to follow the line of least resistance through the soil. In addition to thigmotropic responses, roots (as well as other organs) are known to grow in response to gravity.

- A. Thigmotropic growth
- B. Thigmotropism
- C. Rapid growth
- D. Negatively thigmotropic
- E. Gravitopism

137. "\_\_\_\_\_" allows the roots to grow in the direction of gravity, which is down into the earth. Interestingly, thigmotropism seems capable of overriding the strong gravitropic responses of even primary roots.

- A. Thigmotropic growth
- B. Thigmotropism
- C. Rapid growth
- D. Negatively thigmotropic
- E. Gravitopism

138. In positive \_\_\_\_\_, the side of the tendril which is opposite to the side of contact will grow at a faster rate than the contact side. In some cases, the cells on the contact side will actually compress, which enhances the curving response.

- A. Thigmotropic growth
- B. Thigmotropism
- C. Rapid growth
- D. Negatively thigmotropic
- E. Gravitopism

139. \_\_\_\_\_ also known as Cape Sundew, comes all the way from South Africa. The glands that produce the digestive enzymes are the same glands that absorb the nutrition.

- A. Drosophyllum
- B. Sundews
- C. Drosera capensis
- D. D. pygmaea
- E. Enzyme nitrate reductase

140. *Drosera capensis* is one of the most popular \_\_\_\_\_ because it's easy to grow, does not need a dormancy period and it grows well in terrariums.

- A. Drosophyllum
- B. Sundews
- C. *Drosera capensis*
- D. *D. pygmaea*
- E. Enzyme nitrate reductase

141. The sundew genus (*Drosera*) consists of over 100 species of active flypapers, whose mucilage glands are borne at the end of \_\_\_\_\_, which frequently grow fast enough in response to prey (thigmotropism) to aid the trapping process.

- A. Drosophyllum
- B. Sundews
- C. *Drosera capensis*
- D. *D. pygmaea*
- E. Long tentacles

142. Sundews are extremely \_\_\_\_\_, and are found on all the continents except the Antarctic mainland.

- A. Drosophyllum
- B. Cosmopolitan
- C. *Drosera capensis*
- D. *D. pygmaea*
- E. Enzyme nitrate reductase

143. Sundews are most diverse in Australia, the home to the large subgroup of pygmy sundews such as \_\_\_\_\_, and to a number of tuberous sundews such as *D. peltata*, which form tubers that aestivate during the dry summer months.

- A. Drosophyllum
- B. Sundews
- C. *Drosera capensis*
- D. *D. pygmaea*
- E. Enzyme nitrate reductase

144. These tuberous sundews species are so dependent on insect sources of nitrogen that they generally lack the \_\_\_\_\_, which most plants require to assimilate soil-borne nitrate into organic forms.

- A. Drosophyllum
- B. Sundews
- C. *Drosera capensis*
- D. *D. pygmaea*
- E. Enzyme nitrate reductase

145. Closely related to *Drosera* is the Portuguese dewy pine, \_\_\_\_\_, which differs from the sundews in being passive.

- A. *Drosophyllum*
- B. Sundews
- C. *Drosera capensis*
- D. *D. pygmaea*
- E. Enzyme nitrate reductase

146. \_\_\_\_\_'s leaves are incapable of rapid movement or growth. Unrelated, but similar in habit, are the Australian rainbow plants (*Byblis*).

- A. *Drosophyllum*
- B. Sundews
- C. *Drosera capensis*
- D. *D. pygmaea*
- E. Enzyme nitrate reductase

147. \_\_\_\_\_ is unusual in that it grows under near-desert conditions; almost all other carnivores are either bog plants or grow in moist tropical areas.

- A. *Drosophyllum*
- B. Sundews
- C. *Drosera capensis*
- D. *D. pygmaea*

148. Recent molecular data (particularly the production of plumbagin) indicate that the remaining flypaper, *Triphyophyllum peltatum*, a member of the *Dioncophyllaceae*, is closely related to \_\_\_\_\_, and forms part of a larger clade of carnivorous and non-carnivorous plants with the *Droseraceae*, *Nepenthaceae*, *Ancistrocladaceae* and *Plumbaginaceae*.

- A. *Triphyophyllum peltatum*
- B. *Drosophyllum*
- C. *Dionaea muscipula*
- D. *Aldrovanda vesiculosa*
- E. Snap trap

149. \_\_\_\_\_ is usually encountered as a liana, but in its juvenile phase, the plant is carnivorous. This may be related to a requirement for specific nutrients for flowering.

- A. *Triphyophyllum peltatum*
- B. *Drosophyllum*
- C. *Dionaea muscipula*
- D. *Aldrovanda vesiculosa*

150. The snap traps of \_\_\_\_\_ or Venus Flytrap close rapidly when triggered to trap prey between two lobes. Commonly found in North and South Carolina, Venus Flytraps can live 20 to 30 years.

- A. *Triphyophyllum peltatum*
- B. *Drosophyllum*
- C. *Dionaea muscipula*
- D. *Aldrovanda vesiculosa*
- E. Snap trap

151. The \_\_\_\_\_ has fascinated people throughout history, including Thomas Jefferson, who corresponded with Timothy Bloodworth in order to obtain seeds from this most unusual plant.

- A. Waterwheel Plant
- B. Buckwheat
- C. Man trap
- D. Venus Flytrap
- E. Underwater vegetation

152. \_\_\_\_\_ is hardy to zone 7.

- A. Waterwheel Plant
- B. Buckwheat
- C. Man trap
- D. Venus Flytrap
- E. Underwater vegetation

153. Venus Flytraps grow well in the partial shade cast by the taller \_\_\_\_\_.  
Not recommended for indoor or terrarium culture due to dormancy requirements.

- A. Waterwheel Plant
- B. Buckwheat
- C. Sarracenia
- D. Venus Flytrap
- E. Underwater vegetation

154. The only two active snap traps – the Venus flytrap (*Dionaea muscipula*) and the waterwheel plant (\_\_\_\_\_) – are believed to have had a common ancestor with similar adaptations.

- A. *Triphyophyllum peltatum*
- B. *Drosophyllum*
- C. *Dionaea muscipula*
- D. *Aldrovanda vesiculosa*
- E. Snap trap

155. Their trapping mechanism has also been described as a 'mouse trap' or \_\_\_\_\_, based on their shape or rapid movement. However, the term snap trap is preferred as other designations are misleading, particularly with respect to the intended prey.

- A. Waterwheel Plant
- B. Buckwheat
- C. Man trap
- D. Venus Flytrap
- E. Underwater vegetation

156. *Aldrovanda* is aquatic, and specializes in catching small invertebrates; \_\_\_\_\_ is terrestrial and catches a variety of arthropods, including spiders.

- A. Waterwheel Plant
- B. Buckwheat
- C. *Dionaea*
- D. Venus Flytrap
- E. Underwater vegetation

157. \_\_\_\_\_ is a member of the sundew family.
- A. Waterwheel Plant
  - B. Buckwheat
  - C. Man trap
  - D. Venus Flytrap
  - E. Underwater vegetation
158. \_\_\_\_\_ is a water-plant that traps and digests aquatic insects.
- A. Waterwheel Plant
  - B. Buckwheat
  - C. Man trap
  - D. Venus Flytrap
  - E. Underwater vegetation
159. \_\_\_\_\_ leaves face outwards from the stem and snap shut on small water animals that trigger the long, sensitive hairs surrounding each leaf.
- A. Waterwheel Plant
  - B. Buckwheat
  - C. Man trap
  - D. Venus Flytrap
  - E. Underwater vegetation
160. Waterwheel Plants float below the water's surface, and can be seen caught on \_\_\_\_\_. They have stems 5 - 20 cm long, with whorls of 5 - 9 reddish-colored leaves. The small, white or pinkish flowers emerge from the water, but the fruit capsules are held underwater.
- A. Waterwheel Plant
  - B. Buckwheat
  - C. Man trap
  - D. Venus Flytrap
  - E. Underwater vegetation
161. Aldrovanda catches its dinner in \_\_\_\_\_. But unlike all other members of the group, it is aquatic.
- A. Waterwheel Plant
  - B. Buckwheat
  - C. Snap traps
  - D. Venus Flytrap
  - E. Underwater vegetation
162. The same carnivorous-plant group is related to \_\_\_\_\_, cactus, carnation, jojoba, rhubarb, and salt cedar. Today botanists classify all of them in distinct but closely related families of the plant order Caryophyllales.
- A. Waterwheel Plant
  - B. Buckwheat
  - C. Man trap
  - D. Venus Flytrap
  - E. Underwater vegetation

163. The traps are very similar, with leaves whose terminal section is divided into two lobes, hinged along the midrib. \_\_\_\_\_ (three on each lobe in *Dionaea*, many more in the case of *Aldrovanda*) inside the trap lobes are sensitive to touch.

- A. Waterwheel Plant
- B. Buckwheat
- C. Trigger hairs
- D. Venus Flytrap
- E. Underwater vegetation

164. When the trigger hairs are bent, \_\_\_\_\_ in the membranes of cells at the base of the trigger hair open, generating an action potential that propagates to cells in the midrib.

- A. Unresponsive to stimulation
- B. Stretch-gated ion channels
- C. Causes the lobes to grow together towards the prey
- D. Cause rapid acid growth
- E. Spurious closure in response

165. These cells respond by pumping out ions, which may either cause water to follow by osmosis (collapsing the cells in the midrib) or \_\_\_\_\_. The mechanism is still debated, but in any case, changes in the shape of cells in the midrib allow the lobes, held under tension, to snap shut, flipping rapidly from convex to concave and interring the prey.

- A. Unresponsive to stimulation
- B. Stretch-gated ion channels
- C. Causes the lobes to grow together towards the prey
- D. Cause rapid acid growth
- E. Spurious closure in response

166. This whole process takes less than a second. In the Venus flytrap, \_\_\_\_\_ to raindrops and blown-in debris is prevented by the leaf's having a simple memory: for the lobes to shut, two stimuli are required, 0.5 to 30 seconds apart.

- A. Unresponsive to stimulation
- B. Stretch-gated ion channels
- C. Causes the lobes to grow together towards the prey
- D. Cause rapid acid growth
- E. Spurious closure in response

167. The snapping of the leaves is a case of thigmonasty (undirected movement in response to touch). Further stimulation of the lobe's internal surfaces by the struggling insects \_\_\_\_\_: thigmotropism, sealing the lobes hermetically, and forming a stomach in which digestion occurs over a period of one to two weeks.

- A. Unresponsive to stimulation
- B. Stretch-gated ion channels
- C. Causes the lobes to grow together towards the prey
- D. Cause rapid acid growth
- E. Spurious closure in response

168. Leaves can be reused three or four times before they become \_\_\_\_\_.
- A. Unresponsive to stimulation
  - B. Stretch-gated ion channels
  - C. Causes the lobes to grow together towards the prey
  - D. Cause rapid acid growth
  - E. Spurious closure in response
169. \_\_\_\_\_ are carnivorous plants with delicate, finely-divided underwater leaves and emergent snapdragon-like yellow flowers. The most distinctive underwater features are the small bladder-like traps.
- A. Daphnia
  - B. Bladder traps
  - C. Small invertebrates
  - D. Carnivorous
  - E. Terrestrial species
170. These traps use a vacuum to capture \_\_\_\_\_ or even tiny fish that trigger the trap door. Enzymes are secreted to digest the prey which provides the plant with nutrients.
- A. Daphnia
  - B. Bladder traps
  - C. Small invertebrates
  - D. Carnivorous
  - E. Terrestrial species
171. All bladderworts are \_\_\_\_\_, and capture small organisms by means of bladder-like traps.
- A. Daphnia
  - B. Bladder traps
  - C. Small invertebrates
  - D. Carnivorous
  - E. Terrestrial species
172. \_\_\_\_\_ tend to have tiny traps, and feed on minute prey such as protozoa and rotifers swimming in water-saturated soil.
- A. Daphnia
  - B. Bladder traps
  - C. Small invertebrates
  - D. Carnivorous
  - E. Terrestrial species
173. In aquatic species such as the Common Bladderwort *U. vulgaris*, the bladders are large (sometimes exceeding 5 mm in diameter) and can feed on more substantial prey such as water fleas (\_\_\_\_\_), nematodes and even fish fry, mosquito larvae and new tadpoles. Despite their small size, the traps are extremely sophisticated.
- A. Daphnia
  - B. Bladder traps
  - C. Small invertebrates
  - D. Carnivorous
  - E. Terrestrial species

174. When prey animals brush against trigger hairs connected to the \_\_\_\_\_, it is released and the bladder sucks in the door and the prey, along with the water surrounding it.

- A. Trapdoor
- B. Bladder traps
- C. Small invertebrates
- D. Carnivorous
- E. Terrestrial species

175. \_\_\_\_\_ are unusual and highly specialized plants; they have no roots, and their simple structure makes distinguishing between leaf, shoot, and stem seem arbitrary.

- A. Utricularia
- B. Vesicular
- C. Bladder
- D. Bladderworts
- E. Bladder traps

176. The \_\_\_\_\_ are recognized as one of the most sophisticated structures in the plant kingdom.

- A. Utricularia
- B. Vesicular
- C. Bladder
- D. Bladderworts
- E. Bladder traps

177. Bladder traps are exclusive to the genus \_\_\_\_\_, or bladderworts.

- A. Utricularia
- B. Vesicular
- C. Bladder
- D. Bladderworts
- E. Bladder traps

178. The bladders (\_\_\_\_\_) pump ions out of their interiors. Water follows by osmosis, generating a partial vacuum inside the bladder.

- A. Utricularia
- B. Vesicular
- C. Bladder
- D. Bladderworts
- E. Bladder traps

179. The \_\_\_\_\_ has a small opening, sealed by a hinged door. In aquatic species, the door has a pair of long trigger hairs. Aquatic invertebrates such as Daphnia touch these hairs and deform the door by lever action, releasing the vacuum.

- A. Utricularia
- B. Vesicular
- C. Bladder
- D. Bladderworts
- E. Bladder traps

180. The invertebrate is sucked into the bladder, where it is digested. Many species of \_\_\_\_\_ (such as *U. sandersonii*) are terrestrial, growing on waterlogged soil, and their trapping mechanism is triggered in a slightly different manner.

- A. Utricularia
- B. Vesicular
- C. Bladder
- D. Bladderworts
- E. Bladder traps

181. \_\_\_\_\_ lack roots, but terrestrial species have anchoring stems that resemble them. Temperate aquatic bladderworts generally die back to a resting turion during the winter months, and *U. macrorhiza* appears to regulate the number of bladders it bears in response to the prevailing nutrient content of its habitat.

- A. Utricularia
- B. Vesicular
- C. Bladder
- D. Bladderworts
- E. Bladder traps

182. *Nepenthes*, *N. maxima* also known as the \_\_\_\_\_. The lid of this Pitcher Plant and other pitchers never moves- it prevents rain from entering the pitcher and diluting the digestive enzymes.

- A. *Roridula gorgonias*
- B. Ammonium ions
- C. Southeast Asian Pitcher Plant
- D. *Heliamphora*
- E. *Brocchinia reducta*

183. To be a fully fledged carnivore, a plant must attract, kill, and digest prey; it must also benefit from absorbing the products of the digestion (mostly amino acids and \_\_\_\_\_).

- A. *Roridula gorgonias*
- B. Ammonium ions
- C. Southeast Asian Pitcher Plant
- D. *Heliamphora*
- E. *Brocchinia reducta*

184. There is a spectrum of carnivory found in plants: from completely non-carnivorous plants like cabbages, to borderline carnivores, to unspecialized and simple traps, like \_\_\_\_\_, to extremely specialized and complex traps, like that of the Venus flytrap.

- A. *Roridula gorgonias*
- B. Ammonium ions
- C. Southeast Asian Pitcher Plant
- D. *Heliamphora*
- E. *Brocchinia reducta*

185. \_\_\_\_\_ is a borderline carnivore that gains nutrients from its 'prey' via the droppings of a predatory bug.
- A. *Roridula gorgonias*
  - B. Ammonium ions
  - C. Southeast Asian Pitcher Plant
  - D. *Heliamphora*
  - E. *Brocchinia reducta*
186. \_\_\_\_\_ is a South African genus of plants that, while having many of the adaptations of a carnivorous plant. Such as the possession of insect-trapping sticky hairs, does not directly digest the animals it traps.
- A. *Roridula*
  - B. Ammonium ions
  - C. Southeast Asian Pitcher Plant
  - D. *Heliamphora*
  - E. *Brocchinia reducta*
187. Whether \_\_\_\_\_ is regarded as carnivorous or not is essentially a matter of style. The genus contains just two species, *Roridula gorgonias* Planch. and *Roridula dentata* L., and is the only genus in the family Roridulaceae.
- A. *Roridula*
  - B. Ammonium ions
  - C. Southeast Asian Pitcher Plant
  - D. *Heliamphora*
  - E. *Brocchinia reducta*
188. The borderline carnivores include *Roridula* and *Catopsis berteroniana*. *Catopsis* is a borderline carnivorous bromeliad, like \_\_\_\_\_.
- A. *Roridula*
  - B. Ammonium ions
  - C. Southeast Asian Pitcher Plant
  - D. *Heliamphora*
  - E. *Brocchinia reducta*
189. Unlike the phosphatase of \_\_\_\_\_, *C. berteroniana* has not been shown to produce digestive enzymes. In these pitfall traps, prey simply fall into the urn, assisted by the waxy scales located on the rim.
- A. *Roridula*
  - B. Ammonium ions
  - C. Southeast Asian Pitcher Plant
  - D. *Heliamphora*
  - E. *Brocchinia reducta*
190. \_\_\_\_\_ has a more intricate relationship with its prey. The plants in this genus produce sticky leaves with resin-tipped glands, and look extremely similar to some of the larger sundews.
- A. *Roridula*
  - B. Ammonium ions
  - C. Southeast Asian Pitcher Plant
  - D. *Heliamphora*
  - E. *Brocchinia reducta*

191. \_\_\_\_\_ do not directly benefit from the insects they catch. Instead, they form a mutualistic symbiosis with species of assassin bug (genus *Pameridea*), which eat the trapped insects. The plant benefits from the nutrients in the bugs' feces.

- A. *Roridula*
- B. Ammonium ions
- C. Southeast Asian Pitcher Plant
- D. *Heliamphora*
- E. *Brocchinia reducta*

192. A number of species in the \_\_\_\_\_ (previously *Pedaliaceae*), such as *Ibicella lutea*, have sticky leaves that trap insects. These plants have not been shown conclusively to be carnivorous.

- A. Triggerplants
- B. *Calcifuges*
- C. *Martyniaceae*
- D. *Byblis*
- E. Carnivorous plants

193. The seeds of Shepherd's Purse, urns of *Paepalanthus bromelioides*, bracts of *Passiflora foetida*, and flower stalks and sepals of \_\_\_\_\_ (*Stylidium*) appear to trap and kill insects, but their classification as carnivores is contentious.

- A. Triggerplants
- B. *Calcifuges*
- C. *Martyniaceae*
- D. *Byblis*

194. The production of specific prey-digesting enzymes (proteases, ribonucleases, phosphatases, etc.), is sometimes used as a criterion for carnivory. However, this would probably discount \_\_\_\_\_ *Heliamphora*, and *Darlingtonia*, all of which appear to rely on the enzymes of symbiotic bacteria to break down their prey, but are generally considered as carnivores.

- A. Triggerplants
- B. *Calcifuges*
- C. *Martyniaceae*
- D. *Byblis*

195. Although different species of \_\_\_\_\_ have different requirements in terms of sunlight, humidity, soil moisture, etc., there are commonalities.

- A. Triggerplants
- B. *Calcifuges*
- C. *Martyniaceae*
- D. *Byblis*
- E. Carnivorous plants

196. Most \_\_\_\_\_ require rain water, or water that has been distilled, deionized by reverse osmosis, or acidified to around pH 6.5 using sulfuric acid.

- A. Triggerplants
- B. *Calcifuges*
- C. *Byblis*
- D. Carnivorous plants

197. Common tap or drinking water contains minerals (particularly calcium salts) that will quickly build up and kill the plant. This is because most \_\_\_\_\_ have evolved in nutrient-poor, acidic soils and are consequently extreme calcifuges. They are therefore very sensitive to excessive soil-borne nutrients.

- A. Triggerplants
- B. Calcifuges
- C. Martyniaceae
- D. Byblis
- E. Carnivorous plants

198. Since most of these plants are found in bogs, almost all are very intolerant of drying. There are exceptions: tuberous sundews require a dry (summer) dormancy period and \_\_\_\_\_ requires much drier conditions than most.

- A. Triggerplants
- B. Calcifuges
- C. Drosophyllum
- D. Byblis
- E. Carnivorous plants

199. Outdoor-grown \_\_\_\_\_ generally catch more than enough insects to keep themselves properly fed.

- A. Triggerplants
- B. Calcifuges
- C. Martyniaceae
- D. Byblis
- E. Carnivorous plants

200. Insects may be fed to the plants by hand to supplement their diet; however, \_\_\_\_\_ are generally unable to digest large non-insect food items; bits of hamburger, for example, will simply rot, and this may cause the trap, or even the whole plant, to die.

- A. Triggerplants
- B. Calcifuges
- C. Martyniaceae
- D. Byblis
- E. Carnivorous plants

**You are finished with your assignment. Allow two weeks for grading and to receive your certificate of completion from TLC. If you need this graded and turned around within 48-hours, prepare to pay a rush handling service fee of \$50.00.**

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