

T or F 1. By definition, all Lower Vascular Plants are heterosporous.

T or F 2. Heterosporous vascular plants always have endosporic gametophytes.

____ 3. Which statement is true for the gametes of lower vascular plants?

- A. produced in gametangia and their ploidy level is $2n$ C. result from meiosis and their ploidy level is n
 B. produced in sporangia and their ploidy level is n D. result from mitosis and their ploidy level is n

____ 4. Which of the following is NOT true for *Selaginella*?

- A. gametophytes are unisexual C. gametophytes are exosporic E. leaves bear ligules
 B. spores are borne in sporangia in leaf axils D. spores are of two sizes

____ 5. A leaf bearing a sporangium which produces only 4 large spores would therefore be called a:

- A. prophyll B. megaphyll C. microphyll D. megasporophyll E. microsporophyll

____ 6. Which of the following traits is constantly present in heterosporous plants?

- A. exosporic, bisexual gametophytes C. endosporic, bisexual gametophytes
 B. exosporic, unisexual gametophytes D. endosporic, unisexual gametophytes

____ 7. Spores from which of the following can be collected and used in flash photography?

- A. *Psilotum* B. *Selaginella* C. *Isoetes* D. *Lycopodium* E. *Anthoceros*

____ 8. Leaves that are usually small, supplied by a single vascular trace and leave no gap in the stele are called:

- A. prophylls B. microphylls C. megaphylls D. protophylls E. enations

____ 9. Which of the following L.V.P. genera contains species **most** likely to be mistaken for a true moss?

- A. *Lycopodium* B. *Huperzia* C. *Isoetes* D. *Psilotum* E. *Selaginella*

____ 10. Which of the following genera has hollow, jointed stems?

- A. *Psilotum* B. *Selaginella* C. *Equisetum* D. *Lycopodium* E. *Huperzia*

____ 11. Which of the following is characteristically present in a siphonostele but not in a protosteles?

- A. protoxylem B. metaxylem C. pith D. cortex E. endodermis

____ 12. Which set of terms describes the plant seen here.

- A. homosporous; gametophyte C. heterosporous; sporophyte E. no match
 B. homosporous; sporophyte D. heterosporous; gametophyte

____ 13. This strobilus was taken from a member of which of the following families?

- A. Isoetaceae B. *Psilotum* C. Lycopodiaceae D. *Lycopodium* E. Selaginellaceae

____ 14. Which of the following sets of terms applies to this organism?

- A. homosporous; microphyllous C. heterosporous; megaphyllous
 B. homosporous; megaphyllous D. heterosporous; microphyllous

____ 15. The branched mark indicated by the arrow is called a ____ and indicates these spores were produced by ____.

- A. tetraspore; mitosis B. trilete scar; meiosis C. annulus; meiosis D. enation; mitosis E. tapetum; mitosis

____ 16. What is the **specific** stelar pattern exhibited here?

- A. siphonostele B. plectostele C. amphloic siphonostele D. haplostele E. protosteles

____ 17. Which arrow (A or B) is pointing at the metaxylem?

____ 18. The structure indicated by the bracket is a

- A. club B. vegetative branch C. ligule D. seed cone E. strobilus

19. _____ Name the genus!

20. _____ What are the small structures indicated by the arrow in this closeup?

21. _____ Name the small, yellowish structures near the leaf bases (see arrow).

22. _____ What is the **specific** stelar pattern exhibited here?

23. _____ What is the **tissue** indicated by the arrow?

24. _____ Is this plant homosporous or is it heterosporous?

25. _____ What is the **cell type** of the cells near the stem periphery, indicated by the arrow?

26. _____ Name the genus shown here. Explain the ecological significance of the two different conditions shown for this species, on the left and on the right!